

**ROADS AUTHORITY**

**Bidding Document for the Procurement of Civil Works for the Construction of Chiponde / Mandimba One Stop Border Post (OSBP) and Associated External Works at Malawi / Mozambique Border Crossing in Mangochi District**

**Employer:** ROADS AUTHORITY

Functional Building

Off Paul Kagame Road

Private Bag B346

Lilongwe 3

MALAWI

**Project:** Multinational Nacala Road Corridor Development Project-Phase V

**Project ID No.:** P-Z1-DB0-202

**Contract Title:** Construction of a One-Stop Border Post (OSBP) between

Malawi and Mozambique at Chiponde

**Country:** Malawi

**Loan No. / Grant No.:** 2100150041793

**OCBI No:** RA/W/DEV/NACALA/2025/02

**Issued on: 29th September 2025**

**Schedule of Bid Documents**

**Construction of the Chiponde/Mandimba One Stop Border Post (OSBP) in Mangochi District**

**VOLUME 1**

**Bidding Document**

**VOLUME 2**

**Drawings**

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**Foreword**

This Standard Bidding Document (SBD) for Works has been prepared by the African Development Bank (AfDB). The SBD derives from the Master Bidding Document for Procurement of Works.

This SBD has been updated to reflect the African Development Bank’s Procurement Framework as amended from time to time. This SBD is applicable to the Procurement of Works funded by AfDB financed projects whose Legal Agreement makes reference to the Procurement Framework.

**Preface**

This Standard Bidding Document (SBD) for Works has been prepared for the use in contracts financed by the African Development Bank Group.

This SBD is to be used for the procurement of large works of admeasurement (unit price or rate) type contracts through Open Competitive Bidding (International) (OCBI) or Limited Competitive Bidding (LCB) procedures in projects that are financed, in whole or in part, by the African Development Bank Group. Separate SBDs for Works after prequalification has taken place, and for Small Works using one or two-envelope process are available. This SBD is to be used when prequalification has not taken place before Bidding.

The Bank’s procurement policy supports Borrowers in obtaining optimal value for money in procurement. To achieve this objective, adopting an appropriate approach that would be the best ‘fit for purpose” is critical. Depending upon the nature, type, value, complexity and outcome to be achieved, procurement may adopt price alone as a factor for selection e.g. for small value and simple procurement, or other relevant factors besides price can be considered to determine the evaluated cost of a bid for large value and complex procurement. The Bank recommends that as far as practical minimum pass-fail, and monetarily quantifiable criteria shall be adopted for the determination of the lowest evaluated bid and for evaluation of the qualification of Bidders to determine their technical capability and financial resources to perform the contract which will result in achieving the “Most Economically Advantageous Tender (MEAT)”. This approach avoids subjectivity in evaluation and provides greater transparency.

However, there may be some exceptional situations where for comparison of Bids or Bidders, certain factors cannot be quantified in monetary terms or there may be a need for assessment beyond the pass-fail criteria. For example, the particular nature of procurement or specifications or certain aspects of procurement which cannot be précised, or outputs cannot be accurately measured e.g. complex procurement involving innovative, aesthetic, sustainability aspects, etc. (although in most cases sustainability can be verified for compliance on pass-fail criteria and comparison among bids can be based on monetarily quantifiable criteria). In such cases, to determine “MEAT”, a merit point rated criteria/scoring system may need to be adopted for evaluation of Bids and /or Bidders. This SBD is primarily based on application of pass-fail and monetarily quantifiable criteria for procurement of large works and may not be used in such situations. **However, the Bank has developed a specific SBD which incorporates provisions on the rated criteria/system which can be used only after the approval of the Bank.**

The Bank’s Procurement Framework stipulates that bidders may send copies of their communications with the Borrowers to the Bank or write to the Bank directly when, Borrowers do not respond promptly, any questions on any issues regarding the implementation of Bank funded projects, or when the communication is a complaint against the Borrower. In this regard, if a bidder wishes to protest against a decision made by a Borrower or the Bank with regards to the procurement process or wishes to inform the Bank that the Bank’s procurement rules and/or provisions of the bidding documents have not been complied with, an email can be sent to the following address:

Email: [procurementcomplaints@afdb.org](mailto:procurementcomplaints@afdb.org)

To obtain further information on procurement under the African Development Bank-funded projects or for question regarding the use of this SBD, please contact:

**Fiduciary Services & Inspection Department (SNFI)**

African Development Bank (www.afdb.org)

Headquarters – Abidjan (Côte d'Ivoire)

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E-mail: [procurementpolicy@afdb.org](mailto:procurementpolicy@afdb.org)

**Standard Bidding Document**

**Summary**

**Specific Procurement Notice - Invitation for Bids (IFB)**

The template attached is the Specific Notice of Procurement for Invitation for Bids for a Bidding process without prequalification. This is the template to be used by the Employer.

**Bidding Document: Invitation for Bids – Works (Without Prequalification)**

**Part 1 – Bidding Procedures**

**Section I - Instructions to Bidders (ITB)**

This Section provides relevant information to help Bidders prepare their Bids. It is based on a one-envelope Bidding process when pre-qualification has not taken place. Information is also provided on the submission, opening, and evaluation of Bids and on the award of Contracts. Section I contains provisions that are to be used without modification.

**Section II - Bid Data Sheet (BDS)**

This Section includes provisions that are specific to each procurement and that supplement Section I, Instructions to Bidders.

**Section III - Evaluation and Qualification Criteria**

This Section specifies the criteria for evaluation of Bids and qualification of Bidders to perform the contract to determine the successful Bidder or Bidders that are substantially responsive to the bidding document and whose Bid (s) offer the lowest evaluated cost to the Employer. Only such criteria as appropriate for each procurement will be specified.

**Section IV - Bidding Forms**

This Section includes the forms for the Bid submission, Bill of Quantities, Schedules of Technical Proposal, including technical and financial qualifications, personnel, financial resources, and equipment, Bid Security and others to be completed and submitted by the Bidder as part of its Bid.

**Section V - Eligible Countries**

This Section contains information regarding eligible countries.

**Section VI - Fraud and Corruption**

This section includes the Fraud and Corruption provisions which apply to this Bidding process.

**Part 2 – Works’ Requirements**

**Section VII - Works’ Requirements**

This Section contains the Specification, the Drawings, and supplementary information that describe the Works to be procured. The Works’ Requirements also include the environmental and social (ES) requirements (including requirements relating to Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) which are to be satisfied by the Contractor while executing the works.

**Part 3 – Conditions of Contract and Contract Forms**

**Section VIII - General Conditions (GC)**

This Section refers to the “General Conditions” which form part of the Conditions of Contract for Construction (Second Edition 2017) published by the Federation Internationale Des Ingenieurs – Conseils (FIDIC).

**Section IX - Particular Conditions (PC)**

This Section includes particular conditions of the contract consisting of: Part A- Contract Data; Part B -Specific Provisions, Part C – Fraud and Corruption; Part D – Environmental and Social (ES) Reporting Metrics for Progress Reports; and Part E - Eligibility. The contents of this Section supplement the General Conditions and shall be completed by the Employer.

**Section X - Contract Forms**

This Section contains the Letter of Acceptance, Contract Agreement and other relevant forms.

**Bidding Document**

**Works**

**(Without Prequalification)**

***[Without Provisions for Evaluation Using MEAT]***

**Procurement of**

Construction of a One-Stop Border Post (OSBP)

and Associated External Works Between Malawi and Mozambique at Chiponde \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Employer:** Roads Authority

**Project:** Multinational Nacala Road Corridor Development Project -Phase V

**Contract title:** Construction of a One-Stop Border Post (OSBP) between

Malawi and Mozambique at Chiponde

**Country:** Malawi

**Loan No. / Grant No.:** 210050041793

**OCBI No:** RA/W/DEV/NACALA/2025/02

**Issued on:** 29th September 2025

**Table of Contents**

Part 1: Bidding Procedures 16

Section 1: Instructions to Bidders 17

Section II: Bid Data Sheet (BDS) 49

Section III: Evaluation and Qualification Criteria 63

Section IV: Bidding Forms 88

Section V: Eligible Countries 160

Section VI: Fraud and Corruption 162

Part 2: Works’ Requirements 165

Section VII: Works’ Requirements 166

Part 3: Conditions of Contract & Contract Forms 177

Section VIII: General Conditions of Contract (GC) 178

Section IX: Particular Conditions 179

Section X: Contract Forms 244

# Part 1: Bidding Procedures

## Section 1: Instructions to Bidders

**Table of Contents**

[**A. General 19**](#_Toc23435624)

[1. Scope of Bid 19](#_Toc23435625)

[2. Source of Funds 20](#_Toc23435626)

[3. Fraud and Corruption 20](#_Toc23435627)

[4. Eligible Bidders 20](#_Toc23435628)

[5. Eligible Materials, Equipment, and Services 23](#_Toc23435629)

[**B. Contents of Bidding Document 23**](#_Toc23435630)

[6. Sections of Bidding Document 23](#_Toc23435631)

[7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting 24](#_Toc23435632)

[8. Amendment of Bidding Document 26](#_Toc23435633)

[**C. Preparation of Bids 26**](#_Toc23435634)

[9. Cost of Bidding 26](#_Toc23435635)

[10. Language of Bid 26](#_Toc23435636)

[11. Documents Comprising the Bid 26](#_Toc23435637)

[12. Letter of Bid and Schedules 27](#_Toc23435638)

[13. Alternative Bids 27](#_Toc23435639)

[14. Bid Prices and Discounts 28](#_Toc23435640)

[15. Currencies of Bid and Payment 30](#_Toc23435641)

[16. Documents Comprising the Technical Bid 30](#_Toc23435642)

[17. Documents Establishing the Eligibility and Qualifications of the Bidder 30](#_Toc23435643)

[18. Period of Validity of Bids 31](#_Toc23435644)

[19. Bid Security 31](#_Toc23435645)

[20. Format and Signing of Bid 33](#_Toc23435646)

[**D. Submission and Opening of Bids 34**](#_Toc23435647)

[21. Sealing and Marking of Bids 34](#_Toc23435648)

[22. Deadline for Submission of Bids 35](#_Toc23435649)

[23. Late Bids 35](#_Toc23435650)

[24. Withdrawal, Substitution, and Modification of Bids 35](#_Toc23435651)

[25. Bid Opening 36](#_Toc23435652)

[**E. Evaluation and Comparison of Bids 37**](#_Toc23435653)

[26. Confidentiality 37](#_Toc23435654)

[27. Preliminary Examination & Clarification of Bids 37](#_Toc23435655)

[28. Deviations, Reservations, and Omissions 38](#_Toc23435656)

[29. Determination of Responsiveness 38](#_Toc23435657)

[30. Nonmaterial Nonconformities 39](#_Toc23435658)

[31. Correction of Arithmetical Errors 40](#_Toc23435659)

[32. Conversion to Single Currency 40](#_Toc23435660)

[33. Margin of Preference 41](#_Toc23435661)

[34. Subcontractors 41](#_Toc23435662)

[35. Evaluation of Bids 41](#_Toc23435663)

[36. Comparison of Bids 42](#_Toc23435664)

[37. Abnormally Low Bids 42](#_Toc23435665)

[38. Unbalanced or Front Loaded Bids 43](#_Toc23435666)

[39. Qualifications of the Bidder 43](#_Toc23435667)

[40. Successful Bid or Bids 44](#_Toc23435668)

[41. Employer’s Right to Accept Any Bid, and to Reject Any or All Bids 44](#_Toc23435669)

[42. Standstill Period 44](#_Toc23435670)

[43. Notification of Intention to Award 44](#_Toc23435671)

[**F. Award of Contract 45**](#_Toc23435672)

[44. Award Criteria 45](#_Toc23435673)

[45. Notification of Award 45](#_Toc23435674)

[46. Debriefing by the Employer 46](#_Toc23435675)

[47. Signing of Contract 47](#_Toc23435676)

[48. Performance Security 47](#_Toc23435677)

[49. Procurement Related Complaint 48](#_Toc23435678)

**Section I: Instructions to Bidders**

1. General
2. Scope of Bid

1.1 In connection with the Specific Procurement Notice – Invitation for Bids (IFB), specified in the Bid Data Sheet (BDS), the Employer, as specified in the BDS, issues this Bidding document for the provision of Works as specified in Section VII, Works’ Requirements. The name, identification, and number of “whole of the works”, hereafter called ‘Works’ invited under one or more lots (Contracts) or packages each lot containing one or more ‘Works’ or each package containing one or more lots of this IFB are specified in the BDS.

1.2 Throughout this bidding document:

1. the term “in writing” means communicated in written form (e.g. by mail, e-mail, fax, including, if specified in the BDS, distributed or received through electronic-procurement system used by the Employer) with proof of receipt;
2. if the context so requires, “singular” means “plural’ and vice versa;
3. “Day” means calendar day, unless otherwise specified as a “Business Day.” Business Day is any day that is a working day of the Borrower. It excludes the Borrower’s official public holidays; and
4. “ES” means environmental and social (including Sexual Exploitation, and Abuse (SEA) and Sexual Harassment (SH));
5. “Sexual Exploitation and Abuse” “(SEA)” means the following:

**“Sexual Exploitation”** is defined as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another;

**“Sexual Abuse”** is defined as the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions;

1. **“Sexual Harassment” “(SH)”** is defined as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature by the Contractor’s Personnel with other Contractor’s or Employer’s Personnel;
2. **“Contractor’s Personnel”** is as defined in Sub- Clause 1.1.17 of the General Conditions of Contract; and
3. “Employer’s personnel” is as defined in GCC Sub-Clause 1.1.31 of the General Conditions of Contract.

A non-exhaustive list of (i) behaviors which constitute SEA and (ii) behaviors which constitute SH is attached to the Code of Conduct form in Section IV.

1. Source of Funds

2.1 The Borrower or Recipient (hereinafter called “Borrower”) specified in the BDS has received or has applied for financing (hereinafter called “funds”) from the Specific Financing Institution named in the BDS (hereinafter called “the Bank”) in an amount specified in the BDS, toward the project named in the BDS. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this Bidding document is issued.

2.2 Payment by the Bank will be made only at the request of the Borrower and upon approval by the Bank, and will be subject, in all respects, to the terms and conditions of the Loan (or other financing) Agreement. The Loan (or other financing) Agreement prohibits a withdrawal from the loan account for the purpose of any payment to persons or entities, or for any import of goods, equipment, plant, or materials, if such payment or import is prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. No party other than the Borrower shall derive any rights from the Loan (or other financing) Agreement or have any claim to the proceeds of the Loan (or other financing).

1. Fraud and Corruption

3.1 The Bank requires compliance with its Integrity Framework comprising the African Development Bank Group’s Sanctions Procedures, the Bank’s Whistleblowing and Complaints Policy, the Bank’s Procurement Policy under the Procurement Framework and any other applicable Policies and Procedures including their updates in regard to corrupt and fraudulent practices, as set forth in Section VI.

3.2 In further pursuance of this policy, bidders shall permit and shall cause their agents (where declared or not), subcontractors, subconsultants, service providers, suppliers, and their personnel, to permit the Bank to inspect all accounts, records and other documents relating to any prequalification process, bid submission, and contract performance (in the case of award), and to have them audited by auditors appointed by the Bank.

1. Eligible Bidders

4.1 A Bidder may be a firm that is a private entity, a state-owned enterprise or institution subject to ITB 4.6 or any combination of such entities in the form of a joint venture, consortium, or association (JVCA) hereinafter called JV, under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. In the case of a joint venture, consortium, or association (JV): a) Unless otherwise specified in the BDS, all members shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms; b) The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the Bidding process and, in the event the JV is awarded the Contract, during contract execution; c) The maximum number of members proposed in a JV shall not exceed the number specified in the BDS, or the number derived from the percentage specified under ITB 4.1 (d), whichever is smaller unless both are equal, in which case anyone shall apply; and d) Participation by value of the contract as share of each of the JV partner (member) shall not be less than the percentage specified in the BDS. In case of any inconsistency between ITB 4.1 c) and ITB 4.1 d) such that both cannot be applied simultaneously, the latter shall prevail.

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

(a) directly or indirectly controls, is controlled by or is under common control with another Bidder; or

(b) receives or has received any direct or indirect subsidy from another Bidder; or

(c) has the same legal representative as another Bidder; or

(d) has a relationship with another Bidder, directly or through common third parties, that puts it in a position to influence the Bid of another Bidder, or influence the decisions of the Employer regarding this Bidding process; or

(e) any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the works that are the subject of the Bid; or

(f) any of its affiliates has been hired (or is proposed to be hired) by the Employer or Borrower as Engineer for the Contract implementation; or

(g) would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the project specified in the BDS ITB 2.1 that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm; or

(h) has a close business or family relationship with a professional staff of the Borrower (or of the project implementing agency, or of a recipient of a part of the loan) who: (i) are directly or indirectly involved in the preparation of the Bidding document or specifications of the Contract, and/or the Bid evaluation process of such Contract; or (ii) would be involved in the implementation or supervision of such Contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Bank throughout the Bidding process and execution of the Contract.

4.3 A firm that is a Bidder (either individually or as a JV member) shall not participate in more than one Bid, except for permitted alternative Bids. This includes participation as a subcontractor in other Bids. Such participation shall result in the disqualification of all Bids in which the firm is involved. A firm that is not a Bidder or a JV member may participate as a subcontractor in more than one Bid.

4.4 A Bidder and all parties constituting the Bidder including any subcontractors or suppliers shall have the nationality of an eligible country of the Bank in accordance with the Bank’s Procurement Policy for the Bank Group Funded Operations described under the Bank’s Procurement Framework, and as listed in Section V, Eligible Countries, subject to the restrictions pursuant to ITB 4.8. A Bidder shall be deemed to have the nationality of a country if the Bidder is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion shall also apply to the determination of the nationality of proposed subcontractors or subconsultants for any part of the Contract including related Services.

4.5 A Bidder that has been sanctioned by the Bank, pursuant to the Bank’s Integrity Framework, and in accordance with its prevailing sanctions policies and procedures as set forth in the Bank’s Integrity Framework, as described in Section VI paragraph 2.2 d. shall be ineligible to be prequalified for, bid for, or be awarded a Bank-financed contract or benefit from a Bank-financed contract, financially or otherwise, during such period of time as the Bank shall have determined. The list of debarred firms and individuals is available at the electronic address specified in the BDS.

4.6 Bidders that are state-owned enterprises or institutions in the Employer’s Country may be eligible to compete and be awarded a Contract(s) only if they can establish, in a manner acceptable to the Bank, that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not under supervision of the Employer.

4.7 A Bidder shall not be under suspension from Bidding by the Employer as the result of the operation of a Bid-Securing Declaration.

4.8 Firms and individuals may be ineligible if so indicated in Section V and (a) as a matter of law or official regulations, the Borrower’s country prohibits commercial relations with that country, provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of goods or the contracting of works or services required; or (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower’s country prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country. When the Works are implemented across jurisdictional boundaries (and more than one country is a Borrower, and is involved in the procurement), then exclusion of a firm or individual on the basis of ITB 4.8 (a) above by any country may be applied to that procurement across other countries involved, if the Bank and the Borrowers involved in the procurement agree.

4.9 A Bidder shall provide such documentary evidence of eligibility satisfactory to the Employer, as the Employer shall reasonably request.

4.10 A firm that is under a sanction of debarment by the Borrower from being awarded a contract is eligible to participate in this procurement, unless the Bank, at the Borrower’s request, is satisfied that the debarment; (a) relates to fraud or corruption, and (b) followed a judicial or administrative proceeding that afforded the firm adequate due process.

1. Eligible Materials, Equipment, and Services

5.1 The materials, equipment and services to be supplied under the Contract and financed by the Bank shall have their origin in an eligible country of the Bank in accordance with the Bank’s Procurement Policy for Bank Group Funded Operations described under the Bank’s Procurement Framework, and as listed in Section V, Eligible Countries, subject to the restrictions specified therein, Eligible Countries, and all expenditures under the Contract will not contravene such restrictions. At the Employer’s request, Bidders may be required to provide evidence of the origin of materials, equipment and services.

5.2 The nationality of the firm that produces, assembles, distributes, or sells the materials and equipment shall not determine their origin.

1. Contents of Bidding Document
2. Sections of Bidding Document

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

PART 1 Bidding Procedures

• Section I - Instructions to Bidders (ITB)

• Section II - Bid Data Sheet (BDS)

• Section III - Evaluation and Qualification Criteria

• Section IV - Bidding Forms

• Section V - Eligible Countries

• Section VI - Fraud and Corruption

PART 2 Works Requirements

• Section VII - Works’ Requirements

PART 3 Conditions of Contract and Contract Forms

• Section VIII - General Conditions (GC)

• Section IX - Particular Conditions (PC)

• Section X - Contract Forms

6.2 The Specific Procurement Notice - Invitation for Bids (IFB) issued by the Employer is not part of the Bidding document.

6.3 Unless obtained directly from the Employer, the Employer is not responsible for the completeness of the Bidding document, responses to requests for clarification, the minutes of the pre-Bid meeting (if any), or Addenda to the Bidding document in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Employer shall prevail.

6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding document and to furnish with its Bid all information and documentation as is required by the Bidding document.

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

7.1 A Bidder requiring any clarification of the Bidding document shall contact the Employer in writing at the Employer’s address specified in the BDS or raise its enquiries during the pre-Bid meeting if provided for in accordance with ITB 7.4. The Employer will respond in writing to any request for clarification, provided that such a request is received no later than fourteen (14) days prior to the deadline for submission of Bids. The Employer shall forward copies of its response to all Bidders who have acquired the Bidding document in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. If so, specified in the BDS, the Employer shall also promptly publish its response at the web page identified in the BDS. Should the clarification result in changes to the essential elements of the Bidding document, the Employer shall amend the Bidding document following the procedure under ITB 8 and ITB 22.2.

7.2 The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder’s own expense.

7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

7.4 If so, specified in the BDS, the Bidder’s designated representative is invited to attend a pre-Bid meeting and/or a Site of Works visit. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

7.5 The Bidder is requested to submit any questions in writing, to reach the Employer not later than one week before the meeting.

7.6 Minutes of the pre-Bid meeting, if applicable, including the text of the questions asked by Bidders, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding document in accordance with ITB 6.3. If so, specified in the BDS, the Employer shall also promptly publish the Minutes of the pre-Bid meeting at the web page identified in the BDS. Any modification to the Bidding document that may become necessary as a result of the pre-Bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to ITB 8 and not through the minutes of the pre-Bid meeting. Nonattendance at the pre-Bid meeting will not be a cause for disqualification of a Bidder.

1. Amendment of Bidding Document

8.1 At any time prior to the deadline for submission of Bids, the Employer may amend the Bidding document by issuing addenda.

8.2 Any addendum issued shall be part of the Bidding document and shall be communicated in writing to all who have obtained the Bidding document from the Employer in accordance with ITB 6.3. The Employer shall also promptly publish the addendum on the Employer’s web page in accordance with ITB 7.1.

8.3 To give Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Employer should extend the deadline for the submission of Bids, pursuant to ITB 22.2.

1. Preparation of Bids
2. Cost of Bidding

9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall not be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process.

1. Language of Bid

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

1. Documents Comprising the Bid

11.1 The Bid shall comprise the following:

(a) Letter of Bid prepared in accordance with ITB 12;

(b) Schedules including priced Bill of Quantities, completed in accordance with ITB 12 and ITB 14;

(c) Bid Security or Bid-Securing Declaration, in accordance with ITB 19.1;

(d) Technical Bid - of Base Bid;

(e) Commercial Terms and Conditions;

(f) Alternative Technical Bid, if permissible, in accordance with ITB 13;

(g) Authorization: written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.3;

(h) Eligibility and Qualifications: documentary evidence in accordance with ITB 17 establishing the Bidder’s eligibility and qualifications to perform the Contract if its Bid is accepted;

(i) Conformity: documentary evidence in accordance with ITB 16 and ITB 30, and in support of the above sub-paragraphs (d) and (e) of ITB 11.1, as necessary, to establish that the offered Works and Services, and Terms and Conditions of the Bid conform to the requirements and provisions of the bidding document; and

(j) any other document required in the BDS.

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

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

11.4 The Bidder shall furnish in the Letter of Bid the names of three potential Dispute Avoidance/Adjudication Board (DAAB) members and attach their curriculum vitae. The list of potential DAAB members proposed by the Employer (Contract Data 21.1) and by the Bidder (Letter of Bid) shall be subject to the Bank’s No-objection.

1. Letter of Bid and Schedules

12.1 The Letter of Bid and Schedules, including the Bill of Quantities, shall be prepared using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 20.3. All blank spaces shall be filled with the information requested.

1. Alternative Bids

13.1 Unless otherwise specified in the BDS, alternative Bids shall not be considered. If Alternative Bids are permitted, the BDS shall specify which of the following ITB (s), namely, ITB 13.2, ITB 13.3 and ITB 13.4 shall be considered.

13.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the BDS, and the method of evaluating different alternative times for completion will be described in Section III, Evaluation and Qualification Criteria.

13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding document must first price the Employer’s design as described in the Bidding document and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the Bidder with the Lowest Evaluated Bid conforming to the basic technical requirements shall be considered by the Employer.

13.4 When specified in the BDS, Bidders are permitted to submit alternative technical solutions for specified parts of the Works. Such parts will be identified in the BDS and described in Section VII, Works’ Requirements. The method for their evaluation will be stipulated in Section III, Evaluation and Qualification Criteria.

1. Bid Prices and Discounts

14.1 The prices and discounts (including any price reduction) quoted by the Bidder in the Letter of Bid and in the Bill of Quantities shall conform to the requirements specified below.

14.2 The Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered into by the Bidder shall be deemed covered by the rates for other items in the Bill of Quantities and will not be paid for separately by the Employer. An item not listed in the priced Bill of Quantities shall be assumed to be not included in the Bid, and provided that the Bid is determined substantially responsive notwithstanding this omission, the average or the highest price of the item as specified in the BDS quoted by substantially responsive Bidders will be added to the Bid price and the equivalent total cost of the Bid so determined will be used for price comparison.

14.3 The price to be quoted in the Letter of Bid, in accordance with ITB 12.1, shall be the total price of the Bid, excluding any discounts offered.

14.4 The Bidder shall quote any discounts and the methodology for their application in the Letter of Bid, in accordance with ITB 12.1, ITB 14.6 and ITB 14.7.

14.5 Unless otherwise specified in the BDS and the Conditions of Contract, the rates and prices quoted by the Bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract. In such a case, the Bidder shall furnish the indices and weightings for the price adjustment formulae in the Schedule of Adjustment Data and the Employer may require the Bidder to justify its proposed indices and weightings. A Bid submitted with a fixed price basis shall not be rejected unless otherwise specified in the BDS and in the latter case, a Bid submitted with a fixed price shall be rejected.

14.6 **As** **specified in the BDS**, bids are being invited for “Works” as a single contract (or as one lot); or for individual lots (contracts) each lot containing one or more ‘Works’; or for any combination of lots (packages). Bidders wishing to offer discounts for the award of more than one Contract (lot) shall specify in their Bid the price reductions applicable to each contract (lot) and package as the case may be. Bidders shall fully explain the methodology and calculations for applying such discounts, showing how the reductions are derived and the net amounts of each contract after the application of the discounts offered to individual items. Discounts can be offered only for those items for which the Bidder is required to bid and not for any item where the Employer has included its estimated cost as a fixed sum or a percentage in the Bills of Quantities. Discounts shall be submitted in accordance with ITB 14.4, and ITB 14.6 provided that the Bids for all lots (contracts) are opened at the same time.

14.7 Discounts offered shall be clear and without any vagueness or ambiguity to avoid rejection of the bid as no clarification shall be requested or permitted on this account after bid submission. The Employer’s decision on a bid’s discount will be based on the contents of the bid itself, without recourse to any extrinsic evidence. If in the Employer’s opinion, which will be final, a discount offered in the bid: I) is unclear, ambiguous or vaguely presented to the extent that it cannot be either interpreted or applied with reasonable accuracy, the Bid shall be rejected; II) relates to any item of cost for which the Bidder is not required to submit a bid price or the Employer may have indicated the estimated cost e.g. for a provisional sum or contingencies as per the bidding document, then the bid will be evaluated without the application of the discount offered for such item of cost; and III) has minor discrepancy or unclarity which could be interpreted reasonably, the Employer in this case may decide not to reject the bid and apply the discount as it deems reasonable and appropriate resulting in the lowest evaluated cost to the Employer. If the Bidder does not accept the Employer’s decision based on any of the above, the bid shall be rejected.

14.8 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of Bids, shall be included in the rates and prices and the total Bid Price submitted by the Bidder.

1. Currencies of Bid and Payment

15.1 The currency (ies) of the Bid and the currency (ies) of payments shall be as specified in the BDS.

15.2 Bidders may be required by the Employer to justify, to the Employer’s satisfaction, their local and foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Adjustment Data in the Appendix to Bid are reasonable, in which case a detailed breakdown of the foreign currency requirements shall be provided by Bidders.

1. Documents Comprising the Technical Bid

16.1 The Bidder shall furnish details of technical specifications proposed in the Technical Bid including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section IV, Bidding Forms, or elsewhere in the bidding document, and if applicable, a statement of deviations and exceptions to any of the provisions of the bidding document, in sufficient detail to demonstrate the adequacy of the Bidder’s proposal to meet the Employer’s work’s requirements and the completion time, and to demonstrate substantial responsiveness to the technical specifications required as per the provisions of the Section VII, Work’s Requirements.

1. Documents Establishing the Eligibility and Qualifications of the Bidder

17.1 To establish Bidder’s eligibility in accordance with ITB 4, Bidders shall complete the Letter of Bid, included in Section IV, Bidding Forms.

17.2 In accordance with Section III, Evaluation and Qualification Criteria, to establish its qualifications to perform the Contract the Bidder shall provide the information requested in the corresponding forms included in Section IV, Bidding Forms.

17.3 If a margin of preference applies as specified in accordance with ITB 33.1, domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference or regional preference shall supply all information required to satisfy the criteria for eligibility specified in accordance with ITB 33.1.

1. Period of Validity of Bids

18.1. Bids shall remain valid for the Bid Validity period specified in the BDS or any extended period if amended by the Employer in accordance with ITB 8. The Bid Validity period starts from the date fixed for the Bid submission deadline (as prescribed by the Employer in accordance with ITB 22). A Bid valid for a shorter period shall be rejected by the Employer as non-responsive.

18.2 In exceptional circumstances, prior to the expiration of the Bid validity period, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a Bid Security is requested in accordance with ITB 19, it shall also be extended for twenty-eight (28) days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its Bid security. A Bidder granting the request shall not be required or permitted to modify its Bid, except as provided in ITB 18.3.

18.3 If the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial Bid validity period, the Contract price shall be determined as follows:

(a) in the case of fixed price contracts, the Contract price shall be the Bid price adjusted by the factor specified in the BDS to reflect any increase in the cost of inputs over the period of extension, which for the purpose of this adjustment, shall be the period elapsed between the date arrived immediately after expiry of the fifty-six (56) days beyond the initial Bid validity period and the date of notification of award;

(b) in the case of adjustable price contracts, no adjustment shall be made; and

(c) in any case, Bid evaluation shall be based on the Bid price without taking into consideration the applicable correction from those indicated above.

1. Bid Security

19.1 The Bidder shall furnish as part of its Bid, either a Bid-Securing Declaration or a Bid Security amount as specified in the BDS, in original form and, in the case of a Bid Security amount, in the amount and currency specified in the BDS.

19.2 A Bid-Securing Declaration shall use the form included in Section IV, Bidding Forms.

19.3 If a Bid Security amount is specified pursuant to ITB 19.1, the Bid Security shall be a demand guarantee in any of the following forms at the Bidder’s option:

(a) an unconditional guarantee issued by a bank or non-bank financial institution (such as an insurance, bonding or surety company);

(b) an irrevocable letter of credit;

(c) a cashier’s or certified check; or

(d) another security specified in the BDS,

The Bidders shall obtain Bid Security from a reputable source from an eligible country. If an unconditional guarantee is issued by a non-bank financial institution located outside the Employer’s Country, the issuing non-bank financial institution shall have a correspondent financial institution located in the Employer’s Country to make it enforceable unless the Employer has agreed in writing, prior to Bid submission, that a correspondent financial institution is not required. In the case of a bank guarantee, the Bid Security shall be submitted either using the Bid Security Form included in Section IV, Bidding Forms, or in another substantially similar format approved by the Employer prior to Bid submission. The Bid Security shall be valid for twenty-eight (28) days beyond the original validity period of the Bid, or beyond any period of extension if requested under ITB 18.2.

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

19.5 If a Bid Security is specified pursuant to ITB 19.1, the Bid Security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder’s signing the Contract and furnishing the Performance Security and if required in the BDS, the Environmental and Social (ES) Performance Security pursuant to ITB 48.

19.6 The Bid Security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required Performance Security, and if required in the BDS, the Environmental and Social (ES) Performance Security.

19.7 The Bid Security amount may be forfeited:

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

(b) if the successful Bidder fails to:

(i) sign the Contract in accordance with ITB 47; or

(ii) furnish Performance Security and if required in the BDS, the Environmental and Social (ES) Performance Security in accordance with ITB 48.

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

19.9 If a Bid Securing Declaration is required in the BDS, pursuant to ITB 19.1, and:

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

(b) if the successful Bidder fails to:

(i) sign the Contract in accordance with ITB 47; or

(ii) furnish Performance Security and, if required in the BDS, the Environmental and Social (ES) Performance Security in accordance with ITB 48, the Borrower may execute the Bid Securing Declaration, as provided for in the BDS, declare the Bidder ineligible to be awarded a contract by the Employer for a period of time stated in the BDS.

1. Format and Signing of Bid

20.1 The Bidder shall prepare one original of the documents comprising the Bid as described in ITB 11 and clearly mark it “ORIGINAL.” Alternative Bids, if permitted in accordance with ITB 13, shall be clearly marked “ALTERNATIVE.” In addition, the Bidder shall submit copies of the Bid, in the number specified in the BDS and clearly mark them “COPY.” In the event of any discrepancy between the original and the copies, the original shall prevail.

20.2 Bidders shall mark as “CONFIDENTIAL” all information in their Bids which is confidential to their business. This may include proprietary information, trade secrets, or commercial or financially sensitive information.

20.3 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be attached to the Bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Bid where entries or amendments have been made shall be signed or initialed by the person signing the Bid.

20.4 In case the Bidder is a JV, the Bid shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by the power of attorney signed by their legally authorized representatives.

20.5 Any inter-lineation, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Bid.

1. Submission and Opening of Bids
2. Sealing and Marking of Bids

21.1 The Bidder shall deliver the Bid in a single, sealed envelope (one-envelope Bidding process). Within the single envelope the Bidder shall place the following separate, sealed envelopes:

(a) in an envelope marked “ORIGINAL”, all documents comprising the Bid, as described in ITB 11; and

(b) in an envelope marked “COPIES”, all required copies of the Bid; and

(c) if alternative Bids are permitted in accordance with ITB 13, and if relevant:

(i) in an envelope marked “ORIGINAL - ALTERNATIVE BID”, the alternative Bid; and

(ii) in the envelope marked “COPIES - ALTERNATIVE BID”, all required copies of the alternative Bid.

21.2 The inner and outer envelopes shall:

(a) bear the name and address of the Bidder;

(b) be addressed to the Employer in accordance with ITB 22.1;

(c) bear the specific identification of this Bidding process specified in accordance with BDS 1.1; and

(d) bear a warning not to open before the time and date for Bid opening.

21.3 If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the Bid.

1. Deadline for Submission of Bids

22.1 Bids must be received by the Employer at the address and no later than the date and time specified in the BDS. When so specified in the BDS, Bidders shall have the option of submitting their Bids electronically. Bidders submitting Bids electronically shall follow the electronic Bid submission procedures specified in the BDS.

22.2 The Employer may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.

1. Late Bids

23.1 The Employer shall not consider any Bid that arrives after the deadline for submission of Bids, in accordance with ITB 22. Any Bid received by the Employer after the deadline for submission of Bids shall be declared late, rejected, and returned unopened to the Bidder.

1. Withdrawal, Substitution, and Modification of Bids

24.1 A Bidder may withdraw, substitute, or modify its Bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 20.3, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Bid must accompany the respective written notice. All the notices must be:

(a) prepared and submitted in accordance with ITB 20 and ITB 21 (except that withdrawals notices do not require copies), and in addition, the respective envelopes shall be clearly marked “WITHDRAWAL,” “SUBSTITUTION,” “MODIFICATION;” and

(b) received by the Employer prior to the deadline prescribed for submission of Bids, in accordance with ITB 22.

24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.

24.3 No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of Bid validity specified by the Bidder on the Letter of Bid or any extension thereof.

1. Bid Opening

25.1 Except in the cases specified in ITB 23 and ITB 24.2, the Employer shall publicly open and read out in accordance with this ITB all Bids received by the deadline, at the date, time and place specified in the BDS, in the presence of Bidders` designated representatives and anyone who chooses to attend. Any specific electronic Bid opening procedures required if electronic Bidding is permitted in accordance with ITB 22.1, shall be as specified in the BDS.

25.2 First, envelopes marked “WITHDRAWAL” shall be opened and read out and the envelope with the corresponding Bid shall not be opened but returned to the Bidder. No Bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at Bid opening.

25.3 Next, envelopes marked “SUBSTITUTION” shall be opened and read out and exchanged with the corresponding Bid being substituted, and the substituted Bid shall not be opened, but returned to the Bidder. No Bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Bid opening.

25.4 Next, envelopes marked “MODIFICATION” shall be opened and read out with the corresponding Bid. No Bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Bid opening.

25.5 Next, all remaining envelopes shall be opened one at a time, reading out: the name of the Bidder and whether there is a modification; the total Bid Price, per lot (contract) if applicable, including any discounts and alternative Bids; the presence or absence of a Bid Security or Bid-Securing Declaration, if required; and any other details as the Employer may consider appropriate.

25.6 Only Bids, alternative Bids and discounts that are opened and read out at Bid opening shall be considered further for evaluation. The Letter of Bid and the Bill of Quantities are to be initialed by representatives of the Employer attending Bid opening in the manner specified in the BDS.

25.7 The Employer shall neither discuss the merits of any Bid nor reject any Bid (except for late Bids, in accordance with ITB 23.1).

25.8 The Employer shall prepare a record of the Bid opening that shall include, as a minimum:

(a) the name of the Bidder and whether there is a withdrawal, substitution, or modification;

(b) the Bid Price, per lot (contract) if applicable, including any discounts;

(c) any alternative Bids;

(d) the presence or absence of a Bid Security, if one was required.

25.9 The Bidders’ representatives who are present shall be requested to sign the record. The omission of a Bidder’s signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders.

1. Evaluation and Comparison of Bids
2. Confidentiality

26.1 Information relating to the evaluation of Bids and recommendation of contract award shall not be disclosed to Bidders or any other persons not officially concerned with the Bidding process until information on Intention to Award the Contract is transmitted to all Bidders in accordance with ITB 43.

26.2 Any effort by a Bidder to influence the Employer in the evaluation of the Bids or Contract award decisions may result in the rejection of its Bid.

26.3 Notwithstanding ITB 26.2, from the time of Bid opening to the time of Contract award, if a Bidder wishes to contact the Employer on any matter related to the Bidding process, it shall do so in writing.

1. Preliminary Examination & Clarification of Bids

27.1 Prior to the detailed evaluation, pursuant to ITB 35, the Employer will conduct preliminary examination of all bids that have been received by the deadline for bid submission and opened at the public bid opening as the first step towards determination of their substantial responsiveness to the bidding document. The Employer’s determination of a bid’s responsiveness is to be based on the contents of the bid itself, as defined in ITB 11 without recourse to extrinsic evidence. The Employer will verify and examine bids to determine whether they are complete, properly signed to bind the bidder, meet eligibility requirements of bidders, materials, equipment, and services, bidders have no conflict of interest and have provided required Bid validity, Bid Security or Bid Securing Declaration, as required and other essential documents to complete the evaluation, and whether the bids are generally in order. Subject to ITB 27.2 and 27.3, Bids failing to meet the above requirements shall be rejected and not retained for further review.

* 1. To assist in the examination, evaluation, and comparison of the Bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid, given a reasonable time for a response. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer’s request for clarification and the response shall be in writing. No change, including any voluntary increase or decrease, in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids, in accordance with ITB 31.
  2. If a Bidder does not provide clarifications of its Bid by the date and time set in the Employer’s request for clarification, its Bid may be rejected.

1. Deviations, Reservations, and Omissions

28.1 During the evaluation of Bids, the following definitions apply:

(a) “Deviation” is a departure from the requirements specified in the Bidding document;

(b) “Reservation” is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding document; and

(c) “Omission” is the failure to submit part or all of the information or documentation required in the Bidding document.

1. Determination of Responsiveness

29.1 Following the rejection of Bids if any, pursuant to ITB 27, as the next step, the remaining Bids will be further reviewed to determine their substantial responsiveness. The Employer’s determination of a Bid’s responsiveness is to be based on the contents of the Bid itself, as defined in ITB 11.

29.2 A substantially responsive Bid is one that meets the requirements of the Bidding document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,

(a) if accepted, would:

(i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or

(ii) limit in any substantial way, inconsistent with the Bidding document, the Employer’s rights or the Bidder’s obligations under the proposed Contract; or

(b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.

29.3 The Employer shall examine the technical aspects of the Bid in accordance with ITB 16, ITB 17, ITB 29, ITB 30, BDS if applicable, and Section III Evaluation and Qualification Criteria in particular, to confirm that all requirements of Section VII, Works’ Requirements have been met without any material deviation, reservation or omission. To this end, in consideration of the materiality of any deviations, reservations or omissions, Bids failing to meet the mandatory technical requirements or minimum pass-fail technical criteria or failing to substantially meet any other technical requirements of the biding document will risk their rejection.

29.4 The Employer shall similarly examine the commercial aspects of the bids including any deviations, other than technical specifications, submitted in response to the provisions of the bidding document, to determine if they conform to the terms and conditions of the draft contract and other documents included in the bidding document without any material deviation, reservation or omission, and establishment of materiality in such aspects will similarly risk rejection of the Bids.

29.5 If a Bid is not substantially responsive to the requirements of the Bidding document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission. All other bids determined substantially responsive will be retained for further evaluation.

1. Nonmaterial Nonconformities

30.1 Provided that a Bid is substantially responsive, the Employer may waive any nonconformities in the Bid.

30.2 Provided that a Bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

30.3 Provided that a Bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component and costs associated, if any, with non-material deviations, reservations and omissions to the requirements of the bidding documents in the manner specified in the BDS.

1. Correction of Arithmetical Errors

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

(a) if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;

(b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and

(c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

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

1. Conversion to Single Currency

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

1. Margin of Preference

33.1 Unless otherwise specified in the BDS no margin of domestic or regional preference shall apply. If a margin of preference is applicable, the application methodology shall be as specified in Section III, Evaluation and Qualification Criteria, and in accordance with the provisions stipulated in the Bank’s Procurement Framework.

1. Subcontractors

34.1 Unless otherwise stated in the BDS, the Employer does not intend to execute any specific elements of the Works by subcontractors selected in advance by the Employer.

34.2 Bidders may propose subcontracting up to the percentage of total value of contracts or the volume of works as specified in the BDS. Subcontractors proposed by the Bidder shall be fully qualified for their parts of the Works.

34.3 The subcontractor’s qualifications shall not be used by the Bidder to qualify for the Works unless their specialized parts of the Works were previously designated by the Employer in the BDS as can be met by subcontractors referred to hereafter as ‘Specialized Subcontractors’, in which case, the qualifications with respect to only the specific work experience of the Specialized Subcontractors proposed by the Bidder may be added to the qualifications of the Bidder.

1. Evaluation of Bids

35.1 The Employer shall use the criteria and methodologies listed in this ITB and Section III, Evaluation and Qualification Criteria. No other evaluation criteria or methodologies shall be permitted. By applying the criteria and methodologies the Employer shall determine the successful Bid or Bids in accordance with ITB 40.

35.2 To evaluate Bids, the Employer shall consider the following factors, in accordance with the evaluation and award criteria as applicable for single contract (one lot), lots (contracts) or packages (combination of lots) and as specified under Section III-Evaluation and Qualification Criteria:

a) the Bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including Daywork items, where priced competitively;

b) price adjustment for correction of arithmetic errors in accordance with ITB 31.1;

c) price adjustment due to discounts offered in accordance with ITB 12.1, ITB 14.4, ITB 14.6 and ITB 14.7;

d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 32;

e) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 30.3;

f) the additional evaluation factors specified in the BDS and Section III, Evaluation and Qualification Criteria; and

g) price adjustment due to application of Margin of Preference, if applicable, as per BDS of ITB 33.1, and Section III, Evaluation and Qualification Criteria.

35.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Bid evaluation.

35.4 If this Bidding document allows Bidders to quote separate prices for different lots (contracts), the methodology to determine the lowest evaluated cost of the lot (contract) combinations, including any discounts offered in the Letter of Bid, is specified in Section III, Evaluation and Qualification Criteria.

1. Comparison of Bids

36.1 The Employer shall compare the evaluated costs of all substantially responsive Bids established in accordance with ITB 35.2 to determine the Bid that has the lowest evaluated cost.

1. Abnormally Low Bids

37.1 An Abnormally Low Bid is one where the Bid price, in combination with other elements of the Bid, appears so low that it raises material concerns as to the capability of the Bidder in regards to the Bidder’s ability to perform the Contract for the offered Bid Price.

37.2 In the event of identification of a potentially Abnormally Low Bid, the Employer shall seek written clarifications from the Bidder, including detailed price analyses of its Bid price in relation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the Bidding document.

37.3 After evaluation of the price analyses, in the event that the Employer determines that the Bidder has failed to demonstrate its capability to perform the Contract for the offered Bid Price, the Employer may reject the Bid.

1. Unbalanced or Front-Loaded Bids

38.1 If the Bid that is evaluated as the lowest evaluated cost is, in the Employer’s opinion, seriously unbalanced or front loaded, the Employer may require the Bidder to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the Bid prices with the scope of works, proposed methodology, schedule and any other requirements of the Bidding document.

38.2 After the evaluation of the information and detailed price analysis presented by the Bidder, the Employer may as appropriate:

(a) accept the Bid; or

(b) require that the total amount of the Performance Security be increased at the expense of the Bidder to a level not exceeding 20% of the Contract Price; or

(c) reject the Bid.

1. Qualifications of the Bidder

39.1 The Employer shall determine to its satisfaction whether the eligible Bidder or Bidders that is/are selected as having submitted the lowest evaluated cost and substantially responsive Bid(s), substantially meet the qualifying criteria specified in Section III, Evaluation and Qualification Criteria. To this end, the Employer will determine for which Lots and Packages, and/or their combinations, as the case may be, for which Bidder submitted bid, it substantially meets the respective minimum qualification criteria.

39.2 The determination shall be based upon an examination of the documentary evidence of the Bidder’s qualifications submitted by the Bidder, pursuant to ITB 17. The determination shall not take into consideration the qualifications of other firms such as the Bidder’s subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors if permitted in the Bidding document), or any other firm(s) different from the Bidder.

39.3 An affirmative determination shall be a prerequisite for award of the Contract to the Bidder. A negative determination shall result in disqualification of the Bid, in which event the Employer shall proceed to the Bidder or Bidders who offered substantially responsive Bid or Bids with the next lowest evaluated cost to make a similar determination of such Bidders’ qualifications to perform satisfactorily.

39.4 The Employer reserves the right to waive minor deviations from the qualification criteria if they do not materially affect the technical capability and financial resources of the Bidder to perform the Contract or combination of Contracts.

1. Successful Bid or Bids

40.1 Having compared the evaluated costs of Bids, the Employer shall determine the successful Bid or combination of Bids as the case may be, in accordance with the additional Bid Evaluation Criteria as further described in Section III. Such Bid or Bids would be those which has/have been determined to:

(a) be substantially responsive to the Bidding document;

(b) offer the lowest evaluated cost to the Employer for all works to be procured based on either a single Contract or all multiple Contracts combined, as the case may be, in accordance with the ITB 14.6 inviting bid prices and discounts, and provisions made in the Bidding Document for evaluation of bids and award of contract (s); and

(c) be offered by Bidder or Bidders that substantially meet the qualification criteria applicable for Contract or combination of Contracts for which they are selected.

1. Employer’s Right to Accept Any Bid, and to Reject Any or All Bids

41.1 The Employer reserves the right to accept or reject any Bid and to annul the Bidding process and reject all Bids at any time prior to Contract Award, without thereby incurring any liability to Bidders. In case of annulment, all Bids submitted and specifically, Bid securities, shall be promptly returned to the Bidders.

1. Standstill Period

42.1 The Contract shall not be awarded earlier than the expiry of the Standstill Period. The Standstill Period shall be ten (10) Business Days unless extended in accordance with ITB 46. The Standstill Period commences the day after the date the Employer has transmitted to each Bidder the Notification of Intention to Award the Contract. Where only one Bid is submitted, or if this contract is in response to an emergency situation recognized by the Bank, the Standstill Period shall not apply.

1. Notification of Intention to Award

43.1 The Employer shall send to each Bidder the Notification of Intention to Award the Contract to the successful Bidder. The Notification of Intention to Award shall contain, at a minimum, the following information:

(a) the name and address of the Bidder submitting the successful Bid;

(b) the Contract price of the successful Bid;

(c) the names of all Bidders who submitted Bids, and their Bid prices as readout, and as evaluated;

(d) a statement of the reason(s) the Bid (of the unsuccessful Bidder to whom the notification is addressed) was unsuccessful, unless the price information in c) above already reveals the reason;

(e) the expiry date of the Standstill Period; and

(f) instructions on how to request a debriefing and/or submit a complaint during the standstill period;

1. Award of Contract
2. Award Criteria

44.1 Subject to ITB 41, and unless otherwise specified in the BDS, the Employer shall award the Contract or Contracts to the Bidder or Bidders whose Bid or Bids has/have been determined successful in accordance with ITB 40.

1. Notification of Award

45.1 Prior to the expiry of the Bid Validity Period and upon expiry of the Standstill Period specified in ITB 42.1 or any extension thereof, and, upon satisfactorily addressing any complaint that has been filed within the Standstill Period, the Employer shall notify the successful Bidder, in writing, that its Bid has been accepted. The notification of award (hereinafter and in the Conditions of Contract and Contract Forms called the “Letter of Acceptance”) shall specify the sum that the Employer will pay the Contractor in consideration of the execution of the Contract (hereinafter and in the Conditions of Contract and Contract Forms called “the Contract Price”).

45.2 Within ten (10) Business Days after the date of transmission of the Letter of Acceptance, the Employer shall publish the Contract Award Notice which shall contain, at a minimum, the following information:

(a) name and address of the Employer;

(b) name and reference number of the contract being awarded, and the selection method used;

(c) names of all Bidders that submitted Bids, and their Bid prices as read out at Bid opening, and as evaluated;

(d) names of all Bidders whose Bids were rejected either as nonresponsive or as not meeting qualification criteria, or were not evaluated, with the reasons therefor;

(e) the name of the successful Bidder, the final total contract price, the contract duration and a summary of its scope; and

(f) successful Bidder’s Beneficial Ownership Disclosure Form, if specified in BDS ITB 47.1

45.3 The Contract Award Notice shall be published on the Employer’s website with free access if available, or in at least one newspaper of national circulation in the Employer’s Country, or in the official gazette. The Employer shall also publish the contract award notice in UNDB online.

45.4 Until a formal Contract is prepared and executed, the Letter of Acceptance shall constitute a binding Contract.

1. Debriefing by the Employer

46.1 On receipt of the Employer’s Notification of Intention to Award referred to in ITB 43.1, an unsuccessful Bidder has three (3) Business Days to make a written request to the Employer for a debriefing. The Employer shall provide a debriefing to all unsuccessful Bidders whose request is received within this deadline.

46.2 Where a request for debriefing is received within the deadline, the Employer shall provide a debriefing within five (5) Business Days, unless the Employer decides, for justifiable reasons, to provide the debriefing outside this timeframe. In that case, the standstill period shall automatically be extended until five (5) Business Days after such debriefing is provided. If more than one debriefing is so delayed, the standstill period shall not end earlier than five (5) Business Days after the last debriefing takes place. The Employer shall promptly inform, by the quickest means available, all Bidders of the extended standstill period.

46.3 Where a request for debriefing is received by the Employer later than the three (3) Business Days deadline, the Employer should provide the debriefing as soon as practicable, and normally no later than fifteen (15) Business Days from the date of publication of Public Notice of Award of contract. Requests for debriefing received outside the three (3) days deadline shall not lead to extension of the standstill period.

46.4 Debriefings of unsuccessful Bidders may be done in writing or verbally. The Bidder shall bear its own costs of attending such a debriefing meeting.

1. Signing of Contract

47.1 The Employer shall send to the successful Bidder the Letter of Acceptance including the Contract Agreement, and, if specified in the BDS, a request to submit the Beneficial Ownership Disclosure Form providing additional information on its beneficial ownership. The Beneficial Ownership Disclosure Form, if so requested, shall be submitted within eight (8) Business Days of receiving this request.

47.2 The successful Bidder shall sign, date and return to the Employer, the Contract Agreement within twenty-eight (28) days of its receipt.

1. Performance Security

48.1 Within twenty-eight (28) days of the receipt of the Letter of Acceptance from the Employer, the successful Bidder shall furnish the Performance Security and, if required in the BDS, the Environmental and Social (ES) Performance Security in accordance with the General Conditions of Contract, subject to ITB 38.2 (b), using for that purpose the Performance Security and ES Performance Security Forms included in Section X, Contract Forms, or another form acceptable to the Employer. If the Performance Security furnished by the successful Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder to be acceptable to the Employer. A foreign institution providing a bond shall have a correspondent financial institution located in the Employer’s Country, unless the Employer has agreed in writing that a correspondent financial institution is not required.

48.2 Failure of the successful Bidder to submit the above-mentioned Performance Security and, if required in the BDS, the Environmental and Social (ES) Performance Security, or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event the Employer may award the Contract to the Bidder or Bidders offering the next Lowest Evaluated Cost to the Employer as per the bid evaluation and award criteria.

1. Procurement Related Complaint

49.1 The procedures for making a Procurement-related Complaint are as specified in the BDS.

## Section II: Bid Data Sheet (BDS)

The following specific data for the Works to be procured shall complement, supplement, or amend the provisions in the Instructions to Bidders (ITB). Whenever there is a conflict, the provisions herein shall prevail over those in the ITB.

|  |  |
| --- | --- |
| **A. General** | |
| **ITB 1.1** | The reference number of the Invitation for Bids (IFB) is: ***RA/W/DEV/NACALA/2025/02***  The Employer is***: Roads Authority***  Name of Works: **Construction of a One-Stop Border Post (OSBP) between Malawi and Mozambique at Chiponde**  The name of the IFB is: ***Open Competitive Bidding Number (International) (OCBI)] RA/W/DEV/NACALA/2025/02***  The number and identification of works under single or multiple lots (contracts)comprising this IFB is: ***One Lot*** |
| **ITB 1.2(a)** | *N/A* |
| **ITB 2.1** | The Borrower is: ***Republic of Malawi***  Loan or Financing Agreement amount: ***USD60.68 Million***  The Specific Bank financing institution is: ***African Development Fund***  The name of the Project is: **Multinational Nacala Road Corridor Development Project Phase V** |
| **ITB 4.1 (a)** | i) The firms in a Joint Venture, Consortium or Association (JV) ***shall be* j**ointly and severally liable. |
| ITB 4.1 (c) | The maximum number of members in the Joint Venture, Consortium or Association (JV) shall be: ***Four*** |
| ITB 4.1 (d) | Minimum share of a member of Joint Venture, Consortium or Association (JV) in the contract shall not be less than **25%** percent of the total value of the contract |
| ITB 4.5 | A list of debarred firms and individuals is available on the Bank’s external website: [https://www.afdb.org/en/projects-operations/ debarment-and-sanctions-procedures](https://www.afdb.org/en/projects-operations/debarment-and-sanctions-procedures) |
| **B. Contents of Bidding Document** | |
| **ITB 7.1** | For Clarification of Bid purposes only, the Employer’s address is:  The Chairperson - Internal Procurement and Disposal Committee  The Roads Authority  Functional Building,  Off Paul Kagame Road  Private Bag B346, Lilongwe 3 MALAWI  Attention: Procurement Specialist  Email: [ipc@ra.org.mw](mailto:%20ipc@ra.org.mw%20)  with a copy to [mmphinga@ra.org.mw](mailto:mmphinga@ra.org.mw)  Requests for clarification should be received by the Employer no later than: **21 days prior to the deadline for submission of bids.** |
| **ITB 7.4** | A Pre-Bid meeting ***shall*** take place at the following date, time and place:  Date: **20th October 2025**  Time: **10:00 Hours**  Place: **Chiponde Border on the Malawi side**  A site visit conducted by the Employer ***shall be*** organized  Date: 20th October 2025  Time: 10:00 Hours  Place: Chiponde Border on the Malawi side |
| **ITB 7.6** | N/A |
| **C. Preparation of Bids** | |
| ITB 10.1 | The language of the Bid is: ***English****.*  All correspondence exchange shall be in English language.  Language for translation of supporting documents and printed literature is English language. |
| ITB 11.1 (j) | The Bidder shall submit the following additional documents in its Bid:   1. **Certified copy of Incorporation/Registration** 2. **Notarized or Registered Power of Attorney** 3. **Certified Copy of Company Form 7 or Equivalent confirming Directors of the Company and Company Secretary** 4. **Certified copy of Tax Clearance** 5. **Copy of VAT Registration Certificate** 6. **Copy of Trading License or its equivalent** 7. **Evidence of ownership of proposed equipment** 8. **Signed CVs of proposed personnel and copies of academic and professional certificates** 9. **Copies of Takeover/Completion Certificates for projects listed for experience in similar works** 10. **Line of credit issued by a Bank** 11. **Audited Books of Accounts** 12. **Analysis of Major Unit Rates** 13. **Quotations from suppliers of materials** 14. **Agreements for any form of association (Joint Venture, Subcontracting, etc.)** 15. **Copies of Contract Agreements for works ongoing and completed works.** 16. **The complete bid and supporting documents on a memory stick.** 17. **Electronic copy (MS Excel) of the priced BoQs**   **Code of Conduct for Contractor’s Personnel (ES)**  The Bidder shall submit its Code of Conduct that will apply to the Contractor’s Personnel (as defined in Sub- Clause 1.1.17 of the General Conditions of Contract), to ensure compliance with the Contractor’s Environmental and Social (ES) obligations under the Contract. The Bidder shall use for this purpose the Code of Conduct form provided in Section IV. No substantial modifications shall be made to this form, except that the Bidder may introduce additional requirements, including as necessary to take into account specific Contract issues/ risks.  **Management Strategies and Implementation Plans (MSIP) to manage the (ES) risks**  The Bidder shall submit Management Strategies and Implementation Plans (MSIPs) to manage the following key Environmental and Social (ES) risks:  • Water Resource Protection Plan to prevent contamination of drinking water;  • Strategy to manage the environment including waste management measures;  • Strategy to manage public and occupational health and safety, include HIV prevention measures, a grievance mechanism and GBV/SEA/VAC prevention and response plan for workers to raise workplace related concerns;  • Labor Influx Management Plan  • COVID - 19 Prevention and Management Plan   * Sexual Exploitation, and Abuse (SEA) prevention and response action plan; * Traffic Management Plan to ensure the safety of local communities from construction traffic   **Electronic version of the Bid and of the Bidder’s Bill of Quantities.**  Electronic version of the Bidder’s Bill of Quantities in “Microsoft Excel” “\*.xls” which will be used for arithmetic correctness evaluation purposes only.   * Bidders should note that the original hardcopy of the Bid and of the Bill of Quantities shall take precedence over the electronic version should there be a dispute. |
| **ITB 13.1** | Alternative Bids ***shall not be considered*** |
| **ITB 13.2** | Alternative times for completion ***shall not be*** permitted. |
| **ITB 13.3** | Technical Alternative as per ITB 13.3 ***shall not be***permitted. |
| **ITB 13.4** | Alternative technical solutions ***shall not be***permitted. |
| ITB 14.2 | The adjustment shall be based on the ***highest price*** of the item as quoted in other substantially responsive Bids. |
| **ITB 14.5** | The prices quoted by the Bidder shall be: ***Fixed***  A bid submitted with price subject to adjustment shall be rejected. |
| **ITB 14.6** | Bids are invited, and Bidders shall bid for ‘Works’. |
| **ITB 15.1** | The currency(ies) of the Bid and the payment currency(ies) shall be:  **Alternative B (Bidders allowed to quote in local and foreign currencies):**  (a) The unit rates and prices shall be quoted by the Bidder in the Bill of Quantities separately in the following currencies:  (i) for those inputs to the Works that the Bidder expects to supply from within the Employer’s Country, in ***Malawi Kwacha*,** and further referred to as “the local currency”; and  (ii) for those inputs to the Works that the Bidder expects to supply from outside the Employer’s Country (referred to as “the foreign currency requirements”), in up to any three foreign currencies. |
| **ITB 18.1** | The Bid validity period shall be **126** days. |
| **ITB 18.3 (a)** | The Bid price shall be adjusted by the following factor(s):  ***N/A*** |
| **ITB 19.1** | A Bid Security amount **shall** be required.  A Bid Securing Declaration **shall not be** required.  The Bidder shall furnish a Bid Security in the amount of **Two Hundred Fifty Thousand United States Dollars (USD250, 000)**.  The only acceptable form of Bid Security shall be: an on-demand unconditional Bank Guarantee issued by a reputable financial institution (Bank) using the relevant format presented in Section IV Bidding Forms.  Bidders who use Banks domiciled outside Malawi must secure along with the Bid Security, a declaration from a Bank domiciled and registered in Malawi categorically stating that the Malawi domiciled Bank “shall unconditionally and on first demand in writing from the Employer, accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions stated in the Bid Security, honor the Bid Security on behalf of the issuing Bank.  The Bid Security shall be valid for twenty-eight (28) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2 |
| **ITB 19.3 (d)** | Other types of acceptable securities:  ***None*** |
| **ITB 20.1** | In addition to the original of the Bid, the number of copies is:   1. **2 Hard Copies** 2. **A Soft Copy of the whole document in pdf format and a Soft Copy of priced bills of quantities in excel format on the same USB clearly labelled Company Name and Contract Number** |
| **ITB 20.3** | The written confirmation of authorization to sign on behalf of the Bidder shall consist of:  (1) Individual Bidder  Power of Attorney by the company legal representative to nominate the Bidder’s representative to sign all the bid documents.  (2) Joint Venture (JV)  In the case of Bids submitted by an existing or intended JVCA an undertaking signed by all parties (i) stating that all parties shall be jointly and severally liable, if so required in accordance with ITB 4.1(a), and (ii) nominating a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the JVCA during the bidding process and, in the event the JVCA is awarded the Contract, during contract execution |
| **D. Submission and Opening of Bids** | |
| **ITB 22.1** | For **Bid submission purposes** only, the Employer’s address is:  The Chairperson,  Internal Procurement and Disposal Committee,  Roads Authority,  Off Paul Kagame Road,  Functional Building - Room 40, Private Bag B346,  Lilongwe 3.  MALAWI  The deadline for Bid submission is:  Date:**12th November 2025**  Time: ***10:00 Hours – CAT***  Bidders ***shall not***have the option of submitting their Bids electronically. |
| **ITB 25.1** | The Bid opening shall take place at:  Conference Room  The Roads Authority, Off Paul Kagame Road,  Functional Building,  Lilongwe  MALAWI  Date: ***12th November 2025***  Time: ***10:00 Hours – CAT*** |
| **ITB 25.6** | The Letter of Bid and priced Bill of Quantities shallbe initialed by **two** representatives of the Employer conducting Bid opening*.*  ***Each Bid shall be initialed by all representatives and shall be numbered, any modification to the unit or total price shall be initialed by the Representative of the Employer*** |
| **E. Evaluation, and Comparison of Bids** | |
| **ITB 30.3** | The adjustment with respect to a missing or non-conforming item or component, and costs associated, if any, with non-material deviations, reservations or omissions to the requirements of the bidding document shall be based on the ***highest*** price of the item or component and cost, if any, of non-material deviations, reservations or omissions as quoted in or derived from other substantially responsive Bids unless any other specific evaluation criteria has been provided elsewhere in the bidding document for such adjustments in which case the latter shall be applied. If the price or cost of any of the above cannot be derived from the price of other substantially responsive Bids, the Employer shall use its best estimate based on its own judgment, past experience or market search, as considered appropriate. |
| **ITB 32.1** | The currency that shall be used for Bid evaluation and comparison purposes to convert at the selling exchange rate all Bid prices expressed in various currencies into a single currency is: ***United States Dollar***  The source of exchange rate shall be: ***Reserve Bank of Malawi***  The date for the exchange rate shall be ***14 days prior to the deadline for submission of the Bids****.* The currency(ies) of the Bid shall be converted into a single currency in accordance with the procedure under Alternative \_\_**N/A\_**\_\_ that follows:  ***N/A***  ***OR***  ***Alternative B: Bidders quote in local and foreign currencies***  The Employer will convert the amounts in various currencies in which the Bid Price, corrected pursuant to ITB 31, is payable (excluding Provisional Sums but including Daywork where priced competitively) to the single currency identified above at the selling rates established for similar transactions by the authority specified and on the date stipulated above. |
| **ITB 33.1** | A margin of domestic preference ***shall not*** apply.  A margin of regional preference ***shall not***apply. |
| **ITB 34.1** | At this time the Employer ***does not intend*** to execute certain specific parts of the Works by subcontractors selected in advance. |
| **ITB 34.2** | Contractor’s proposed subcontracting: Maximum percentage of subcontracting permitted is:***30%*** *of the total contract amount*  Bidders planning to subcontract more than 10% of total volume of work shall specify, in the Letter of Bid, the activity (ies) or parts of the Works to be subcontracted along with complete details of the subcontractors and their qualification and experience. |
| **ITB 34.3** | The parts of the Works for which the Employer permits Bidders to propose Specialized Subcontractors are designated as key activities, as follows and further identified under sub-factor 4.2 (b) of Section III:   1. \_\_***N/A\_\_\_\_\_\_\_\_\_\_\_\_\_*** 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   For the above-designated parts of the Works that may require Specialized Subcontractors, the relevant qualifications with respect to Specific Experience only of the proposed Specialized Subcontractors will be added to the qualifications of the Bidder for the purpose of evaluation in accordance with paragraph 2.6 of Section III. |
| **F. Award of Contract** | |
| **ITB 47.1** | The successful Bidder ***shall*** submit the Beneficial Ownership Disclosure Form. |
| **ITB 48.1 and 48.2** | Successful Bidder ***shall be*** required to submit an Environmental and Social (E&S) Performance Security. |
| **ITB 49.1** | The procedures for making a Procurement-related Complaint are detailed in the [**Part B**](https://www.afdb.org/en/projects-and-operations/procurement/new-procurement-policy) of the Operations Procurement Manual under the Procurement Framework of the African Development Bank. If a Bidder wishes to make a Procurement-related Complaint, the Bidder shall submit its complaint following these procedures to the employer, in writing (by the quickest means available, such as by email in accordance with the following:  **For the attention of**: *Engineer Ammiel Champiti*  **Title/position**: *Chief Executive Officer*  **Employer**: *Roads Authority*  **Email address***:* [*achampiti@ra.org.mw*](mailto:achampiti@ra.org.mw) */* [*ipc@ra.org.mw*](mailto:ipc@ra.org.mw) */* [*mmphinga@ra.org.mw*](mailto:mmphinga@ra.org.mw)  In summary, a Procurement-related Complaint may challenge any of the following:   1. the terms of the Bidding Documents; 2. the purchaser’s decision to exclude a bidder from the procurement process prior to the award of contract; and 3. the Employer’s decision to award the contract.   The Bank’s Procurement Framework stipulates that bidders may send copies of their communications with the Borrowers to the Bank or write to the Bank directly when, Borrowers do not respond promptly, any questions on any issues regarding the implementation of Bank funded projects, or when the communication is a complaint against the Borrower. In this regard, if a bidder wishes to protest against a decision made by a Borrower or the Bank with regards to the procurement process or wishes to inform the Bank that the Bank’s procurement rules and/or provisions of the bidding documents have not been complied with, an email can be sent to the following address:  **Email:** [procurementcomplaints@afdb.org](mailto:procurementcomplaints@afdb.org) |

## Section III - Evaluation and Qualification Criteria

This section contains all the criteria that the Employer shall use to evaluate Bids and qualify Bidders. No other factors, methods or criteria shall be used other than specified in this Bidding document. The Bidder shall provide all the information requested in the forms included in Section IV, Bidding Forms. Wherever a Bidder is required to state a monetary amount, Bidders should indicate the USD equivalent using the rate of exchange as follows:

* For construction turnover or financial data required for each year - Exchange rate prevailing on the last day of the respective calendar year (in which the amount for that year is to be converted) was originally established.
* Value of single contract - Exchange rate prevailing on the date of the contract.

Exchange rates shall be taken from the publicly available source identified in ITB 32.1. Any error in determining the exchange rates in the Bid may be corrected by the Employer.

**Table of Criteria**

1. Margin of Preference 64

2. Successful Bid or Bids & Evaluation 65

3. Qualification 72

4. Contractor’s Representative and Key Personnel 87

5. Equipment 87

1. Margin of Preference *Not Applicable*

1.1 Preference for Domestic Contractors

**If the BDS so specifies,** the Employer will grant a margin of preference of 10% (ten percent) to domestic contractors, in accordance with, and subject to, the following provisions:

(a) Contractors applying for such preference shall be asked to provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Borrower and accepted by the Bank, a particular contractor or group of contractors qualifies for a domestic preference. The Bidding document shall clearly indicate the preference and the method that will be followed in the evaluation and comparison of Bids to give effect to such preference.

(b) After Bids have been received and reviewed by the Employer, responsive Bids shall be classified into the following groups:

(i) Group A: Bids offered by domestic contractors eligible for the preference.

(ii) Group B: Bids offered by other contractors.

All evaluated Bids in each group shall, as a first evaluation step, be compared to determine the Bid with lowest evaluated cost, and the Bid with the lowest evaluated cost in each group shall be further compared with each other. If as a result of this comparison, a Bid from Group A is the lowest, it shall be selected for the award, if the Bidder is determined substantially qualified. If a Bid from Group B is the lowest, as a second evaluation step, all Bids from Group B shall then be further compared with the lowest evaluated cost from Group A. For the purpose of this further comparison only, an amount equal to 10% (ten percent) of the respective Bid price of Group B corrected for arithmetical errors, including unconditional discounts but excluding provisional sums and the cost of day works, if any, shall be added to the evaluated cost offered in each Bid from Group B. If the Bid from Group A is the lowest, it shall be selected for award. If not, the Bid offering the lowest evaluated cost from Group B based on the first evaluation step shall be selected, if the Bidder is determined substantially qualified.

**1.2** **Preference for Regional Contractors**

If the BDS so specifies, the Employer will grant a regional preference to contractors in RMCs that have joined the Borrower’s country in a regional cooperation agreement designed to foster economic integration, by a customs union, or a free trade area.in accordance with the following procedure. All responsive bids will be classified in one of the following two groups:

**Group A:** Bids offered by contractors, which have established, to the satisfaction of the Borrower and the Bank, to be eligible for regional preference; and

**Group B:** Bids offered by other contractors.

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

2. Successful Bid or Bids & Evaluation

In continuation and accordance with ITB 40, the Employer shall use the criteria and methodologies listed in this Section to evaluate Bids. By applying these criteria and methodologies the Employer shall determine the Successful Bid or Bids which has/have been determined to:

(a) be substantially responsive to the Bidding document;

(b) offer the lowest evaluated cost to the Employer for all works to be procured based on either a single Contract or all multiple Contracts combined, as the case may be, in accordance with the ITB 14.6 inviting bid prices and discounts, and provisions made of the Bidding Document for evaluation of bids and award of contract (s); and

(c) be offered by Bidder or Bidders that substantially meet the qualification criteria applicable for Contract or combined Contracts for which they are selected.

2.1 Evaluation (ITB 35)

In addition to the criteria listed in ITB 35.2 and BDS, the following criteria shall apply:

(i) Assessment of adequacy of Technical Proposal with Requirements (Reference ITB 16 and ITB 29.3): The Employer will determine whether the Bids are substantially responsive to the Technical Requirements.

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

* *Mobilization of key equipment.*
* *Mobilization of key personnel*
* *Work/ Construction Method Statement*
* *Construction Schedule*
* *Material Source*
* *Environment and Social Management Plan (ESMP)*

(ii) Assessment of adequacy of Commercial Terms and Conditions of the Bid (Reference ITB 29.4): The Employer will determine whether the Bids are substantially responsive to the Commercial and Contractual Terms and Conditions.

***A Bid not comprising Technical Proposal or a Bid for which the Technical Proposal is not substantially responsive (i.e. with material deviation, reservation or omission) shall be rejected.***

2.2 Single and Multiple Contracts

Pursuant to ITB 14.6, and ITB 35.4 and in accordance with how bids are invited either for “Works” or Works are grouped in lots (contracts) or packages (one or more lots) and bids are invited for mulpiple lots or packages, evaluation and award will be as follows:

**Award Criteria for a Single Contract:**

**‘Works’**

Evaluation and Award Criteria for ‘Works’ as One (Single) Contract: ***The bids will be evaluated for ‘Works’ and the contract will be awarded to the Bidder offering the lowest evaluated cost to the Employer for ‘Works’, subject to the selected Bidder substantially meeting the required qualification criteria for the contract,*** ***and determination of substantial responsiveness of the Bid.***

**Award Criteria for Multiple Contracts [ITB 35.4]:** *Not Applicable*

2.3 Alternative Completion Times

Alternative time for completion ***is not*** permitted. Bids offering completion time longer than that specified under Part A-Contract Data under Section IX-Particular Conditions of Contract shall be rejected.

………………………………………………………………………………………………………………………………………………………………………………

2.4 Sustainable Procurement: Based on the following main considerations:

1. Socio-economic consideration *[****N/A****]*
2. Environmentally and Socially Responsible Procurement *[****N/A****]*

*[If specific****sustainable procurement******technical requirements****have been specified in Section VII- Specification,****either****state that (i) those requirements will be evaluated on a pass/fail (compliance basis)****or****otherwise (ii) in addition to evaluating those requirements on a pass/fail (compliance basis), if applicable, specify the monetary adjustments  to be applied to Bid prices for comparison purposes on account of Bids that exceed the specified minimum sustainable procurement technical requirements.]*

2.5 Alternative Technical Solutions for specified parts of the Works

Alternative technical solutions are ***not permitted***.

2.6 Specialized Subcontractors

If permitted under ITB 34, only the specific experience of Subcontractors for specialized works permitted by the Employer will be considered. The general experience and financial resources of the Specialized Subcontractors shall not be added to those of the Bidder for purposes of qualification of the Bidder.

3. Qualification

| **Eligibility and Qualification Criteria** | | | | | **Compliance Requirements** | | | | | **Documentation** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No.** | **Subject** | **Requirement** | | **Single Entity** | | **Joint Venture (existing or intended)** | | | **Submission Requirements** | |
| **All Members Combined** | **Each Member** | **One Member** |
| **1. Eligibility** | | | | | | | | | | |
| **1.1.1** | **Nationality** | Nationality in accordance with ITB 4.4 | | Must meet requirement | | Must meet requirement | Must meet requirement | N/A | Letter of Bid & Forms ELI – 1.1 and 1.2, with attachments | |
| **1.1.2** | **Eligibility of Materials, Equipment and Services** | Country of Origin in accordance with ITB 5 | | Must meet requirement | | Must meet requirement | Must meet requirement | N/A | Letter of Bid &  Form ELI-1.3 | |
| **1.2** | **Conflict of Interest** | No conflicts of interest in accordance with ITB 4.2 | | Must meet requirement | | Must meet requirement | Must meet requirement | N/A | Letter of Bid | |
| **1.3** | **Bank Eligibility** | Not having been declared ineligible by the Bank, as described in ITB 4.5. | | Must meet requirement | | Must meet requirement | Must meet requirement | N/A | Letter of Bid | |
| **1.4** | **State-owned Enterprise or Institution of the Borrower country** | Meets conditions of ITB 4.6 | | Must meet requirement | | Must meet requirement | Must meet requirement | N/A | Forms ELI – 1.1 and 1.2, with attachments | |
| **1.5** | **United Nations resolution or Borrower’s country law** | Not having been excluded as a result of prohibition in the Borrower’s country laws or official regulations against commercial relations with the Bidder’s country, or by an act of compliance with UN Security Council resolution, both in accordance with ITB 4.8 and Section V. | | Must meet requirement | | Must meet requirement | Must meet requirement | N/A | Forms ELI – 1.1 and 1.2, with attachments | |
| **2. Historical Contract Non-Performance** | | | | | | | | | | |
| **2.1** | **History of Non-Performing Contracts** | Non-performance of a contract that[[1]](#footnote-1) did not occur as a result of contractor default since 1st January 2020. | | Must meet requirement | | Must meet requirements | Must meet requirement[[2]](#footnote-2) | N/A | Form CON-2 | |
| **2.2** | **Suspension Based on Execution of Bid Securing Declaration by the Employer** or withdrawal of the Bid within Bid validity period or other failures | Not under suspension based on-execution of a Bid Securing Declaration or other failures pursuant to ITB 4.7 and ITB 19.9 | | Must meet requirement | | Must meet requirement | Must meet requirement | N/A | Letter of Bid | |
| **2.3** | **Pending Litigation** | Bid’s financial position and prospective long-term profitability still sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Bidder | | Must meet requirement | | N/A | Must meet requirement | N/A | Form CON – 2 | |
| **2.4** | **Litigation History** | No consistent history of court/arbitral award decisions against the Bidder[[3]](#footnote-3) since 1st January *2020* | | Must meet requirement | | Must meet requirement | Must meet requirement | N/A | Form CON – 2 | |
| **2.5** | **Declaration: Environmental** **and Social (ES) past performance** | Declare any civil work contracts that have been suspended or terminated and/or performance security called by an employer for reasons related to the non-compliance of any environmental or social (including sexual exploitation and abuse (SEA) and gender-based violence (GBV)), or health or safety requirements or safeguard in the past five years.[[4]](#footnote-4) | | Must make a declaration. Where there are Specialized Sub-contractor/s, the Specialized Sub-contractor/s must also make the declaration. | | N/A | Each must make a declaration. Where there are Specialized Sub-contractor/s, the Specialized Sub-contractor/s must also make the declaration. | N/A | Form CON-3 ES Performance Declaration | |
| **3. Financial Situation and Performance** | | | | | | | | | | |
| **3.1** | **Financial Capabilities** | 1. The Bidder shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as ***USD 2.4***   ***Million*** for the subject contract(s) net of the Bidder’s other commitments  (ii) The Bidders shall also demonstrate, to the satisfaction of the Employer, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.  (iii) The audited balance sheets or, if not required by the laws of the Bidder’s country, other financial statements acceptable to the Employer, for **the last *five (5)* years** shall be submitted and must demonstrate the current soundness of the Bidder’s financial position and indicate its prospective long-term profitability. | | Must meet requirement  Must meet requirement  Must meet requirement | | Must meet requirement  Must meet requirement    N/A | N/A  N/A  Must meet requirement | N/A  N/A  N/A | Form FIN – 3.1, 3.3 and 3.4 with attachments | |
| **3.2** | **Average Annual Construction Turnover** | Minimum average annual construction turnover of **US$4,500,000.00**    calculated as total certified payments received for contracts in progress and/or completed within the last Five (5)years | | Must meet requirement | | Must meet requirement | Must meet *25* %, *(Twenty Five percentage)* of the requirement | Must meet *40* %, *(Forty percentage)*  of the requirement | Form FIN – 3.2 | |
| **4. Experience** | | | | | | | | | | |
| **4.1 (a)** | **General Construction Experience** | | Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the last ***10*** years, starting ***1st January 2015.*** | Must meet requirement | | N/A | Must meet requirement | N/A | Form EXP – 4.1 | |
| **4.2 (a)** | **Specific Construction & Contract Management Experience** | | (i) A minimum number of *two* similar contracts specified below that have been satisfactorily and substantially[[5]](#footnote-5) completed as a prime contractor, joint venture member[[6]](#footnote-6), management contractor or sub-contractor within the past five years from the bid submission deadline:  Each contract should have a minimum value of  **US$5,000,000.00 (Five Million United States Dollars).**  **Note:**  **Bidder to provide Legally Certified Completion Certificates for completed Contracts or Letter from the Employer for ongoing Works** | Must meet requirement | | Must meet requirement[[7]](#footnote-7) | N/A | N/A | Form EXP 4.2(a) | |
| **4.2 (b)** | **Construction Experience in Key Activities** | | For the above and any other contracts [substantially completed and under implementation] as prime contractor, joint venture member, or sub-contractor Five (5) to the date of the Bid submission deadline, a minimum construction experience in the following key activities successfully completed[[8]](#footnote-8):  **Construction of conventional Heavy Concrete, extensive structural steel structures and steel roof sheets, aluminum windows and doors, extensive wall tiling, industrial electrical and mechanical installation, treatment plant and associated external works inclusive of sewer system.**  **Also, completion of highway pavements and concrete public parking.**  **Note: For all the above Key Activities, Bidder to give the name, location (country and city) and description of the urban area where the Works were carried out and a copy of Legally Certified Completion Certificate or Supporting Letter signed by the Employer.** | Must meet requirements  *[Specify activities that may be met through a specialized subcontractor, if permitted in accordance with ITB 34.3]* | | Must meet requirements *[Specify activities that may be met through a Specialized Subcontractor, if permitted in accordance with ITB 34.3]* | N/A | Must meet the following requirements for key activities listed below *[****if applicable, out of the key activities in the first column of this 4.2 b),*** *list key activities (volume, number or rate of production as applicable) and the corresponding minimum requirements that have to be met by one member,* ***otherwise this cell should state: “N/A”.]*** | Form EXP – 4.2 (b) | |
| **4.2 (c)** | **Specific Experience in managing E&S aspects** | | For the contracts in 4.2 (a) above and/or any other contracts [substantially completed and under implementation] as prime contractor, joint venture member, or Subcontractor between ***1st January 2020*** and Bid submission deadline, experience in managing ES risks and impacts in the following aspects: *As in Works Requirements, (Environmental and Social ES) aspects.* | Must meet requirements | | Must meet requirement | Must meet the following requirements: *N/A* | Must meet the following requirements: *N/A* | Form EXP – 4.2 (c) | |
| **5.1** | **ESHS Documentation** | | Availability of in-house policies and procedures acceptable to the Employer for ESHS management:  1. Existence of an Ethics Charter;  2. Existence of a system for monitoring compliance with ESHS commitments for Bidder’s subcontractors and all its partners;  3. Existence of official company procedures for the management of the following relevant points:   ESHS resources and facilities and ESHS monitoring organization;   Project Areas management (base camps, quarries, borrow pits, storage areas);   Health & Safety on worksites;   Local recruitment and ESHS training of local staff (capacity building), ESHS trainings of subcontractors and local partners (transfer of knowledge);   Traffic Management   Atmospheric emissions, noise and vibrations   Site rehabilitation and revegetation; |  | |  |  | Leader must meet the requirement | 1. The ESHS Ethics Charter of the company or equivalent must be provided.  2. A procedure or information on how the Bidder ensures that all members of the Joint Venture, subcontractors, suppliers and temporary labor (i) are aware and (ii) meet ESHS requirements must be provided.  3. Official internal procedure documents on the topics indicated must be provided. | |
| **5.2** | **Similar Experience** | | Experience of ***Two (2)*** construction contracts in developing and emerging countries over the last ***Ten***  ***(10)*** years, where major ESHS measures were carried out or are on progress satisfactorily and in compliance with international standards. | Must meet requirement | | N/A | N/A | Leader must meet the requirement | Form EXP-ESHS with supporting documents **(the Bidder shall submit a piece of evidence**  **supporting the ESHS implementation measures)** | |
| **5.3** | **ESHS Dedicated Personnel** | | Availability of in-house personnel dedicated to ESHS issues: Environmental and Social Manager, and/or Health and Safety Manager. | Must meet requirement | | N/A | N/A | Leader must meet the requirement | Organizational chart evidencing filled ESHS position(s) | |

4. Contractor’s Representative and Key Personnel

The Bidder must demonstrate that it will have a suitably qualified Contractor’s Representative and suitably qualified (and in adequate numbers) Key Personnel, as described in the below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Item No.** | **Position/specialization** | **Relevant academic qualifications** | **Minimum years of relevant work experience** |
| *1* | Contractor’s Representative 1x Project Manager | A Minimum of degree in Civil Engineering with Project Management qualification | At least ten years of experience in major building works including road works with demonstrated project leadership with at least 2 similar project as Project Manager |
| *2* | 1x Site Agent | A Minimum of degree in Civil Engineering | At least ten years of experience in major building works including road works with at least 2 similar project as site agent |
| *3* | *1x Quantity Surveyor* | A minimum qualification of a degree in Quantity Surveying | At least ten years of experience in major building works including road works with at least 2 similar project as a Quantity Surveyor |
| *4* | *1x Civil Engineer* | A Minimum of degree in Civil Engineering | At least ten years of experience in major building works including road works with at least 2 similar project as a Civil Engineer |
| *5* | *1x Electromechanical Engineer* | A Minimum of degree in Electrical Engineering | At least ten years of experience in major building works including road works with at least 2 similar project as a Services Engineer |
| *6* | *1x Land Surveyor* | Minimum of Diploma in Surveying | At least five (5) years  of experience in major civil works of similar nature |
| *7* | *1x Environmental Expert* | A minimum qualification of a degree in a relevant discipline | A minimum of two years' experience in construction works |
| *8* | *1x Social Expert* | A minimum qualification of a degree or diploma in a relevant discipline | A minimum two years' experience in construction works |
| *9* | *1x Sexual Exploitation, Abuse and Harassment Officer.* | A minimum of degree in Social Science with experience in handling gender-based issues | A minimum of five years experience in handling gender-based issues |
| *10* | *2x Foremen (Building)* | Minimum of Diploma in Civil Engineering/  Road / Building  Foremanship Certificate or equivalent | *A minimum of seven years experience in major building works* |

The Bidder shall provide details of the Contractor’s Representative and Key Personnel

and such other Key Personnel that the Bidder considers appropriate to perform the Contract, together with their academic qualifications and work experience. The Bidder shall complete the relevant Forms in Section IV, Bidding Forms.

5. Equipment

The Bidder must demonstrate that it has the key equipment listed hereafter:

|  |  |  |
| --- | --- | --- |
| **No.** | **Equipment Type and Characteristics** | **Minimum Number required** |
| 1 | Self-propelled graders | 2 |
| 2 | Dozers | 2 |
| 3 | Loaders and/or excavators; | 2 |
| 4 | 10m3 Tippers | 4 |
| 5 | Pneumatic-tired Rollers (123kw, 10t); | 1 |
| 6 | Vibrating Rollers (123kw, 10t); | 2 |
| 7 | Water Bowsers (10,000 to 18,000 litre). | 3 |
| 8 | Sheep foot roller (10t); | 2 |
| 9 | Bitumen distributor; | 1 |
| 10 | Asphalt Paver (at least 5.94m width capacity) | 1 |
| 11 | Concrete Mixers | 3 |
| 12 | Concrete Batching Machine | 1 |
| 13 | Concrete Pump | 2 |
| 14 | Generator 15kVA | 2 |
| 15 | Mobile rubber-tired Crane (5 ton) | 1 |
| 16 | Tower Crane | 1 |
| 17 | Concrete dumpers (> 0.75m3) | 10 |
| 18 | Reinforcement bar bender | 1 |
| 19 | Mobile Concrete Mixer truck | 2 |
| 20 | Low-bed Loader | 2 |
| 21 | Air compressor (with > 8 Jack hammers) | 2 |

The Bidder shall provide further details of proposed items of equipment using Form EQU in Section IV, Bidding Forms.

|  |
| --- |
| Section IV - Bidding Forms |

Table of Forms

Letter of Bid 89

Appendix to Bid: Schedule of Adjustment Data 93

Bill of Quantities 97

Daywork Schedule 105

Summary of Specified Provisional Sums 113

Technical Bid 115

Technical Bid-Base Bid 116

Site Organization 117

Method Statement 118

Mobilization Schedule 119

Construction Schedule 120

ES Management Strategies and Implementation Plans 121

Form EQU: Equipment 127

Bidders Qualification without prequalification 133

Form CON – 2 138

Form CON – 3 141

Environmental and Social (ES) Performance Declaration 141

Form FIN – 3.1: Financial Situation and Performance 143

Form FIN – 3.2: Average Annual Construction Turnover 145

Form FIN – 3.3: Financial Resources 146

Form FIN – 3.4: Current Contract Commitments / Works in Progress 147

Form EXP - 4.1: General Construction Experience 149

Form EXP - 4.2(a): Specific Construction and Contract Management Experience 150

Form EXP - 4.2(b): Construction Experience in Key Activities 153

Form EXP - 4.2(c): Specific Experience in Managing ES aspects 156

Form of Bid Security - Demand Guarantee 156

Form of Bid-Securing Declaration 159

|  |
| --- |
| Letter of Bid |
| *INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED*  *THE DOCUMENT*  *The Bidder must prepare this Letter of Bid on stationery with its letterhead clearly showing*  *the Bidder’s complete name and business address.*  *Note: All italicized text in is to help Bidders in preparing this form.* |

**Date of this Bid submission**: [*insert date (as day, month and year) of Bid submission*]

**OCBI/LCB No..:** [*insert number of bidding process as per procurement plan*]

**Invitation for Bid No**.: [*insert same IFB number as advertised*]

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

To: **[*insert complete name of Employer*]**

We, the undersigned, declare that:

1. **No reservations:** We have examined and have no reservations to the bidding document, including Addenda issued in accordance to ITB 8;
2. **Eligibility of Bidder:** We, including any subcontractors or suppliers for any part of the Contract, have nationalities from eligible countries and meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;
3. **Eligibility of Materials, Equipment and Services**: We meet the eligibility requirements for Materials, Equipment and Services in accordance with ITB 5;
4. **Bid-Securing Declaration:** We have not been suspended nor declared ineligible by the Employer based on execution of a Bid-Securing Declaration in the Employer’s country in accordance with ITB 4.7;
5. **Conformity:** We offer to execute in conformity with the bidding document and in accordance with the construction schedule the following Works: *[insert a brief description of the Works];*
6. **Bid Price:** The total price of our Bid, excluding any discounts offered in item (g) below is: *[Insert one of the options below as appropriate]*

(i) Total price excluding VAT of the Bid:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(ii) The total amount of VAT is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(iii) The total bid price including VAT is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*[Option 1, in case of one Contract for ‘Works’:] Total price is: [insert the total price of the Bid in words and figures, indicating the various amounts and the respective currencies];*

1. **Discounts:** The discounts offered and the methodology for their application are:

(i) The discounts offered are: *[Specify in detail each discount offered.]*

(ii) The exact method of calculations to determine the net price of each item and ‘Works’, and in case of multiple lots or multiple packages, net price of each item, each lot and each package after application of discounts is shown below: [*Specify in detail the method that shall be used to apply the discounts and ensure clarity, unambiguity, etc. in accordance with ITB 14.7*];

1. **Bid Validity Period**: Our Bid shall be valid for a period of \_\_\_\_\_\_\_\_\_from the date fixed for the Bid submission deadline specified in BDS 22.1, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
2. **Performance Security**: If our Bid is accepted, we commit to obtain a Performance Security in the forms in accordance with the bidding document;
3. **One Bid Per Bidder:** We are not submitting any other Bid(s) as an individual Bidder, and weare not participating in any other Bid(s) as a Joint Venture member or as a subcontractor, and meet the requirements of ITB 4.3, other than alternative Bids submitted in accordance with ITB 13;
4. **Suspension and Debarment**: We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Bank or a debarment imposed by the Bank in accordance with the Agreement for Mutual Enforcement of Debarment Decisions between the Bank and other development banks. Further, we are not ineligible under the Employer’s country laws or official regulations or pursuant to a decision of the United Nations Security Council;
5. **State-owned enterprise or institution:** [*select the appropriate option and delete the other*] [*We are not a state-owned enterprise or institution*] / [*We are a state-owned enterprise or institution but meet the requirements of ITB 4.6*];
6. **Commissions, gratuities, fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the Bidding process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]*

|  |  |  |  |
| --- | --- | --- | --- |
| Name of Recipient | Address | Reason | Amount |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

(If none has been paid or is to be paid, indicate “none.”);

1. **Binding Contract:** We understand that this Bid, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;
2. **Not Bound to Accept**: We understand that you are not bound to accept the lowest evaluated cost Bid, or any other Bid that you may receive;
3. **Fraud and Corruption:** We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption.
4. **Potential DAAB Members:** We hereby propose the following three persons, whose curriculum vitae are attached, as potential DAAB members:

|  |  |
| --- | --- |
| Name | Address |
| * + - 1. ……...... |  |
| * + - 1. ……….. |  |
| * + - 1. ……… |  |

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

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

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

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

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

Date signed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ day of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_

**\*** In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder or names of all members (partners) of JV and sign on behalf of the JV and not on behalf of only one member that has been given power of attorney.

\*\* Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid. If the Bidder is a JV, the power of attorney shall be given by the JV or by all members of the JV.

|  |
| --- |
| Appendix to Bid: Schedule of Adjustment Data  (Applicable only if Prices are subject to adjustment as per ITB 18.3 (a) and Sub-Criteria 13.7 of Part A-Contract Data under PC) |

[In Tables A, B, and C, below, the Bidder shall (a) indicate its amount of local currency payment, (b) indicate its proposed source and base values of indices for the different foreign currency elements of cost, (c) derive its proposed weightings for local and foreign currency payment, and (d) list the exchange rates used in the currency conversion.]

Table A. Local Currency

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Index code\*** | **Index description\*** | **Source of index\*** | **Base value**  **and date\*** | **Bidder’s**  **related currency amount** | **Bidder’s**  **proposed**  **weighting** |
|  | Nonadjustable | — | — | — | A: \*  B: \*  C: \*  D: \*  E: \* |
|  |  |  | **Total** |  | **1.00** |

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

Table B. Foreign Currency (FC)

**State type:** ....................... [If the Bidder is allowed to receive payment in foreign currencies this table shall be used. If Bidder wishes to quote in more than one foreign currency (up to three currencies permitted) then this table should be repeated for each foreign currency.]

| Index code | Index description | Source of index | Base value and date | Bidder’s related source currency in type/amount | Equivalent in FC1 | Bidder’s proposed weighting |
| --- | --- | --- | --- | --- | --- | --- |
|  | Nonadjustable | **—** | **—** | **—** |  | **A: \***  **B: \***  **C: \***  **D: \***  **E: \*** |
|  |  |  |  | **Total** |  | **1.00** |

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

Table C. Summary of Payment Currencies

*[In case of multiple lots or multiple packages Bidder shall prepare separate table for each lot identified by package number and related lot number]*

Table: Alternative A

For *[Employer to Select i) or ii) and delete the other]* i) Whole of the Works / ii) *[Insert name of Section of the Works.] [If ii) is selected, then Employer to prepare similar Table C for all sections of works including the summary Table C of all sections to account for whole works under the contract]*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name of payment currency** | **A**  **Amount of currency** | **B**  **Rate of exchange**  **(local currency per unit of foreign)** | **C**  **Local currency equivalent**  **C = A x B** | **D**  **Percentage of  Total Bid Price (TBP)**  **100xC**  **TBP** |
| **Local currency** |  | **1.00** |  |  |
| **Foreign currency #1** |  |  |  |  |
| **Foreign currency #2** |  |  |  |  |
| **Foreign currency # 3** |  |  |  |  |
| **Total Bid Price** |  |  |  | **100.00** |
| **Provisional sums expressed in local currency** *[If ii) above is selected Employer to specify provisional sums as applicable for each section]* | *[To be entered by the Employer]* | **1.00** | [*To be entered by the Employer*] |  |
| **TOTAL BID PRICE of (i) or (ii) as applicable (including provisional sum)** |  |  |  |  |

Table: Alternative B

***To be used only with Alternative B Prices directly quoted in the currencies of payment.*** *(ITB 15.1)*

Summary of currencies of the Bid for *Employer to Select i) or ii) and delete the other* [i) Whole of the Works / ii) Insert name of Section of the Works*. If ii) is selected, then Employer to prepare similar Table C for all sections of works including the summary Table C of all sections to account for whole works under the contract]*

|  |  |
| --- | --- |
| *Name of currency* | *Amounts payable* |
| Local currency: |  |
| Foreign currency #1: |  |
| Foreign currency #2: |  |
| Foreign currency #3: |  |
| Provisional sums expressed in local currency | [*To be entered by the Employer*] *[If ii) above is selected Employer to specify provisional sums as applicable for each section]* |
| Bill of Quantities | | | |

**Notes for Preparing a Bill of Quantities**

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

**Objectives**

The objectives of the Bill of Quantities are

(a) to provide sufficient information on the quantities of Works to be performed to enable bids to be prepared efficiently and accurately; and

(b) when a contract has been entered into, to provide a priced Bill of Quantities for use in the periodic valuation of Works executed.

In order to attain these objectives, Works should be itemized in the Bill of Quantities in sufficient detail to distinguish between the different classes of Works, or between Works of the same nature carried out in different locations or in other circumstances which may give rise to different considerations of cost. Consistent with these requirements, the layout and content of the Bill of Quantities should be as simple and brief as possible.

**Content**

The Bill of Quantities should be divided generally into the following sections:

(a) Preamble;

(b) Work Items (grouped into parts);

(c) Daywork Schedule; and

(d) Summary.

**Preamble**

The Preamble should indicate the inclusiveness of the unit prices and should state the methods of measurement that have been adopted in the preparation of the Bill of Quantities and that are to be used for the measurement of any part of the Works.

**Rock**

Where excavation, boring, or driving is included in the Works, a comprehensive definition of rock (always a contentious topic in contract administration), should be provided in the Technical Specification and this definition should be used for the purposes of measurement and payment.

**Work Items**

The items in the Bill of Quantities should be grouped into sections to distinguish between those parts of the Works that by nature, location, access, timing, or any other special characteristics may give rise to different methods of construction, phasing of the Works, or considerations of cost. General items common to all parts of the Works may be grouped as a separate section in the Bill of Quantities. When a family of Price Adjustment Formulae are used, they should relate to appropriate sections in the Bill of Quantities.

**Quantities**

Quantities should be computed net from the Drawings, unless directed otherwise in the Contract, and no allowance should be made for bulking, shrinkage, or waste. Quantities should be rounded up or down where appropriate and spurious accuracy should be avoided.

**Units of Measurement**

The following units of measurement and abbreviations are recommended for use (unless other national units are mandatory in the country of the Employer).

|  |  |  |  |
| --- | --- | --- | --- |
| **Unit** | **Abbreviation** | **Unit** | **Abbreviation** |
| cubic meter  hectare  hour  kilogram  lump sum  meter  metric ton  (1,000 kg) | m3 *or* cu m  ha  h  kg  sum  m  t | millimeter  month  number  square meter  square millimeter  week | mm  mon  nr  m2 *or* sq m  mm2 *or* sq mm  wk |

**Ground and Excavation Levels**

The commencing surface should be identified in the description of each item for work involving excavation, boring, or driving, for which the commencing surface is not also the original surface. The excavated surface should be identified in the description of each item for work involving excavation for which the excavated surface is not also the final surface. The depths of work should be measured from the commencing surface to the excavated surface, as defined.

**Daywork Schedule**

A Daywork Schedule should be included if the probability of unforeseen work, outside the items included in the Bill of Quantities, is relatively high. To facilitate checking by the Employer of the realism of rates quoted by the bidders, the Daywork Schedule should normally comprise:

(a) a list of the various classes of labour, materials, and Contractor’s Equipment for which basic Daywork rates or prices are to be inserted by the bidder, together with a statement of the conditions under which the Contractor will be paid for work executed on a Daywork basis; and

(b) a percentage to be entered by the bidder against each basic Daywork Subtotal amount for labour, materials, and Plant representing the Contractor’s profit, overheads, supervision, and other charges.

**Provisional Quantities and Sums**

Provision for quantity contingencies in any particular item or class of work with a high expectation of quantity overrun should be made by entering specific “Provisional Quantities” or “Provisional Items” in the Bill of Quantities, and *not* by increasing the quantities for that item or class of work beyond those of the work normally expected to be required. To the extent not covered above, a general provision for physical contingencies (quantity overruns) should be made by including a “Provisional Sum” in the Summary of the Bill of Quantities. Similarly, a contingency allowance for possible price increases should be provided as a “Provisional Sum” in the Summary of the Bill of Quantities. The inclusion of such Provisional Sums often facilitates budgetary approval by avoiding the need to request periodic supplementary approvals as the future need arises.

The estimated cost of specialized work to be carried out, or of special goods to be supplied, by a Nominated Subcontractor should be specified in the relevant part of the Bill of Quantities as a particular Provisional Sum with an appropriate brief description. A separate bidding procedure is normally carried out by the Employer to select the specialists, who are then nominated as subcontractors to the main or prime contractor. To provide an element of competition among the main bidders (or prime contractors) in respect of any facilities, amenities, attendance, etc., to be provided by the successful bidder as prime contractor for the use and convenience of the specialist or nominated subcontractor, each related Provisional Sum should be following by an item in the Bill of Quantities inviting a percentage (to be quoted by the main bidder) payable on the actual expenditure from the Provisional Sum.

**Summary**

The Summary should contain a tabulation of the separate parts of the Bill of Quantities carried forward, with provisional sums for Daywork, for physical (quantity) contingencies, and for price contingencies (upward price adjustment) where applicable.

|  |
| --- |
| Technical Bid |

* **Technical Bid-Base Bid**
* **Site Organization**
* **Method Statement**
* **Mobilization Schedule**
* **Construction Schedule**
* **ES Management Strategies and Implementation Plans**
* **Code of Conduct (ES)**
* **Equipment**
* **Key Personnel Schedule**
* **Others**

Technical Bid-Base Bid

***[Note for information of Bidder:*** *Bidders shall demonstrate compliance with the Employer’s requirements and Technical Specifications as described in Section VII of the Bidding Documents. Any departures or deviations from the required Technical Specifications shall be highlighted and if there are none, full compliance shall be confirmed.*

*The Bidder shall provide the Technical Bid for the Base-Bid complete in all respect including Technical information and standards, codes, designs and specifications, of Works offered along with all documentation mentioned in ITB 16 and Section VII of the Bidding Document. This will include relevant literatures, data or drawings, test results and other supporting documents, including all information requested in the Bidding Document and as may be necessary to establish conformity with the Employer’s Specifications and requirements.*

*Any deviations in the technical standards, codes, designs or specifications or other requirements from those stated in the Bidding Documents shall be explained indicating their impact on the performance requirements, characteristics or parameters of the works. To this end, for any such deviations to be acceptable, Bid shall establish to the satisfaction of the Employer substantial responsiveness to the required technical specifications by explaining and documenting for the offered works, equivalency with or improvement to the required technical standards, codes, designs and Specifications.*

*Any Major deviation from the Employer’s requirements shall be the cause for rejection of the Bid. Any deviation which in the Bidder’s opinion is considered minor, the Bidder shall provide evidence to this effect including evidence of any monetary implications caused by such deviation. The Employer’s evaluation shall be independent of Bidder’s opinion on such matters and shall be final****]***

Site Organization

*[insert Site Organization information]*

Method Statement

*[insert Method Statement]*

Mobilization Schedule

*[insert Mobilization Schedule]*

In accordance with the Particular Conditions, Sub-Clause 4.1, the Contractor shall not carry out mobilization to Site unless the Engineer gives consent that appropriate measures are in place to address environmental and social risks and impacts, which as a minimum shall include applying the Management Strategies and Implementation Plans (MSIPs) and Code of Conduct for Contractor’s Personnel, submitted as part of the Bid and agreed as part of the Contract.

Construction Schedule

*[insert Construction Schedule]*

*The construction schedule shall include the following key milestones:*

* *No-objection to the Contractor’s MSIPs, which collectively form the C-ESMP, in accordance with the Particular Conditions – Special provisions Sub-Clause 4.1.*
* *Constitution of the DAAB*

ES Management Strategies and Implementation Plans

#### (ES-MSIP)

#### The Bidder shall submit comprehensive and concise Environmental and Social (ES) Management Strategies and Implementation Plans (ES-MSIP) as required by ITB 11.1 (j) of the Bid Data Sheet. These strategies and plans shall describe in detail the actions, materials, equipment, management processes etc. that will be implemented by the Contractor, and its subcontractors.

#### In developing these strategies and plans, the Bidder shall have regard to the ES provisions of the contract including those as may be more fully described in the Works Requirements in Section VII.

Code of Conduct for Contractor’s Personnel (ES) Form

**Note to the Bidder**:

**The minimum content of the Code of Conduct form as set out by the Employer shall not be substantially modified**. However, the Bidder may add requirements as appropriate, including to take into account Contract-specific issues/risks.

The Bidder shall initial and submit the Code of Conduct form as part of its bid.

***Note to the Employer****:*

***The following minimum requirements shall not be modified****. The Employer may add additional requirements to address identified issues, informed by relevant environmental and social assessment.*

*The types of issues identified could include risks associated with: labour influx, spread of communicable diseases,*Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH) *etc.*

***Delete this Box prior to issuance of the bidding documents.***

**CODE OF CONDUCT FOR CONTRACTOR’S PERSONNEL**

We are the Contractor, [*enter name of Contractor*]. We have signed a contract with [*enter name of Employer*] for [*enter description of the Works*]. These Works will be carried out at [*enter the Site and other locations where the Works will be carried out*]. Our contract requires us to implement measures to address environmental and social risks related to the Works, including the risks of sexual exploitation, sexual abuse and sexual harassment.

This Code of Conduct is part of our measures to deal with environmental and social risks related to the Works. It applies to all our staff, labourers and other employees at the Works Site or other places where the Works are being carried out. It also applies to the personnel of each subcontractor and any other personnel assisting us in the execution of the Works. All such persons are referred to as “**Contractor’s Personnel”** and are subject to this Code of Conduct.

This Code of Conduct identifies the behavior that we require from all Contractor’s Personnel.

Our workplace is an environment where unsafe, offensive, abusive or violent behavior will not be tolerated and where all persons should feel comfortable raising issues or concerns without fear of retaliation.

**REQUIRED CONDUCT**

Contractor’s Personnel shall:

1. carry out his/her duties competently and diligently;
2. comply with this Code of Conduct and all applicable laws, regulations and other requirements, including requirements to protect the health, safety and well-being of other Contractor’s Personnel and any other person;
3. maintain a safe working environment including by:
   1. ensuring that workplaces, machinery, equipment and processes under each person’s control are safe and without risk to health;
   2. wearing required personal protective equipment;
   3. using appropriate measures relating to chemical, physical and biological substances and agents; and
   4. following applicable emergency operating procedures.
4. report work situations that he/she believes are not safe or healthy and remove himself/herself from a work situation which he/she reasonably believes presents an imminent and serious danger to his/her life or health;
5. treat other people with respect, and not discriminate against specific groups such as women, people with disabilities, migrant workers or children;
6. not engage in Sexual Harassment, which means unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature with other Contractor’s or Employer’s Personnel;
7. not engage in Sexual Exploitation, which means any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another;
8. not engage in Sexual Abuse, which means the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions;
9. not engage in any form of sexual activity with individuals under the age of 18, except in case of pre-existing marriage;
10. complete relevant training courses that will be provided related to the environmental and social aspects of the Contract, including on health and safety matters, Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH);
11. report violations of this Code of Conduct; and
12. not retaliate against any person who reports violations of this Code of Conduct, whether to us or the Employer, or who makes use of the grievance mechanism for Contractor’s Personnel or the project’s Grievance Redress Mechanism.

**RAISING CONCERNS**

If any person observes behavior that he/she believes may represent a violation of this Code of Conduct, or that otherwise concerns him/her, he/she should raise the issue promptly. This can be done in either of the following ways:

1. Contact [*enter name of the Contractor’s Social Expert with relevant experience in handling* *sexual exploitation, sexual abuse and sexual harassment cases, or if such person is not required under the Contract, another individual designated by the Contractor to handle these matters*] in writing at this address [ ] or by telephone at [ ] or in person at [ ]; or
2. Call [ ] to reach the Contractor’s hotline *(if any)* and leave a message.

The person’s identity will be kept confidential, unless reporting of allegations is mandated by the country law. Anonymous complaints or allegations may also be submitted and will be given all due and appropriate consideration. We take seriously all reports of possible misconduct and will investigate and take appropriate action. We will provide warm referrals to service providers that may help support the person who experienced the alleged incident, as appropriate.

There will be no retaliation against any person who raises a concern in good faith about any behavior prohibited by this Code of Conduct. Such retaliation would be a violation of this Code of Conduct.

There will be no retaliation against any person who raises a concern in good faith about any behavior prohibited by this Code of Conduct. Such retaliation would be a violation of this Code of Conduct.

**CONSEQUENCES OF VIOLATING THE CODE OF CONDUCT**

Any violation of this Code of Conduct by Contractor’s Personnel may result in serious consequences, up to and including termination and possible referral to legal authorities.

FOR CONTRACTOR’S PERSONNEL:

I have received a copy of this Code of Conduct written in a language that I comprehend. I understand that if I have any questions about this Code of Conduct, I can contact [*enter name of Contractor’s contact person with relevant experience*] requesting an explanation.

Name of Contractor’s Personnel: [insert name]

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: (day month year): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Countersignature of authorized representative of the Contractor:

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: (day month year): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**ATTACHMENT 1:** Behaviors constituting Sexual Exploitation and Abuse (SEA) and behaviors constituting Sexual Harassment (SH)

**ATTACHMENT 1 TO THE CODE OF CONDUCT FORM**

**BEHAVIORS CONSTITUTING SEXUAL EXPLOITATION AND ABUSE (SEA) AND BEHAVIORS CONSTITUTING SEXUAL HARASSMENT (SH)**

The following non-exhaustive list is intended to illustrate types of prohibited behaviors.

1. **Examples of sexual exploitation and abuse** include, but are not limited to:

* A Contractor’s Personnel tells a member of the community that he/she can get them jobs related to the work site (e.g. cooking and cleaning) in exchange for sex.
* A Contractor’s Personnel that is connecting electricity input to households says that he can connect women headed households to the grid in exchange for sex.
* A Contractor’s Personnel rapes, or otherwise sexually assaults a member of the community.
* A Contractor’s Personnel denies a person access to the Site unless he/she performs a sexual favor.
* A Contractor’s Personnel tells a person applying for employment under the Contract that he/she will only hire him/her if he/she has sex with him/her.

1. **Examples of sexual harassment** **in a work context**

* Contractor’s Personnel comment on the appearance of another Contractor’s Personnel (either positive or negative) and sexual desirability.
* When a Contractor’s Personnel complains about comments made by another Contractor’s Personnel on his/her appearance, the other Contractor’s Personnel comment that he/she is “asking for it” because of how he/she dresses.
* Unwelcome touching of a Contractor’s or Employer’s Personnel by another Contractor’s Personnel.
* A Contractor’s Personnel tells another Contractor’s Personnel that he/she will get him/her a salary raise, or promotion if he/she sends him/her naked photographs of himself/herself.

Form EQU: Equipment

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III, Evaluation and Qualification Criteria. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

|  |  |  |
| --- | --- | --- |
| Item of equipment | | |
| Equipment information | Name of manufacturer | Model and power rating |
|  | Capacity | Year of manufacture |
| Current status | Current location | |
|  | Details of current commitments | |
|  |  | |
| Source | Indicate source of the equipment  o Owned o Rented o Leased o Specially manufactured | |

Omit the following information for equipment owned by the Bidder.

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

Form PER -1

**Contractor’s Representative and Key Personnel**

**Schedule**

Bidders should provide the names and details of the suitably qualified Contractor’s Representative and Key Personnel to perform the Contract. The data on their experience should be supplied using the Form PER-2 below for each candidate.

**Contractor’ Representative and Key Personnel**

|  |  |  |
| --- | --- | --- |
| **1.** | **Title of position:** Contractor’s Representative | |
|  | **Name of candidate:** | |
|  | **Duration of appointment:** | [*insert the whole period (start and end dates) for which this position will be engaged*] |
|  | **Time commitment: for this position:** | [*insert the number of days/week/months/ that has been scheduled for this position*] |
|  | **Expected time schedule for this position:** | [*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] |
| **2.** | **Title of position:** *[Environmental Specialist]* | |
|  | **Name of candidate:** | |
|  | **Duration of appointment:** | [*insert the whole period (start and end dates) for which this position will be engaged*] |
|  | **Time commitment: for this position:** | [*insert the number of days/week/months/ that has been scheduled for this position*] |
|  | **Expected time schedule for this position:** | [*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] |
| **3.** | **Title of position:** *[Health and Safety Specialist]* | |
|  | **Name of candidate:** | |
|  | **Duration of appointment:** | [*insert the whole period (start and end dates) for which this position will be engaged*] |
|  | **Time commitment: for this position:** | [*insert the number of days/week/months/ that has been scheduled for this position*] |
|  | **Expected time schedule for this position:** | [*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] |
| **4.** | **Title of position:** *[Social Specialist]* | |
|  | **Name of candidate:** | |
|  | **Duration of appointment:** | [*insert the whole period (start and end dates) for which this position will be engaged*] |
|  | **Time commitment: for this position:** | [*insert the number of days/week/months/ that has been scheduled for this position*] |
|  | **Expected time schedule for this position:** | [*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] |
| **5.** | **Title of position:** Sexual Exploitation, Abuse and Harassment Expert  *[Where a Project SEA risks are assessed to be substantial or high, Key Personnel shall include an expert with relevant experience in addressing sexual exploitation, , sexual abuse and sexual harassment cases]* | |
|  | **Name of candidate** | |
|  | **Duration of appointment:** | [*insert the whole period (start and end dates) for which this position will be engaged*] |
|  | **Time commitment: for this position:** | [*insert the number of days/week/months/ that has been scheduled for this position*] |
|  | **Expected time schedule for this position:** | [*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] |
| **6.** | **Title of position:** *[insert title]* | |
|  | **Name of candidate** | |
|  | **Duration of appointment:** | [*insert the whole period (start and end dates) for which this position will be engaged*] |
|  | **Time commitment: for this position:** | [*insert the number of days/week/months/ that has been scheduled for this position*] |
|  | **Expected time schedule for this position:** | [*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] |

Form PER-2:

**Resume and Declaration**

**Contractor’s Representative and Key Personnel**

|  |
| --- |
| **Name of Bidder** |

|  |  |  |
| --- | --- | --- |
| **Position [#*1*]: [*title of position from Form PER-1*]** | | |
| **Personnel information** | **Name:** | **Date of birth:** |
|  | **Address:** | **E-mail:** |
|  |  |  |
|  | **Professional qualifications:** | |
|  | **Academic qualifications:** | |
|  | **Language proficiency:** *[language and levels of speaking, reading and writing skills]* | |
| **Details** |  | |
|  | **Address of employer:** | |
|  | **Telephone:** | **Contact (manager / personnel officer):** |
|  | **Fax:** |  |
|  | **Job title:** | **Years with present employer:** |

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Project** | **Role** | **Duration of involvement** | **Relevant experience** |
| *[main project details]* | *[role and responsibilities on the project]* | *[time in role]* | *[describe the experience relevant to this position]* |
|  |  |  |  |
|  |  |  |  |

**Declaration**

I, the undersigned *[insert either “Contractor’s Representative” or “Key Personnel” as applicable]*, certify that to the best of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Bid:

|  |  |
| --- | --- |
| **Commitment** | **Details** |
| **Commitment to duration of contract:** | *[insert period (start and end dates) for which this Contractor’s Representative or Key Personnel is available to work on this contract]* |
| **Time commitment:** | *[insert period (start and end dates) for which this Contractor’s Representative or Key Personnel is available to work on this contract]* |

I understand that any misrepresentation or omission in this Form may:

1. be taken into consideration during Bid evaluation;
2. result in my disqualification from participating in the Bid;
3. result in my dismissal from the contract.

**Name of** Contractor’s Representative or **Key Personnel: [*insert name*]**

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: (day month year): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Countersignature of authorized representative of the Bidder:**

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: (day month year): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Commercial Terms and Conditions**

[Bidder shall specify any deviations to the provisions of the Bidding Document (other than Technical Specifications) in particular those specified in Part 3 of the Bidding document including General and Particular Conditions of Contract. If “None” it shall be confirmed accordingly]

Bidders Qualification without prequalification

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

Form ELI -1.1

Bidder Information Form

Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  
OCBI/LCB No. and title: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  
Page *\_\_\_\_\_\_\_\_\_\_*of *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*pages

|  |
| --- |
| Bidder's name |
| In case of Joint Venture (JV), name of each member: |
| Bidder's actual or intended country of registration:  *[indicate country of Constitution]* |
| Bidder's actual or intended year of incorporation: |
| Bidder's legal address [in country of registration]: |
| Bidder's authorized representative information  Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Address: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Telephone/Fax numbers: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  E-mail address: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* |
| 1. Attached are copies of original documents of  🞎 Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITB 4.4  🞎 In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1  🞎 In case of state-owned enterprise or institution, in accordance with ITB 4.6, documents establishing:   * Legal and financial autonomy * Operation under commercial law * Establishing that the Bidder is not under the supervision of the Employer   2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. *[If required under BDS ITB 47.1, the successful Bidder shall provide additional information on beneficial ownership, using the Beneficial Ownership Disclosure Form.]* |

Form ELI -1.2

Bidder's JV Information Form  
(to be completed for each member of Bidder’s JV)

Bidder’s Name: \_\_\_\_\_\_\_\_\_\_\_\_\_

Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

JV Member’s Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_OCBI/LCB No. and title: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Page *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* of *\_\_\_\_\_\_\_\_\_\_\_\_* pages

Name of the Reporting Firm\_\_\_\_\_\_\_\_

JV Information of the Reporting Firm

|  |
| --- |
| Bidder’s JV name: |
| JV member’s name: |
| JV member’s country of registration: |
| JV member’s year of constitution: |
| JV member’s legal address in country of constitution: |
| JV member’s authorized representative information  Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Telephone/Fax numbers: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  E-mail address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 1. Attached are copies of original documents of  🞎 Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITB 4.4.  🞎 In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and that they are not under the supervision of the Employer, in accordance with ITB 4.6.  2. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. *[If required under BDS ITB 47.1, the successful Bidder shall provide additional information on beneficial ownership for each JV member using the Beneficial Ownership Disclosure Form.]* |

**Form ELI -1.3**

**Eligible Materials, Equipment and Services Form**

(to be completed by the Bidder)

Bidder’s Name: \_\_\_\_\_\_\_\_\_\_\_\_\_

Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

OCBI/LCB No. and title: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Page*\_\_\_\_\_\_\_*of*\_\_\_\_\_\_\_* pages

**Eligible Materials, Equipment and Services**: In compliance with ITB 5, provide the following information for all Materials, Equipment and Services included under the Contract. Instead of listing each and every item, broad categories are listed below. Include all items in these categories unless any item to be supplied is not covered by any one of them in which case list them separately.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1  S. No. | 2  Description of Broad Category of Materials/Equipment and Services | 3  Estimated Quantity*- [Indicate: “All quantity as required” or quantity by subcategory of items]* | Estimated Aggregate Value (US Dollar Equivalent) | 5  Countries of Origin |
| 1 | All Construction and Testing Materials including raw materials, Cement, Steel, Timber, Lime, Sand, Aggregates, Plastics, Bitumen, Oils, Lubricants, etc. as per specification |  |  |  |
| 2 | All types of Plants, Equipment including Laboratory and Testing Equipment, All types of Vehicles, Furniture, Fittings and Fixtures, Pipes, Tools, Steel and Other Structures, Utensils, Computers and Other IT Equipment, etc. as per specification |  |  |  |
| 3 | All Types of Services including Construction, Installation, Assembly, Inspection, Supervision, Care of Sites, Labor (Skilled and Unskilled), Drilling, Mapping, Transportation and Insurance, etc. as per specification |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Form CON – 2

Historical Contract Non-Performance, Pending Litigation and Litigation History

*[The form shall be filled in by the Bidder, and each member of a Joint Venture, if the Bidder is a JV]*

Bidder’s Name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*JV Member’s Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_OCBI/LCB No. and title: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Page *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*of *\_\_\_\_\_\_\_\_\_\_\_\_\_\_*pages

Name of the Reporting Firm\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Historical Contract Non-Performance, Pending Litigation and Litigation History of the Reporting Firm

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria | | | | | | | | | |
| 🞎 Contract non-performance did not occur since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 2.1.  🞎 Contract(s) not performed since 1st January *[insert year]* specified in Section III, Evaluation and Qualification Criteria, requirement 2.1 | | | | | | | | | |
| **Year** | **Non- performed portion of contract** | | | **Contract Identification** | | | **Total Contract Amount (current value, currency, exchange rate and US$ equivalent)** | | |
| *[insert year]* | *[insert amount and percentage]* | | | Contract Identification: *[indicate complete contract name/ number, and any other identification]*  Name of Employer: *[insert full name]*  Address of Employer: *[insert street/city/country]*  Reason(s) for nonperformance: *[indicate main reason(s)]* | | | *[insert amount]* | | |
| Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria | | | | | | | | | |
| 🞎 No pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3. | | | | | | | | | |
| 🞎 Pending litigation in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.3 as indicated below. | | | | | | | | | |
| **Year of dispute** | | | | **Amount in dispute (currency)** | | | **Contract Identification** | | **Total Contract Amount (currency), USD Equivalent (exchange rate)** |
|  | | | |  | | | Contract Identification: \_\_\_\_\_\_\_\_\_\_  Name of Employer: \_\_\_\_\_\_\_\_\_\_\_\_  Address of Employer: \_\_\_\_\_\_\_\_\_\_\_  Matter in dispute: \_\_\_\_\_\_\_\_\_\_\_\_\_  Party who initiated the dispute: \_\_\_\_  Status of dispute: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_* | |  |
|  | | | |  | | | Contract Identification:  Name of Employer:  Address of Employer:  Matter in dispute:  Party who initiated the dispute:  Status of dispute: | |  |
| Litigation History in accordance with Section III, Evaluation and Qualification Criteria | | | | | | | | | |
| 🞎 No Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4.  🞎 Litigation History in accordance with Section III, Evaluation and Qualification Criteria, Sub-Factor 2.4 as indicated below. | | | | | | | | | |
| **Year of award** | | | **Outcome as percentage of Net Worth** | | | **Contract Identification** | | | **Total Contract Amount (currency), USD Equivalent (exchange rate)** |
| *[insert year]* | | | *[insert percentage]* | | | Contract Identification: [indicate complete contract name, number, and any other identification]  Name of Employer: *[insert full name]*  Address of Employer: *[insert street/city/country]*  Matter in dispute: *[indicate main issues in dispute]*  Party who initiated the dispute: *[indicate “Employer” or “Contractor”]*  Reason(s) for Litigation and award decision *[indicate main reason(s)]* | | | *[insert amount]* |

Form CON – 3

Environmental and Social (ES) Performance Declaration

*[The following table shall be filled in by the Bidder, by each member of a Joint Venture and each Specialized Subcontractor]*

Bidder’s Name: *[insert full name]*Date: *[insert day, month, year]*Joint Venture Member’s or Specialized Subcontractor’s Name: *[insert* *full name]*OCBI/LCB No. and title: *[insert IFB number and title]*Page *[insert page number]* of *[insert total number]* pages

Name of the Reporting Firm\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Environmental and Social (ES) Performance Declaration of the Reporting Firm

|  |  |  |  |
| --- | --- | --- | --- |
| Environmental and Social Performance Declaration  in accordance with Section III, Qualification Criteria, and Requirements | | | |
|  **No suspension or termination of contract**: An employer has not suspended or terminated a contract and/or called the performance security for a contract for reasons related to Environmental or Social (ES) performance since the date specified in Section III, Qualification Criteria, and Requirements, Sub-Factor 2.5.   **Declaration of suspension or termination of contract**: The following contract(s) has/have been suspended or terminated and/or Performance Security called by an employer(s) for reasons related to Environmental or Social (ES) performance since the date specified in Section III, Qualification Criteria, and Requirements, Sub-Factor 2.5. Details are described below: | | | |
| **Year** | **Suspended or terminated portion of contract** | **Contract Identification** | **Total Contract Amount (current value, currency, exchange rate and US$ equivalent)** |
| *[insert year]* | *[insert amount and percentage]* | Contract Identification: *[indicate complete contract name/ number, and any other identification]*  Name of Employer: *[insert full name]*  Address of Employer: *[insert street/city/country]*  Reason(s) for suspension or termination: *[indicate main reason(s) e.g. gender-based violence; sexual exploitation or sexual abuse breaches]* | *[insert amount]* |
| *[insert year]* | *[insert amount and percentage]* | Contract Identification: *[indicate complete contract name/ number, and any other identification]*  Name of Employer: *[insert full name]*  Address of Employer: *[insert street/city/country]*  Reason(s) for suspension or termination: *[indicate main reason(s)]* | *[insert amount]* |
| *…* | *…* | *[list all applicable contracts]* | *…* |
| **Performance Security called by an employer(s) for reasons related to ES performance** | | | |
| Year | Contract Identification | | Total Contract Amount (current value, currency, exchange rate and US$ equivalent) |
| *[insert year]* | Contract Identification: *[indicate complete contract name/ number, and any other identification]*  Name of Employer: *[insert full name]*  Address of Employer: *[insert street/city/country]*  Reason(s) for calling of performance security: *[indicate main reason(s) e.g. for gender-based violence; sexual exploitation, or sexual abuse breaches]* | | *[insert amount]* |

Form FIN – 3.1: Financial Situation and Performance

*[The form shall be filled in by the Bidder, and each member of a Joint Venture, if the Bidder is a JV]*

Bidder’s Name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*JV Member’s Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_OCBI/LCB No. and title: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Page *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*of *\_\_\_\_\_\_\_\_\_\_\_\_\_\_*pages

Name of the Reporting Firm­­­­­­­­­­­­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_

Financial Situation and Performance of the Reporting Firm

**1. Financial data**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Type of Financial information in**  **(currency)** | **Historic information for previous** *\_\_\_\_\_\_\_\_\_years,*  *\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  **(amount in currency, currency, exchange rate\*, USD equivalent)** | | | | |
|  | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| Statement of Financial Position (Information from Balance Sheet) | | | | | |
| Total Assets (TA) |  |  |  |  |  |
| Total Liabilities (TL) |  |  |  |  |  |
| Total Equity/Net Worth (NW) |  |  |  |  |  |
| Current Assets (CA) |  |  |  |  |  |
| Current Liabilities (CL) |  |  |  |  |  |
| Working Capital (WC) |  |  |  |  |  |
| Information from Income Statement | | | | | |
| Total Revenue (TR) |  |  |  |  |  |
| Profits Before Taxes (PBT) |  |  |  |  |  |
| Cash Flow Information | | | | | |
| Cash Flow from Operating Activities |  |  |  |  |  |

\*Refer to ITB 15 for the exchange rate

**2. Sources of Finance**

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

|  |  |  |
| --- | --- | --- |
| No. | Source of finance | Amount (US$ equivalent) |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
|  |  |  |

**3. Financial documents**

The Bidder and its parties shall provide copies of financial statements for *\_\_\_\_\_\_\_\_\_\_\_*years pursuant Section III, Evaluation and Qualifications Criteria, Sub-factor 3.1. The financial statements shall:

(a) reflect the financial situation of the Bidder or in case of JV member, and not an affiliated entity (such as parent company or group member).

(b) be independently audited or certified in accordance with local legislation.

(c) be complete, including all notes to the financial statements.

(d) correspond to accounting periods already completed and audited.

🞎 Attached are copies of financial statements[[9]](#footnote-9) for the *\_\_\_\_\_\_\_\_\_\_\_\_*years required above; and complying with the requirements

Form FIN – 3.2: Average Annual Construction Turnover

*[The form shall be filled in by the Bidder, and each member of a Joint Venture, if the Bidder is a JV]* Bidder’s Name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*JV Member’s Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_OCBI/LCB No. and title: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Page *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*of *\_\_\_\_\_\_\_\_\_\_\_\_\_\_*pages

Name of the Reporting Firm\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Average Annual Construction Turnover of the Reporting Firm

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | **Annual turnover data (construction only)** | | |
| **Year** | **Amount**  **Currency** | | **Exchange rate** | **USD equivalent** |
| *[indicate year]* | *[insert amount and indicate currency]* | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
|  |  | |  |  |
| Average Annual Construction Turnover \* |  | |  |  |

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

Form FIN – 3.3: Financial Resources

*[The form shall be filled in by the Bidder, and each member of a Joint Venture, if the Bidder is a JV]*

Bidder’s Name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*JV Member’s Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_OCBI/LCB No. and title: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Page *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*of *\_\_\_\_\_\_\_\_\_\_\_\_\_\_*pages

Name of Reporting Firm: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Financial Resources of the Reporting Firm

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as specified in Section III, Evaluation and Qualification Criteria consistent with information provided under form FIN-3.4

|  |  |  |
| --- | --- | --- |
| **Financial Resources** | | |
| **No.** | **Source of financing** | **Amount (US$ equivalent)** |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
|  |  |  |

Form FIN – 3.4: Current Contract Commitments / Works in Progress

*[The form shall be filled in by the Bidder, and each member of a Joint Venture, if the Bidder is a JV]*

Bidder’s Name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*JV Member’s Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_OCBI/LCB No. and title: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Page *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*of *\_\_\_\_\_\_\_\_\_\_\_\_\_\_*pages

Name of Reporting Firm: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Current Contract Commitments / Works in Progress of the Reporting Firm

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

Based on the value of all outstanding works and average monthly invoicing, the Bidder and each Member to a JV shall explain how completion by estimated time is proposed to be achieved for each contract listed.

The Bidder and each Member of a JV shall also demonstrate based on access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments consistent with information provided by the Bidder/Each JV Member under Forms FIN--3.1, FIN 3.3 and this Form FIN 3.4 how the overall cash flow requirements for this Contract and their all other current contract commitments will be met.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Current Contract Commitments and Cash-Flow Requirements | | | | | | |
| **1**  **S. No.** | **2**  **Name of Contract** | **3**  **Employer’s Contact Address, Tel, Fax** | **4**  **Value of Outstanding Work [Current US$ Equivalent]** | **5**  **Estimated Completion Date/Time in Months to complete** | **6**  **Average Monthly Invoicing Over Last Six Months [US$/month]** | **7**  **Estimated Cash-Flow Required for every 4 months= [Value under column 4 divided by Months under column 5 times 4]** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Explanation:** | | | | | | |

Form EXP - 4.1: General Construction Experience

*[The form shall be filled in by the Bidder, and each member of a Joint Venture, if the Bidder is a JV]*

Bidder’s Name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*JV Member’s Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_OCBI/LCB No. and title: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Page *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*of *\_\_\_\_\_\_\_\_\_\_\_\_\_\_*pages

Name of the Reporting Firm\_\_\_\_\_\_\_\_\_\_\_\_\_

General Construction Experience of the Reporting Firm

|  |  |  |  |
| --- | --- | --- | --- |
| Starting  Year | Ending  Year | Contract Identification | Role of  Bidder |
|  |  | Contract name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Brief Description of the Works performed by the  Bidder: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Amount of contract: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Name of Employer: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Address: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* |  |
|  |  | Contract name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Brief Description of the Works performed by the  Bidder: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Amount of contract: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Name of Employer: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Address: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* |  |
|  |  | Contract name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Brief Description of the Works performed by the  Bidder: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Amount of contract: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Name of Employer: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Address: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* |  |

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

*[The form shall be filled in by the Bidder, and each member of a Joint Venture, if the Bidder is a JV and specialized Sub-Contractors, if applicable]*

Bidder’s Name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*JV Member’s Name if the Bidder is a JV\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Specialized Subcontractor’s Name *[Insert full name if permitted] \_\_\_\_\_\_\_\_\_\_\_*

OCBI/LCB No. and title: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Page *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*of *\_\_\_\_\_\_\_\_\_\_\_\_\_\_*pages

Name of the Reporting Firm\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Specific Construction and Contract Management Experience of the Reporting Firm

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Similar Contract No.** | **Information** | | | |
| Contract Identification | *[insert contract name and number, if applicable]* | | | |
| Name of the firm that was awarded the contract identified above |  | | | |
| Award date | *[insert day, month, year, e.g., 15 June 2016]* | | | |
| Completion date\*\* | *[insert day, month, year, e.g., 03 May 2018]* | | | |
| Role in Contract identified above  *[check the appropriate box. Check box as “Prime Contractor” if contract was awarded to the reporting firm as a single construction contractor. Check Box “Member in JV” if the contract was awarded to a JV and was a member of the JV. Check Box “Management Contractor” if the reporting firm signed the construction contract and was responsible for its performance and completion of works as per terms and conditions of the contract. Also see \*\*\* below. Check Box “Sub-Contractor” if the reporting firm was a sub-contractor appointed by the main contractor who was awarded the contract]* | Prime Contractor 🞎 | Member in  JV  🞎 | Management Contractor  🞎\*\*\* | Sub-contractor 🞎 |
| Total Contract Amount | *[insert total contract amount in local currency]* | | US$ *[insert*  *Exchange rate and total contract amount in US$*  *equivalent]\** | |
| If reporting firm was a member in a “JV” or “sub-contractor”, as per box checked above, it can claim experience only for its’ own share of works actually performed under the contract and not the entire contract. As such, the reporting firm shall indicate its share as a percentage of the total Contract amount and also in absolute amount | *[insert the percentage of the total contract amount indicated above which represents reporting firm’s share under the contract performed]* | *[insert amount the reporting firm received or entitled to for the works performed as its share in the total contract amount in local currency]* | *[insert exchange rate and total contract amount in US$ equivalent]\** | |
| Roles and Responsibilities | *[Briefly describe roles and responsibilities of the Reporting firm under the above contract]* | | | |
| Employer's Name: | *[Insert Full Name]* | | | |
| Address:  Telephone/fax number  E-mail: | *[indicate street / number / town or city / country]*  *[insert telephone/fax numbers, including country and*  *city area codes]*  *[insert e-mail address, if available]* | | | |

\* Refer Section III for guidance on the date and source of exchange rate.

\*\* If contract is not fully completed but substantially completed then indicate the absolute total value of the completed part of the contract and also the percentage completion calculated as a percentage of the total value of the contract upon completion.

\*\*\* In claiming experience as a Management Contractor, the Bidder shall furnish copies of the contracts signed by the Bidder demonstrating scope of construction works performed. It should be noted that a Construction Manager is not the same as a Management Contractor. Construction Manager is a Consultant for or agent of the Borrower and mainly responsible for supervision of the construction works and does not take the risks associated with the performance of the construction contracts as the Management Contractor does. Instead of performing the works directly, a Management Contractor contracts out and manages the work of other contractors taking on full responsibility and risk for price, quality and timely performance as per the terms and conditions of contracts it signs with the Employers.

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

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

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

*[The form shall be filled in by the Bidder, and each member of a Joint Venture, if the Bidder is a JVand specialized Sub-Contractors, if applicable]*

Bidder's Name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Bidder's JV Member Name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Sub-contractor's Name[[10]](#footnote-10) (as per ITB 34): *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*OCBI/LCB No. and title: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Page *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*of *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*pages

Name of the Reporting Firm\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Construction Experience in Key Activities of the Reporting Firm under each contract completed or under implementation

Bidder, Members of the JV or proposed Specialized Contractors claiming experience for key activities must complete the information in this form as per ITB 34 and Section III, Evaluation and Qualification Criteria, Sub-Factor 4.2. *[Provide information for each contract separately when claiming experience by aggregating quantities of the key activity completed in more than one contract]*

1. Key Activity No One: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

|  | **Information** | | | | |
| --- | --- | --- | --- | --- | --- |
| Contract Identification |  | | | | |
| Award date |  | | | | |
| Completion date­­ as per Contract |  | | | | |
| Role in Contract | Prime Contractor  🞎 | Member in  JV  🞎 | | Management Contractor  🞎 | Sub-contractor  🞎 |
| Total Contract Amount |  | | | US$ | |
| Description of the key activities in accordance with Sub-Factor 4.2(b) of Section III: | **Information** | | | | |
|  | *[insert response to Employer’s inquiry indicated in left*  *column]* | | | | |
|  |  | | | | |
|  |  | | | | |
|  |  | | | | |
| Quantity (Volume, number or rate of production, as applicable for the Key activity) performed under the contract per year or part of the year. For each year indicate quantities performed and specify both start and end months.  *[Insert extent of participation indicating actual quantity of key activity successfully completed in the role performed]* | Total quantity in the contract  (i) | | Percentage  participation  (ii) | | Actual Quantity Performed  (i) x (ii) |
| Year 1 *[e.g. 2016 from January to September]* |  | |  | |  |
| Year 2 *[e.g. 2017 from January to December]* |  | |  | |  |
| Year 3 |  | |  | |  |
| Year 4 |  | |  | |  |
| In response to the criterion for rates of production in 12 consecutive months or less, if performance under more than one contract spread over more than one year are considered, the Applicant shall provide information by months for each such contract to demonstrate which same 12 consecutive months meet the minimum rate of production. |  | | | | | |
| Employer’s Name: |  | | | | | |
| Address:  Telephone/fax number  E-mail: |  | | | | | |

2. Activity No. Two

3. …………………

Form EXP - 4.2(c)

Specific Experience in Managing ES aspects

*[The following table shall be filled in for contracts performed by the Bidder, and each member of a Joint Venture]*

Bidder's Name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Date: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*Bidder's JV Member Name: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*RFB No. and title: *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Page *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*of *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*pages

* + - 1. Key Requirement no 1 in accordance with 4.2 (c): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Contract Identification |  | | | |
| Award date |  | | | |
| Completion date |  | | | |
| Role in Contract | Prime Contractor   | Member in  JV   | Management Contractor   | Subcontractor   |
| Total Contract Amount |  | | US$ | |
| Details of relevant experience |  | | | |

* + - 1. Key Requirement no 2 in accordance with 4.2 (c): *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
      2. Key Requirement no 3 in accordance with 4.2 (c): *\_\_\_\_\_\_\_\_\_\_*

|  |
| --- |
| Form of Bid Security - Demand Guarantee |

*[Guarantor letterhead or SWIFT identifier code]*

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

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

**OCBI/LCB No.:** *\_\_\_\_\_\_\_\_ [Employer to insert same OCBI number as in procurement plan]*

**Date:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *[Insert date of issue]*

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

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

We have been informed that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its Bid (hereinafter called "the Bid") for the execution of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ under Invitation for Bids No. \_\_\_\_\_\_\_\_\_\_\_ (“the IFB”) and Open Competitive Bidding (International) No--------------------- (“ the OCBI”).

Furthermore, we understand that, according to the Beneficiary’s conditions, Bids must be supported by a Bid guarantee.

At the request of the Applicant to issue this guarantee, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_\_\_\_\_\_\_, (\_\_\_\_\_\_\_\_\_\_\_\_) upon receipt by us of the Beneficiary’s complying demand, supported by the Beneficiary’s statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:

(a) has withdrawn its Bid during the period of Bid validity set forth in the Applicant’s Letter of Bid (“the Bid Validity Period”), or any extension thereto provided by the Applicant; or

(b) having been notified of the acceptance of its Bid by the Beneficiary during the Bid Validity Period or any extension thereto provided by the Applicant, (i) has failed to execute the contract agreement, or (ii) has failed to furnish the Performance Security and, if required, the Environmental and Social (ES) Performance Security, in accordance with the Instructions to Bidders (“ITB”) of the Beneficiary’s Bidding document.

This guarantee will expire: (a) if the Applicant is the successful Bidder, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security and, if required, the Environmental and Social (ES) Performance Security, issued to the Beneficiary in relation to such contract agreement; or (b) if the Applicant is not the successful Bidder, upon the earlier of (i) our receipt of a copy of the Beneficiary’s notification to the Applicant of the results of the Bidding process; or (ii)twenty-eight days after the end of the Bid Validity Period.

Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

*[signature(s)]*

*[Note: In case the Applicant is a Joint Venture indicate the name of the Joint Venture or names of all members of the Joint Venture that submitted or will submit the Bid]*

Form of Bid-Securing Declaration

**Date:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**OCBI/LCB No.:** *[insert number as in procurement plan].*: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Alternative No.:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

To:

We, the undersigned, declare that:

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

We accept that we will automatically be suspended from being eligible for Bidding in any contract with the Employer for the period of time of *[insert number of months or years* *consistent with BDS 19.9]* \_\_\_\_\_\_\_\_\_\_\_\_\_\_, if we are in breach of our obligation(s) under the Bid conditions, because we:

(a) have withdrawn our Bid during the period of Bid validity specified in the Letter of Bid or any extension thereto provided by us; or

(b) having been notified of the acceptance of our Bid by the Employer during the period of Bid validity, (i) fail or refuse to execute the Contract, if required, or (ii) fail or refuse to furnish the Performance Security and, if required, the Environmental and Social (ES) Performance Security, in accordance with the ITB 48.

The start date of suspension shall be the first date we perform any of the actions mentioned in paragraphs (a) and (b) above. We understand this Bid-Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Name of the Bidder**\***

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

Title of the person signing the Bid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature of the person named above \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date signed \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ day of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_

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

\*\* Person signing the Bid shall have the power of attorney given by the Bidder attached to the Bid

*[Note: In case of a Joint Venture, the Bid-Securing Declaration must be in the name of all members to the Joint Venture that submits the Bid.]*

## 

## Section V - Eligible Countries

Eligibility for the Provision of Goods, Works and Non-Consulting Services in   
Bank Group Financed Procurement

1. **Provisions under Section 5 “Eligibility” of the Procurement Policy for Bank Group Funded Operations and Chapter A2 of the Operations Procurement Manual under Procurement Framework of the African Development Bank**
2. The African Development Fund (ADF) permits firms and individuals from all countries to offer goods, works and services for ADF funded projects.

However, the proceeds of any Financing undertaken in the operations of the African Development Bank (ADB) and the Nigeria Trust Fund (NTF) shall be used for procurement of goods and works, including the related services, provided by bidders from Eligible[[11]](#footnote-11) Countries.[[12]](#footnote-12) Any conditions for participation shall be limited to those that are essential to ensure the firm’s capability to fulfill the contract in question. In the case of ADB and NTF, bidders from non-Member Countries offering goods, works and related services (including transportation and insurance) are not eligible even if they offer these from Eligible Member Countries. Any waiver to this rule will be in accordance with the Articles 17(1) (d) of the Agreement Establishing the African Development Bank and 4.1 of the Agreement Establishing the Nigeria Trust Fund.

1. **Rules and Procedures for Procurement of Goods and Works**

Overview

1. The eligibility criteria for participation in the supply of goods, works and related services, to be procured through the ADB and NTF Financing, derive from the requirements of the Agreement Establishing the African Development Bank, Article 17.1.d, and the Agreement Establishing the Nigeria Trust Fund, Article 4.1. The foregoing requirements basically prescribe two types of eligibility criteria:

1. The eligibility of the bidder;
2. The eligibility of the goods, works and related services.

Eligibility of the Bidder under the ADB and NTF Financing

2. The eligibility of the bidder shall be based on nationality, in accordance with the following rules:

(a) Natural Persons:A natural person is eligible if he or she is a national of a Member Country of the ADB. Where a person has more than one nationality, such a person shall be eligible if the nationality indicated in his or her bid is that of a Member Country of the ADB.

(b) Corporations:A corporation is eligible if it satisfies the following criteria:

1. it is incorporated in a country that is a Member of the ADB;
2. it is a national of a country that is a Member of the ADB, as determined by the law of its place of incorporation;
3. it has its principal place of business in a country that is a Member of the ADB.

(c) Joint Ventures and Associations: An unincorporated joint venture, partnership, or association, shall be eligible if more than 50% of the value of its works and/or services is executed by its members satisfying the eligibility requirements for individuals or corporations.

Eligibility of the Goods, Works and Related Services

3. In order to be eligible, the goods to be procured must have been mined, grown, or produced, in the form in which they are purchased, in an Eligible Member Country.

4. For works contracts, which may include civil works, plant construction, or turnkey contracts, the contractor must satisfy the nationality criteria of eligibility, either as a natural person, or corporation, or joint venture and association. Labour, equipment, and materials needed for carrying out the works contract, shall be supplied from Eligible Member Countries.

5. For contracts, which have been awarded on the basis of Cost, Insurance and Freight (CIF), or Carriage and Insurance Paid (CIP), bidders shall be free to arrange for ocean and other transportation, and the related insurance, from any Eligible Member Country. On the other hand, where goods are shipped on FOB basis, and the Bank has agreed to finance transportation and insurance separately, which are arranged by the purchaser, under a separate contract, the Bank shall be satisfied that the services are supplied from Eligible Member Countries.

**List of Eligible Countries**

6. List of Eligible countries can be found in African Development Bank’s website: [*https://www.afdb.org/en/about-us/corporate-information/members/*](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.afdb.org%2Fen%2Fabout-us%2Fcorporate-information%2Fmembers%2F&data=02%7C01%7C%7Cec75998605974f2b8fb408d5a3bb00f0%7C84df9e7fe9f640afb435aaaaaaaaaaaa%7C1%7C0%7C636594946502339839&sdata=B41Q0Bv9a2730LM37HNBnpPc8kms7rlrr6JUiACcvUg%3D&reserved=0)

**Ineligible Countries in reference to ITB 4.8 and ITB 5.1**

7. In reference to ITB 4.8 and ITB 5.1, for the information of the Bidders, at the present time firms, goods and services from the following countries are excluded from this Bidding process:

Under ITB 4.8(a) and ITB 5.1: *[insert a list of the countries following approval by the Bank to apply the restriction or state “none”].*

Under ITB 4.8(b) and ITB 5.1: *[insert a list of the countries following approval by the Bank to apply the restriction or state “none”]*

## Section VI - Fraud and Corruption

1. **Purpose**
   1. The Bank’s Integrity Framework and this annex apply with respect to procurement under Bank Investment Project Financing operations.
2. **Requirements**
3. The Bank requires that Borrowers (including beneficiaries of Bank financing); bidders (applicants), consultants, contractors and suppliers; any sub-contractors, sub-consultants, service providers or suppliers; any agents (whether declared or not); and any of their personnel, observe the highest standard of ethics during the procurement process, selection and contract execution of Bank-financed contracts, and refrain from Fraud and Corruption[[13]](#footnote-13).
4. To this end, the Bank:
5. Defines, for the purposes of this provision, the terms set forth below as follows:
6. “corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party[[14]](#footnote-14);
7. “fraudulent practice” is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party[[15]](#footnote-15) to obtain financial or other benefit or to avoid an obligation;
8. “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
9. “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
10. “obstructive practice” is:
11. deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
12. acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under paragraph 2.2 e. below.
13. Rejects a proposal for award if the Bank determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
14. In addition to the legal remedies set out in the relevant Legal Agreement, may take other appropriate actions, including declaring misprocurement, if the Bank determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement process, selection and/or execution of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
15. Pursuant to the Banks Integrity Framework and in accordance with the Bank’s prevailing sanctions policies and procedures, may sanction a firm or individual, either indefinitely or for a stated period of time, including by publicly declaring such firm or individual ineligible (i) to be awarded or otherwise benefit from a Bank-financed contract, financially or in any other manner;[[16]](#footnote-16) (ii) to be a nominated[[17]](#footnote-17) sub-contractor, consultant, manufacturer or supplier, or service provider of an otherwise eligible firm being awarded a Bank-financed contract; and (iii) to receive the proceeds of any loan made by the Bank or otherwise to participate further in the preparation or implementation of any Bank-financed project;
16. Requires that a clause be included in bidding documents and in contracts financed by a Bank loan, requiring (i) bidders (applicants), consultants, contractors, and suppliers: and their sub-contractors, sub-consultants, service providers, suppliers, agents, personnel, permit the Bank to inspect[[18]](#footnote-18) all accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the Bank.

# Part 2: Works’ Requirements

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| Section VII - Works’ Requirements |

Contents

Scope of Works 167

Specification 168

Environmental and Social (ES) requirements 169

Contractor’s Representative and Key Personnel 174

Drawings 175

Supplementary Information 176

|  |
| --- |
| 7 A Scope of Works |
|  |

The Roads Authority intends to construct the [Malawi] Chiponde/Mandimba [Mozambique] One Stop Border Post and associated external works at Chiponde/Mandimba border on the Malawian side. The work will involve also the construction of

1. Passenger Terminal
2. Police & Health Building
3. Commercial Building
4. Scanner Building
5. Cafeteria Building
6. Drivers Toilets
7. Utility Building
8. Bus Inspection
9. Vehicle Maintenance
10. Agriculture Building
11. Solid Waste Building
12. Hazardous Goods Store
13. Entry Gates
14. External Works
15. Roads & Parking Areas
16. Approach (M003) road and Circulation roads
17. Weighbridge
18. Drivers Toilets and Associated Works

This document is for construction of major and minor buildings as itemized above including roads and parking areas within the operative area of the One Stop Border Post at the Chiponde/Mandimba border and construction of Approach (M003) - (1.54 Km) and Circulation roads (2.1 Km) and Weighbridge.

**A1. DESCRIPTION OF THE WORKS**

**A1.1 General**

The project is about construction of buildings, external works and roads and parking areas within the operative area at Chiponde in Mangochi District. The total distance coverage for the roads is 3.64 Km and parking area of 9247m2 and about construction and improvement of the M003 (Chiponde / Mandimba Road), Roads outside operative area and weighbridges in Mangochi District. The total distance coverage for the roads is 3.64 Km. The scope will also involve improving the existing M003 and new circulation roads in operative area.

**A1.2 Roadworks**

1. **General**

The scope will involve upgrading the existing earth road (M003) and new OSBP circulation roads. There are 2 No. Road sections comprising approach and circulation roads. The approach road extends from the M003 road and commences at the junction of road S131 with M003. The Nasato river traverses through the approach road. The approach and circulation roads have a total distance of 1.54 km and 2.1 km, respectively.

**(b) Horizontal alignment**

The designed horizontal alignment has substantially remained the same as the existing. As for the access road the designed horizontal alignment has substantially remained the same as the existing, with few necessary improvements at km 55+175 and km 59+250 to avoid cemeteries.

**(c) Vertical alignment**

The vertical alignment has been raised such that the finished road surface is generally above the existing road level and the surrounding ground, with minor improvements to fit to the geometric design.

**(d) Pavement**

The pavement for to be constructed for the road consists of the following:

1. **Rigid Pavement**

* 200mm thick reinforced concrete pavement (30MPa) with A393 wire; (20mm dowels @300mm and 12mm Tie bars@600mm).
* 200mm Natural gravel sub-base with CBR ≥ 30%.

1. **Flexible Pavement**

* 50 mm hot mix asphalt;
* 150 mm thick C3 base course constructed using natural gravel materials stabilized with cement to obtain 7-day UCS 1.5 – 3.0 MPa @100% Mod AASHTO, Minimum ITS = 250 kPa;
* 150 mm thick G5 Natural Gravel base course, Minimum CBR = 45 % @ 95 % Mod. AASHTO; PI < 10; Maximum swell 0,5 % @ 100 % Mod. AASHTO.
* 300 mm thick selected layer, G7 quality materials, soaked CBR >15%;

**A1.3 Drainage Structures**

**Pipe Culverts**

The existing pipe culverts will be replaced with circular pipe culverts as indicated on the drawings and to be confirmed by the Engineer on site.

**Box Culverts**

Reinforced concrete box culverts, with variable sizes and number of openings will be constructed during this contract on locations as indicated on drawings and to be confirmed by the Engineer.

**A1.4 Availability of Materials**

Potential borrow areas are available near the project road route. The contractor shall undertake a detailed soils and materials survey to identify materials of the required quality and quantity to complete the works in accordance with the contract. The materials investigation report provided by the Contracting Authority may be used only as a guide.

Materials to be used in the works shall be stockpiled, at no extra cost, well in advance and tested to confirm compliance with the specifications, prior to hauling to site.

**A1.5 Construction Strategy**

The construction strategy should enable the completion of the construction of the buildings, associated works and road without the interference with the normal through traffic.

**A1.6 Maintenance Works**

The Contractor shall be responsible for the maintenance of all detours necessary.

**A2. DRAWINGS**

Any un-scaled or scaled drawings issued as part of this document, shall be used for bidding purpose only, and shall not be used for construction. The Contractor will be provided with drawings approved for construction at the commencement of the Contract.

The Contractor will be supplied with two paper prints of the full-scale drawing. Only figured dimensions shall be used and dimensions shall not be scaled on the drawings unless so instructed by the Engineer. These drawings need to be updated as the project progresses.

The Engineer will provide any dimensions or information, which may have been omitted from the drawings.

**A3. SITE FACILITIES**

**A3.1 Site facilities available**

The Contractor will be responsible for the provision of a suitable site for his construction camp and to provide accommodation for his personnel. If the Employer can make any specific site available to the Contractor, such site will be pointed out at the site inspection.

The Contractor shall make his own arrangements for the supply of potable water and water for construction purposes, and for electrical power and all other services as well as all safety and security measures necessary for the duration of the contract. In his Bid he must make provision for all negotiations and procurement of these services, which will be deemed to have been included in his tendered rates.

**A3.2 Site facilities required**

Under this contract the Contractor shall provide for use by the Engineer such facilities as detailed in the Particular specifications.

**A4. SECURITY**

The Contractor will be responsible for the security of his personnel and construction plant on and around the Site of the Works and for the security of his camp, and no claims in this regard will be considered by the Employer.

**A5. CLIMATIC CONDITIONS**

The climate is moderate to warm and sub-humid. Rainfall of approximately 854 mm per year can be expected, with the rainy season being during the months of November to April.

**A6. FEATURES REQUIRING SPECIAL ATTENTION**

**A6.1 Co-operation with others on the Site**

All work shall be carried out in such a way as to allow access and afford all reasonable facilities for any other Contractor and his workmen, including the workmen of the Employer or any other person who may be employed in the execution of the work and/or operations at or near the site of work.

The contractor shall endeavor to co-operate with such persons as may be necessary without interference with their work and shall observe all the instructions and orders of the Engineer in that regard. In the preparation of his Programme of Work the Contractor shall take full account of and co-ordinate his programme with the programming of the work of other Contractors.

**A6.2 Roads and Site to be kept clean**

The Contractor shall take great care and all reasonable precautions to ensure that roads and thoroughfares used by him either for the construction of the works or the transport of plant, labor and materials are kept clean of any spillage as a result of construction or transport operations. In the event of any such spillage, the Contractor shall take all necessary and immediate steps to clean the area involved.

**A6.3 Working hours**

Normal working hours shall be 48 hours per week between sunrise and sunset Monday to Saturday. The Contractor shall strictly observe and implement the stipulations of the Employment Act, 1999, (and any amendments thereof) of the Malawi Laws with particular attention to Part VI Clause 36 to 49.

Should the Contractor fall behind on the agreed programme (refer to Clause 27.1 of the Conditions of Contract) and the Engineer is of the opinion that the Contractor will not be able to complete the Contract within the prescribed construction period, the Engineer may instruct the Contractor to extend his working hours a day. The Contractor will not be entitled to any additional remuneration.

**A8. SUBMISSION OF QUALITY ASSURANCE PLAN**

The Contractor shall formulate a Quality Assurance Plan (QAP) that shall be acceptable to the Employer prior to the commencement of the works. The QAP shall be submitted together with the programme of work.

.

**6 B. TECHNICAL SPECIFICATIONS**

The Technical Specifications to be used for this Contract contain two Parts as follows:

**PART A: STANDARD SPECIFICATIONS**

The Standard Specifications for this contract shall be the Southern African Transport Communications Commission (SATCC) Draft Standard Specifications for Road and Bridge Works, September 1998, reprinted July 2001.

This Document, which forms Part of the Tender and Contract documentation, is printed by the SATCC in Maputo in Mozambique and all Tenderers should acquire their own copy of this standard document at their own cost. Tenderers should note that whilst this document is similar to the “Standard Specifications for Road and Bridge Works for State Road Authorities”, (otherwise known as the COLTO specification, prepared by the South African Committee of Land Transport Officials), there are significant differences in some items.

**PART B: PARTICULAR SPECIFICATIONS**

THE PARTICULAR SPECIFICATIONS FORM AN INTEGRAL PART OF THE TENDER AND CONTRACT DOCUMENTATION AND SUPPLEMENT THE STANDARD SPECIFICATIONS.

In the event of any discrepancy with a part or parts of the Standard Specifications, the Bill of Quantities or the Drawings, the Particular Specifications shall take precedence. The Particular Specifications are contained in the pages that follow.

All references to Project Specifications in the Standard Specifications shall mean Particular Specifications for this contract. The terms “Project Specifications” and “Particular Specifications” shall be interpreted to have the exact same meaning.

All works shall be measured as described in the Bill of Quantities.

The Particular Specifications, shall supplement and modify, delete and/or add to the Standard Specifications, as stated. Where any Clause, paragraph or sub-paragraph in the Standard Specifications is supplemented by one of the following paragraphs from the Particular Specifications, the provisions of such Clause, paragraph or sub-paragraph shall remain in effect and the supplemental provisions shall be considered as added thereto, deleted, or superseded by any of the following paragraphs in the Particular Specification, the provisions of such Clause, paragraph, or sub-paragraph in the Standard Specification, not so amended, deleted or superseded shall remain in effect.

**Clauses and pay items modified by the Particular Specifications are numbered “PS” followed by a number corresponding to the number of the relevant clause or pay item in the Standard Specifications. New clauses and pay items not covered in the Standard Specifications are also designated “PS” followed by a number. These numbers follow on from the last clause or payment item number used in the relevant section of the Standard Specifications.**

**PART B: PARTICULAR SPECIFICATIONS**

**SERIES 1000: GENERAL**

**Section 1100: Definitions and Terms**

Change Clause 1126 as follows:

**PS 1126 Road Prism**

The areas indicated in Figures 1 and 2 in the SATCC Draft Standard Specifications for Road and Bridge Works issued by the SATCC in September 1998 (reprinted July 2001).

**SECTION 1200: GENERAL REQUIREMENTS AND PROVISIONS**

**PS1204: PROGRAMME OF WORK**

***Replace the first paragraph with the following***

1. **APPROVED PROGRAMME**

The contractor shall submit his programme of work, within the time stated in the Particular Conditions of Contract, to the Engineer for approval. The Contractor shall ensure that he has at his disposal adequate staff with the necessary expertise to develop and maintain the network programme for the duration of the contract and to provide the information required by the Engineer as specified hereafter.

The programme shall be in a bar chart (Gantt chart) or any other time-activity format acceptable to the Engineer and shall clearly show:

1. The proposed rate of progress in order to complete the works within the required period as tendered, showing the various activities, their duration and proposed resources (major plant and labour) for each element of the works. Sufficient details shall be provided to enable the Engineer to be able to assess construction progress. All activities, including establishment on site, trimming and finishing and the completion of all minor ancillary works are to be included in the programme.
2. The sequence of activities and any dependencies (time or resource related) between them; the critical path activities; the amount of slack time for non-critical activities;
3. Key dates in respect of work to be carried out, or information, etc., to be provided, by others.
4. The anticipated value of work to be done during each month and any
5. Other information specifically required by the Engineer.

When drawing up his programme, the Contractor shall take into consideration:

1. Testing and approval process of materials and works
2. Expected weather conditions and their effects.
3. Known physical conditions or artificial obstructions.
4. The accommodation and safeguarding of public traffic.
5. Dealing with, altering and installing services.
6. Expropriation and all other actions required in terms of this contract.

The following details shall be submitted together with the programme:

1. The number of working hours per day, working days per week, assumed holiday or shut-down periods on which the programme is based.
2. The overall labour and major plant resources on which the programme is based.
3. The detailed traffic accommodation proposals on which the programme is based (road or lane closures, lengths of sections to be worked, timing etc).
4. The rate of production for major works components such as layer works, subbase, base, surfacing, etc (units per day / hour) on which the programmed time for carrying out the work is based.

The Contractor shall base his initial programme of work on the scope of the work as described in the Particular Specifications. This programme shall be reviewed on a regular basis by the Contractor in accordance with changing circumstances, delays and amendments to the work ordered by the Engineer as a result of further examinations made by him.

Minor revisions to the approved programme may be introduced from time to time by mutual agreement between the Contractor and the Engineer. Should the Engineer believe that a major revision of the programme is required, the Contractor will be notified in writing, and a revised programme shall be submitted within two weeks of receipt of such notification.

It should be noted that it is in the Contractor's interest to provide a comprehensive programme giving as much information as possible about the times allowed for the various activities as well as resource or other limitations affecting the programme, since the approved programme may be used to evaluate any claims in terms of the General Conditions of Contract for extensions of time.

1. **REPORTING**

The Contractor shall submit to the Engineer, at least three working days before each monthly site meeting copies of the following:

1. The construction programme with progress charts and programme graphs updated to reflect the actual progress to date.

(ii) A summary of progress on site over the month preceding the site meeting. The report shall be in the form of a detailed narrative to the construction programme.

(iii) Details of activities running late, indicating what steps have been or will be taken to ensure that the work is completed within the specified time.

1. A report on all labour, plant and materials on site, according to sub-clauses PCC 4.21 and PCC 6.10 of the Particular Conditions.

**PS1206 THE SETTING-OUT OF WORK AND PROTECTION OF BEACONS**

***Add the following at the beginning of this clause:***

“Upon issuance of the order to commence, the Engineer shall issue to the Contractor a set of setting out co-ordinates and the Contractor shall set out the works accurately and shall be responsible for any error(s) which may occur in such setting out and shall amend and rectify such error(s) at his own expense.

In addition to setting out data, the Engineer shall issue to the Contractor co-ordinates of Benchmarks and control points for survey control. The Contractor shall, prior to using the benchmarks and control points, check their accuracy and confirm in writing to the Engineer that the information is sufficient for setting out the works accurately. Should discrepancies be found in the information issued by the Engineer, the Contractor shall afford the Engineer the opportunity to investigate the discrepancies and correct them within a period of seven calendar days. The Contractor shall programme his work in such a way that this requirement will not impact negatively on the rate of progress of the works, and no claim for extension of time will be entered pursuant to this requirement.

The Contractor may if he deems it necessary, establish additional control points. Any additional control points shall consist of steel pegs set in concrete at positions not likely to be affected by the works. The coordinates of the established points shall be issued to the Engineer in the form ‘Name, Y, X, Z’”

***Replace the second sentence in the second paragraph with:***

“In case that the reference beacons along the contract sections have been either destroyed, displaced or damaged before the handing over of the site to the contractor, then the Engineer will arrange to have new reference benchmarks reinstated by the Contractor at 500 m intervals and the cost of the re-establishment work will be paid under Section 1800 (Day Works) of the Particular Specifications”.

**PS1207: NOTICES, SIGNS AND ADVERTISEMENTS**

***Add the following to the second paragraph:***

“See Volume 2 Drawing No. PSB/01 of this document for details of the Notice Boards. These boards shall remain in position until the end of the maintenance period and shall then be removed without delay.

**PS 1208: MEASUREMENTS**

***Add the following clause to 1208 (c):***

“Cross-sectional levels shall be taken at not greater than 20-metre intervals jointly from the Surveyor of the Engineer and of the Contractor and agreed between the Contractor and the Engineer before any clearing, grubbing, stripping of topsoil or earthworks are undertaken and at any stage thereafter that the Engineer may require.

Cross sections shall be taken at the same interval as the setting out. The cross sections shall cover the entire road reserve and shall contain a minimum of seven points consisting of centre point and three equally spaced points on either side of the centre point. The points shall be in line and perpendicular to the centre line. The results of the survey shall be certified by the Engineer as soon as possible”

**PS1209 PAYMENT**

1. **Rates to be inclusive**

***Replace “period of maintenance” in the last line of the first paragraph with “Defects Liability Period”***

**(c) The meanings of certain phrases in payment clauses**

(i) Procuring and furnishing (materials)

***Insert “duties” in the sixth line of sub-clause after “all tax”***

**PS 1210 CERTIFICATE OF PRACTICAL COMPLETION OF THE WORKS**

***Replace the words “Certificate of Practical Completion of the Works” in title and text of this clause by the words*** “Taking-over Certificate”

***Amend the sub-clauses of this clause as follows:***

In (b) add "and all storm water drainage works;"

***Add the following to the list of sections of the Works:***

"(i) all service relocations."

***Add the following to this clause:***

“Opening of a section of road to public traffic **before** the requirements of Clause 1210 have been met, if such opening should be allowed by the Engineer, shall not entitle the Contractor to the issue of a Taking-over Certificate for the road section in question.”

**PS 1214: Contractor’s Activities in Respect for Property Outside the Road Reserve and of Services Moved, Damaged or Altered**

***Add the following clause 1214 (f):***

“Any of the Contractor’s activities outside the Site or outside the road reserve on property not belonging to the Employer shall be exclusively at the Contractor’s own risk, cost and responsibility.”

**PS1215 EXTENSION OF TIME RESULTING FROM ABNORMAL RAINFALL**

Method (ii) (Critical – path method) will be used for determining the extension of time due to inclement weather.

Add the following table B1215/1 at the end of section on Method (ii) (Critical Path)

Abnormal rain as shown in table B1215/1 shall be proven by rainfall records for the previous five years (prior to contract start date) from the Meteorological Department. For the purpose of calculating an extension of time due to climatic conditions the number of days in excess of the number of working days anticipated to be lost due to climatic conditions as shown in Table B1215/1 shall be taken into account:

Table B1215/1: Anticipation days (“n” working days) lost due to climatic conditions:

|  |  |
| --- | --- |
| **Month** | **Rain days** |
| January | 15 |
| February | 12 |
| March | 10 |
| April | 7 |
| May | 0 |
| June | 0 |
| July | 0 |
| August | 0 |
| September | 0 |
| October | 0 |
| November | 3 |
| December | 10 |
| **Total** | **57** |

The Engineer will certify a day lost due to climatic conditions only if:

(a) no work on the critical path according to the latest approved programme for completion of the works could be carried out during that specific working day or if

(b) only 30% or less of the work force and plant planned for that specific day, could work.

The extension of time as a result of climatic conditions will be calculated monthly as being equal to the number of days certified by the Engineer as lost due to climatic conditions, less the number of days in Table B1215/1. The total extension of time for the contract will be the sum of the monthly extensions. If the total extension of time for the Contract is negative it will be disregarded when determining the completion date(s)."

***Add the following new clauses:***

**PS 1230: LAND AVAILABLE**

The land available to the Contractor free of charge shall be as follows:

i. The land occupied by the Permanent Works

ii. The land occupied by approved (usually existing and public) temporary diversion routes

Land to be identified and acquired by the contractor

i. The contractor shall provide and maintain such buildings and sheds as maybe required for the use of the workmen employed in the works and for the storage of materials requiring protection and shall remove the same from the site on completion of the works and make good everything disturbed. The contractor shall be responsible for identifying a suitable site for location of the temporary facilities that he may require and he shall obtain approval of usage of any piece of land from the relevant local authority

The contractor shall make all negotiations and pay all necessary compensation fees for any land he may require, including borrow areas for fill material outside the road reserve (if approved by the Engineer).

The land available to the contractor is not necessarily the land to be cleared, which shall be indicated by the Engineer. The costs of clearing for the purpose of borrowing material, opening access roads, working space, or any other purpose of work not forming part of the permanent works shall be borne by the contractor.

**PS 1231: COMPENSATION**

The costs of agreed compensation for disturbance of buildings, crops, trees and relocation of fences and services within the land available free of charge shall be paid by the Contractor through the Contract and he shall be reimbursed net under the relevant items in the Bill of Quantities.

The cost of all other compensation shall be borne by the Contractor.

The Contractor shall cooperate with the appropriate authorities and shall make all necessary arrangements to agree compensation. Construction of the Works shall not commence until compensation has been agreed.

**PS 1232: GRAVES AND TOMBS**

Areas which contain graves and/or tombs within the Site shall be cleared by the Contractor, who shall seek assistance from the District Commissioner to obtain the consent of the Village Authorities to enter into each of such areas for the removal and reburial of corpses and remains. Compensation to the Village Authorities, if any, shall be reimbursed to the Contractor through the Contract under the relevant item in the Bill of Quantities.

**PS 1233: COPIES OF SUPPLY ORDERS**

The Contractor shall provide the Engineer with copies of all orders for the supply of materials and goods required in connection with the Works.

**PS 1234: DRAWINGS**

The Contractor shall be issued with two copies of each of the Drawings forming part of the Contract documents, as well as with two copies of any further drawings which may be issued by the Engineer from time to time. Any additional copies of drawings required by the Contractor may be purchased from the Engineer.”

**PS 1235: AMENITY AND ACCESS**

The Contractor shall ensure that, in carrying out the Works, he causes no damage by plant, workmen, flooding, dust, subsidence or otherwise to property. He shall take all precautions to the satisfaction of the Engineer to ensure that such hazards are avoided and public amenity maintained. The Contractor shall make good, forthwith and at his own cost, any damages and inconveniences caused by him; failing to do which the matter shall be treated under Sub-Clause 72.1 of the General Conditions of Contract, as amended, and the Employer shall be entitled to employ and pay other persons to carry out the same, and all costs shall be recoverable from the Contractor by the Employer in accordance with such sub-clause.

**PS 1236: DUST CONTROL**

The Contractor shall take appropriate measures to protect the Works and adjacent private and public property from dust contamination and nuisance.”

**PS1237 REPORTING OF ACCIDENTS**

“The Contractor shall report every accident which occurs on the road, within the extent of the Works, to the Engineer within twenty-four (24) hours of such accident, irrespective of whether such accident has a bearing on the damage to the works or to persons, property or things. The report must be in writing and must contain full particulars of the accident. Photographs of each accident shall also be included in the report. The Engineer has the right to conduct any or all enquiries, on either the Site or elsewhere, as to the causes and consequences of any such accident. The Contractor shall also keep a comprehensive record of all accidents which occur on the road and shall make such records available to the Engineer on demand.”

**PS 1238 MAXIMISING THE USE OF LABOUR**

This Contract has been established and shall be priced as equipment-based type of road works project. However, the Roads Authority is desirous of making a contribution towards reducing the level of unemployment in the project area. To this end, the following items of work have been identified as suitable for maximising the use of manual labour.

(a) Bush clearing and the removal of roots from the surface after grubbing has been done by machine, and loading of such roots for transport to disposal areas.

(b) Excavation and backfilling for culverts, kerbs and channels, including for removal of existing units, all to a maximum depth of 1,5m.

(c) Excavations for guardrail posts, road sign footings, guide blocks and erosion protection works, all to a maximum depth of 1,5m.

(d) Constructing gabion baskets and stone pitching.

(e) Placing of kerbs and concrete edging.

(f) Erection of road signs.

(g) Base correction.

(h) Back chipping during surfacing operations.

(i) Application of bitumen if so required.

(j) Trimming of cut slopes, and final trimming of shoulder breakpoints and fill slopes.

(k) Trimming of open drains, side drains, inlet and outlet channels of culverts.

(l) Trimming of catch - water drains, mitre banks and mitre drains.

(m) Finishing off the road, road reserve and borrow pits.

Tenderers are required to submit a tender for the Works under the condition that at least the items listed above must be done using manual labour. Additional information and suggestions which will further the use of labour will be viewed in a positive light.

The Employer is also desirous of making a contribution towards equal opportunities for women, not only in respect of labour, but also throughout the human resource base of the Contract. No gender restrictions shall apply throughout the workforce. In respect of the latter and as far as is practicable, the Contractor is required to employ at least 15% of his unskilled labour force from the feminine gender. In addition, only Malawian citizens shall be employed in the Contractor's unskilled labour force.

**PS1239 ENVIRONMENTAL IMPACT CONTROL**

Before any work is commenced on the Site, the Contractor's site management staff including foremen shall attend an environmental awareness-training course presented by the Engineer. The Contractor shall liaise with the Engineer prior to the Commencement Date to fix a date and venue for the course. The Engineer will provide the course content. The Contractor shall provide a suitable venue and ensure that the specified employees attend the course.

The environmental awareness-training course shall be held in the morning during normal working hours. The information presented at the course shall be communicated to the Contractors employees on the site, to any new employees coming onto site after the initial training course and to his suppliers as required by the Project Specification. The Contractor shall ensure that all attendees sign an attendance register, and shall provide the Engineer with a copy of the attendance register the day after each course.

In addition to aspects of design which are intended to avoid or reduce environmental impact, and also in addition to normal good construction practice expected to the Contractor, the requirements of the Project Environmental Management Plan (see under Section 7 D Clause A: Environmental and Social Impact Management) shall be strictly followed. Any non-compliance with these requirements which could have been avoided in the opinion of the Engineer may be considered sufficient grounds for withholding payment of part or all of the amounts to be paid for the pay item PS13.05

**PS 1240 HIV/ AIDS PREVENTION PROGRAMME**

The contractor shall from the commencement of the contract through his SHE-Officer implement a generic AIDS awareness training programme for all permanent and temporary workers of the main contractor and all subcontractors. The type of training; the number of trainees and the cost of all training shall be as agreed by the Employer and the Engineer.

The training material for the structured training programme shall, as far as possible, be accredited by the Ministry of Health and Education and be delivered by suitably qualified and accredited trainers. The training programme shall be subject to the approval of the Employer and the Engineer, and the Contractor shall if so instructed by the Engineer, alter or amend the programme and course content.

The Contractor shall be responsible for the provision of everything necessary for the delivery of the training programme, including the following:

* Transport of the selected workers (as necessary)
* Stationery and all other necessary materials.

No separate payment will be made for the training venue and everything necessary for the delivery of the training.

All Training shall take place during normal working hours and the Contractor shall make adequate allowance in his programme of work to accommodate the training to be provided. All selected workers shall be remunerated in respect of all time spent undergoing skills training. The SHE-Officer must make sure that the specified workers attend the HIV/AIDS Prevention training courses.

The Contractor shall keep comprehensive records of the training given to each worker and whenever required shall provide copies of such records to the Engineer. At the successful completion of a course, each candidate shall be issued at the Contractor’s own cost with a certificate.

The Contractor shall ensure that all attendees sign an attendance register, and shall provide the Engineer with a copy of the attendance register the day after each course. The SHE-Officer shall prepare a quarterly report on the programme.

**SECTION 1300 CONTRACTOR’S ESTABLISHMENT ON SITE AND GENERAL**

**OBLIGATIONS**

**PS 1303: Payment**

**PS 13.01: The Contractor’s General Obligations**

Add the following paragraph after the fourth paragraph (numbered as (iii):

(iv) The combined total amount of pay item 13.01(a), 13.01(b) and 13.01(c) shall not exceed 20% of the tender sum

***Add the following new pay items:***

**PS 13.02: Authorized Compensation Unit**

1. Provisional Sum for Authorized Compensation…………… Provisional Sum
2. Handling Cost and profit in respect of item PS 13.02(a) ……………… %

The contractor has to enter the percentage in the rate column and then calculate the amount for pay item PS13.02 (b)

**PS13.03: Relocation of Services:**

1. Provisional sum allowed for the protection and

relocation of services …………………………………………….. Provisional sum

(b) Handling Cost and profit in respect of item PS13.03(a) ………………. %

The contractor has to enter the percentage in the rate column and then calculate the amount for pay item PS13.03 (b)

The provisional sum allowed under sub item (a) shall be expended to cover the actual costs for the protection and moving of services by the Contractor and others.

The provisional sums shall be expended only with the approval of the Engineer.

**PS 13.04: Construction of Project Sign Boards ……………………………………………. No.**

The unit of measurement shall be number of construction sign boards supplied.

The tendered rate shall include full compensation for procurement, erection and removal of construction sign boards after completion of the project.

The sign board has to comply with drawing number MRA/KAPH-DWA/RDS/RS/02.

**PS 13.05: Contractor’s Environmental and Social Obligations**

(a) Fixed obligations …………………………………………… lump sum

(b) Time-related obligations ……………………………………… month

(c) Remuneration of workers undergoing the environmental awareness

training course ……………………………………………… provisional sum

(d) Implementation of environmental management plan as per Clause A11 of the specifications …………………………………………… lump sum

(e) Handling cost and profit in respect of sub-item B13.05(c)

(state % and extend as an amount) …………………………………………… %

The lump sum tendered under Item PS13.05(a) and shall represent full compensation for the fixed part of the Contractor’s obligations in respect of environmental matters for the Contract, i.e. that part which is substantially fixed and not a function of the time required for the completion of the contract or of the value of the work.

Payment of the lump sum tendered under Item PS13.05(a) shall be effected in the same manner as that described in Clause 1303 of the Specifications for Item 13.01(a).

The monthly rate under item PS13.05 (b) shall represent full compensation for the time-related part of the Contractor’s Environmental obligations as specified in the Environmental Regulations in Clause PS 1239 of the Project Specifications and elsewhere in the contract documents, for which payment is not included under other Pay Items.

Payment of the tendered rate per month for Item PS13.05 (b) will be subject to the same terms and conditions as are described in Clause 1303 of the Specifications for Item 13.01(c).

Payment will be made monthly over the full Time for Completion, as defined in the General Conditions of Contract.

Where the Contractor does not comply fully with his environmental obligations, and where he has been notified to that effect in writing at least three times since the Commencement Date, he may forfeit payment in terms of Clause PS 1239 of the Project Specifications.

The remuneration of the Contractor’s workers undergoing the environmental training course as well as the HIV/AIDS prevention programme will be measured as a Provisional sum. The reimbursement shall be for the actual attendance (total hours)

The sum shall cover all remuneration costs incurred by the Contractor in ensuring the attendance of his staff, including, site management staff at the course.”

**PS13.06 Aids Awareness Training**

(a) Training………………………………………………………… Provisional Sum

(b) Remuneration of the workers undergoing training …… Provisional Sum

(c) Handling costs and profit in respect of sub-items PS13.06(a)

and (b)(state as % and extend as an amount) ……………………… %

The provisional sum for sub-item PS13.06 (a), allows for the provision of the AIDS awareness training programme delivered as specified in the document. This money shall only be expended on the direct instruction of the Engineer. The reimbursement shall be for the final invoice amount from the training institution/s (excluding VAT) for the training.

The provisional sum allowed for pay item PS13.06 (b) is to remunerate the trainees at a rate per hour for attending training. The reimbursement shall be for actual attendance (total hours).

The percentage tendered for pay item PS13.06(c) shall be applied to the amounts expended under pay items B13.04 (a) and (b) to generate an amount that covers all the monies required by the Contractor for managing the training, paying the trainees, and any other costs that may arise from these payments, including any Contractor’s profits and overheads.

**SECTION 1400 HOUSING, OFFICES AND LABORATORIES FOR THE ENGINEER’S SITE PERSONNEL**

PS 1402 OFFICES AND LABORATORIES

Replace Sub-clause 1402 with the following:

(a) Rented Accommodation

The Contractor shall provide rented accommodation for offices and laboratory of the types and in locations approved by the Engineer and shall furnish the same as may be instructed by the Engineer. The laboratory building shall be suitable for the intended purpose as described in Sub-clause 1402(c) of the Standard Specifications.

Payment for rented accommodation shall be at cost plus the percentage mark-up on provisional sum(s) entered in the Bill of Quantities.

(b) Air Conditioners

The offices and laboratory buildings shall be supplied with split type remote controlled air conditioners. The air conditioners shall have 2.5 KW minimum power and shall be capable of heating during winter. The cost of providing air conditioners shall be deemed to have been included in the rent amounts negotiated by the Contractor.

(c) Soft Furnishing

The offices and laboratory buildings shall be supplied with approved curtains to all windows. The cost of providing curtains shall be deemed to have been included in the rent amounts negotiated by the Contractor.

(d) Security

The Contractor shall be responsible for watching and guarding all premises and facilities provided for Engineer’s use. Offices and laboratory buildings shall be in safe locations, shall be fully secured and shall be furnished complete with approved monitoring and alarm systems. The costs of installing, monitoring and maintaining security systems shall be deemed to have been included in the rent amounts negotiated by the Contractor.

(e) Telecommunications Facilities

The Contractor shall:

(i) Arrange with the telecommunications company for the connection of two telephone lines to the Resident Engineer's office,

(ii) Arrange with service provider for connection of internet services,

(iii) Procure mobile telephones as may be instructed by the Engineer,

(iv) Provide and install an answering machine of a type approved by the Engineer, and shall

1. Pay telecommunications bills incurred by the Engineer for official communication.

The Contractor will be reimbursed the amounts of money paid for the installation and maintenance of the above services at cost plus the percentage mark-ups tendered by the Contractor.

(f) Provision of Furniture and Equipment

The Contractor shall supply and install in the offices and laboratory the furniture specified in these specifications. The furniture and equipment shall be new and of quality acceptable to the Engineer. All furniture and equipment purchased using project funds shall revert to the Employer at the end of the Contract.

(g) Services

The Contractor shall provide a full-time office attendant to clean and service the offices and laboratory including all utensils and sundries for that purpose. Alternatively, the Engineer may choose to employ his own office attendants, in which case the Contractor shall reimburse the Engineer all costs involved in employing these attendants.

FURNITURE AND EQUIPMENT FOR THE ENGINEER'S OFFICE

The Contractor shall supply new furniture and new equipment for the Engineer's offices as hereinafter listed.

Item Number

Air-conditioning units (with cooling and heating options minimum 1800BTU) 7

Desk with lockable drawers (1,830mm x 915mm) 7

Tables (1,830mm x 915mm) 6

L-shaped standard secretarial desk 2

Typist Chair swivel 1

Desk Chairs swivel 8

Steel Filing cabinet (4 drawers with locks) 4

Cupboard (1,750mm x 900mm x 550mm) with 3 shelves and lock 4

Shelves (1,830mm x 305mm) 12

Wall pinning boards 2m x 1.2m 4

Desktop computers as shall be specified complete with Microsoft

Windows operating system, Microsoft Office and anti-virus software 3

Un-interruptible power supply for computers 3

operating system, Microsoft Office and anti-virus software 2

A4 black and white laser printer 1

A3 colour inkjet printer 1

A4/A3 photocopier (capable of a minimum of 3000 copies per month) 1

A4 digital scanner plus software 1

Stapling machines 3

Waste paper baskets 5

Desk organizers 5

Desk trays 10

Ring document binder machine 1

Paper punching machine heavy duty 1

Refrigerator, minimum capacity of 1401itres. 1

Carbon Dioxide Fire Extinguishers 2

A sufficient and regular supply of all normal consumable office stationery and stores  
including but not limited to photocopying paper, toner, glue sticks, staples, ink cartridges, computer diskettes and CDs, graph paper, all other type of paper as the Engineer may require from time to time, notebooks, pencils, pens, etc.

Upon completion of the Works, the furniture, equipment and facilities provided by the Contractor shall be handed over to the Employer together with the desktop computers, and printers which shall also become the property of the Employer.

Details of Computers, Printers and Power supplied for the Engineer's Office

The Contractor shall provide approved new computers, software, printers, scanners, power supply elements and peripherals including all software required for use by the Engineer's Site personnel. The computers and software shall be specified by the Engineer at the commencement of the Works and procured under the provisional sum.

Survey Equipment

The Contractor shall provide survey equipment for making the topographical survey of the centre line of the road as well as the detailed survey works of all the junctions, drainage works and bridges that are to be constructed.

All the topographic survey shall be performed using Total Station and the results shall be tied to the National Grid System (UTM) by means of the Basic Network landmarks.

The Contractor shall provide the following survey equipment on site for the full duration of the contract:

1. Two automatic levels with all its accessories,
2. One total station complete with all its accessories including standby batteries,
3. Two Survey umbrellas,
4. Five 5m measuring tapes,
5. Four 50m fibre glass measuring tapes,
6. One steel measuring tape of length 100m,
7. Measuring wheel,
8. One GPS Survey Equipment with all its accessories,
9. All the necessary auxiliary facilities including, but not necessarily limited to, two-way short range (minimum 2km) radio communication handsets, continuous supply of level books, consumables, etc.

Upon issue of the Certificate of Completion or when agreement on the final quantities has been reached, whichever is the later, the Survey Equipment shall remain the property of the Contractor.

Maintenance or Replacement of Equipment and Provision of Consumables

All equipment provided shall be kept full serviceable at all times by the Contractor. The Contractor shall repair/replace any defective equipment within three days after notification by the Engineer's staff. The contractor shall also provide all stationary, paper (including also special photo quality paper) Laser Jet toner cartridges, colour and black ink cartridges, USB Memory sticks, CDs and CD storage containers required by the Engineer.

The Contractor shall insure the equipment against any loss, damage or theft and he shall indemnify the Engineer against any claims in this regard. This equipment shall be available for use by the Engineer at all times. The Contractor shall maintain the equipment in good working order and keep it clean throughout the contract period.

Upon completion of works, the survey equipment shall be deemed to become the property of the Contractor.

Furniture and Equipment for the Engineer's Laboratory Office

**Item No**

Desks with lockable drawers (1830 x 915mm) 2

Table (1830 x 915mm) 1

Chair (2 armchairs) robust and comfortable 6

Shelves (1830 x 1200mm x 350mm) with backing 1

Cupboards (1730mm x 900mm x 550mm (3shelves and lock) 1

Steel filing cabinets (1300mm x 460mm x 600mm) deep with 4 drawers on

runners and lock 4

Wall Board 1

Electric heater, 750watt minimum rating 1

Waste paper baskets 2

Punch 1

Stapling machine 1

Stationary as required

Laboratory Installations and Equipment, etc.

All equipment, chemicals supplies etc. necessary for the performance of the tests and procedures as described in BS 1377:1975 “Methods of Testing Soils for Civil Engineering Purposes" shall be supplied by the Contractor.

Please refer to PS 1205 (b) (iii) regarding the required tests and procedures.

Miscellaneous Laboratory Equipment

The laboratories shall be supplied and resupplied, as often as necessary, with the minimum level of ancillary equipment as detailed below:

**Item No.**

Metal thermometers reading to 260°C 2

Graduated steel rule 2

1000ml capacity measuring cylinder graduated to 5ml 2

500ml capacity measuring cylinder graduated to 5ml 2

1000m1 beaker 2

Hotplate gas type 4

Wire gauze for use with hotplate 12

Tablespoons 3

Chisel blade, 200mm x 25mm 4

Knife, 200mm blade with wooden handle 4

Trowel, 150mm blade approximately 100mm wide 4

Plastic bucket with lid, approximately 300mm diameter and 450mm deep 6

Pick with handle 15

Shovel with handle 15

Panga 12

Metal drying trays, 1 metre square with raised edges 10

Paint brush 25mm wide 3

Hard bristle broom with handle 2

Scientific calculator 4

Ovens (aggregate volume 1m3 minimum) 2

Rain gauges 3

Plus printed test forms, samples bags, hessian, plastic or 4 ply paper for large, disturbed samples, towels soap etc., as required.

For the laboratory works of the Engineer the Contractor has to provide as much semi­-skilled workers as requested.

The laboratory shall at all times be provided with a sufficient stock of consumables equipment to allow for usage, breakage and deterioration. In the event of any item of equipment becoming unserviceable through any cause the Contractor shall, at his own cost, order replacements or spare parts to be air-freighted from the same suppler. This replacement equipment shall be in good condition as determined by the Engineer. Equipment in bad condition transferred from other sites or hired locally will be rejected by the Engineer.

Upon completion of the Works, the furniture, equipment and testing facilities for the  
Laboratory provided by the Contractor shall be deemed to become the property of the Client.

Protective Clothing for the Supervisor's Staff

1. dust coats for laboratory staff including replacements as required
2. sets of water-proof coats for all staff, mouth musk, safety boots and safety helmets for each of the staff; including replacements as required.

**PS1404 SERVICES**

**Add the following to clause 1404:**

Semi-skilled labourers for the Engineer

The Contractor shall employ as many semi-skilled labourers as the Engineer may from time to time direct, for the exclusive use of the Engineer.

Generally, these personnel will be utilised in the Engineer's laboratory, as survey assistants, cleaners and watch-men.

The Contractor shall provide accommodation and services for a maximum of 8 such labourers as specified in Clauses 1403(d) and 1404 of the Standard Specification.

A Provisional Sum has been allowed in the Bills of Quantities for the wages paid to the above labourers.

PS1407 MEASUREMENT AND PAYMENT

Change pay item 14.01, 14.02 and 14.03 as follows:

**Item Unit**

PS14.01 Rented Office and Laboratory Accommodation......................... Prov. Sum

PS14.02 Office and Laboratory Furniture

(a) Office furniture as specified in the Particular Specifications ................. Lump sum

(b) Laboratory furniture as specified in the Particular Specifications ......... Lump sum

Add: The tendered lump sums shall include all the furniture for offices and laboratory in accordance with the details and as listed in Particular Specifications.

Amend Pay Item 14.08 as follows:

PS14.08 Services

(a) Services at rented offices and laboratories ................................... Month

The tendered amounts shall include all specified services rendered to offices and laboratory.

Create the following new pay items:

PS14.12 Survey equipment for use by the Engineer ..................................... month

The unit of measurement for the supply and maintenance of the survey equipment as described in detail in the Particular Specifications including software programme shall be the month.

The tendered rate shall include full compensation for the supply and maintenance of the equipment. The tendered sum per month will be payable for as long as the equipment is required, but not after the official completion date of the contract.

PS14.13 Computers and Printers for Engineers staff

(a) Allow provisional sum for the purchase of computers, software

and printers ................................................................................................ P.S.

(b) Handling cost and profit in respect of PS14.18(a)

(state % and extend as an amount) ......................................................... %

The payment for the supply of the computers including printers, software and accessories as specified in Clause PS1402(b) hereof shall be made from provisional sums.

The provisional sums shall cover full compensation for providing, insuring, maintaining or replacing the computers and printer, software and all consumables.

PS14.14 Security at Engineer's Offices, Laboratory and establishment... month

The unit of measurement for the supply of security guards shall be the month. The rate tendered shall be full compensation for the supply of security guards as specified, including transport, equipment and uniforms as may be applicable, as well as all other costs necessary to provide the security service as specified.

The tendered rate shall be payable for as long as the security service is required and provided, but not after the official completion date of the Contract.

PS14.15 Provision of semi-skilled labour for use by the Engineer

(a) Provision of Labourers ..................................................................................... P.S.

(b) Handling cost and profit in respect of PS 14.20 (a)

(State % and extend as an amount) ................................................................ %

Payment under Item PS14.20 (a) shall be made monthly and the amount due to the Contractor will be equal to the total of the actual amount paid to the Engineer's semi­skilled labourers plus the direct cost of medical and pension benefits, Workmen's Compensation, sick leave and holiday pay, incurred by the Contractor in respect of the Engineer's semi-skilled labourers. The Contractor shall advise the Engineer of the full monthly cost for each semi-skilled labourer engaged. No payment other than that provided above will be made in respect of the employment of semi-skilled labourers for the Engineer. Contract price adjustment will not apply to this item.

SECTION 1500 ACCOMMODATION OF TRAFFIC

## PS1502 GENERAL REQUIREMENTS

***Add the following new sub – clauses:***

**(i) Moving and display of signs**

The Contractor shall adhere strictly on the sign layout and spacing shown on the drawings or directed by the Engineer. Any sign not required for or which is in contradiction with the prevailing situation, shall be removed or covered with non-transparent material without delay. Where permanent signs are to be covered it shall be done with non-plastic material.

**(j) Failure to comply with provisions for the accommodation of traffic**

The failure of or refusal by the Contractor to construct and / or maintain diversions, barricades, traffic signs or road markings at the proper time, or to take the necessary precautions for safety and convenience of public traffic as specified or instructed by the Engineer, shall be sufficient cause to suspend payment on this contract until the required construction or maintenance has been completed to the satisfaction of the Engineer considering that there is a risk to the public. Such stoppage of the payment will not be acceptable as a reason for extension of time or additional compensation.

**PS1503 TEMPORARY TRAFFIC-CONTROL FACILITIES**

***Add the following after the second paragraph:***

No work may proceed in any section where accommodation of traffic is required until such time as the relevant requirements with regard to sign posting are met. The Contractor shall keep sufficient surplus signs, delineators and barricades on the site to allow for the replacement of damaged or missing items within a period of three hours of instructions having been given by the Engineer.

1. **Traffic-control devices**

***Add the following:***

Sufficient flagmen suitably trained and equipped as detailed in sub-clause (g) below, shall be provided at all designated access points on public road to and from the working areas to the satisfaction of the Engineer. The flags shall be at least 750 mm x 500 mm on a stick of adequate length.

When movable temporary signs are used, provision shall be made for sandbags on the sign bases to prevent the signs from being overturned by wind or eddies behind moving traffic, as detailed in sub-clause (h) below.

1. **Road signs and barricades**

***Add the following:***

Retro-reflective material for temporary road signs shall comply with the requirements of SABS 1519.

The retro-reflective coefficients determined according to the methods of SABS 1519, shall be at least 60% of the values given in Table 1 of SABS 1519.

The classes shall be as specified in Sub-clause 5402 (g) of the Standard Specifications.

Road signs that do not comply with these standards shall be cleaned and re-tested or removed from the site and replaced with approved road signs.

**(c) Channelization devices and barricades**

***Add the following:***

Delineators shall comply with the following requirements:

1. A minimum contrast ratio of 4 shall exist between the yellow call 1 retro-reflective material and the black non-reflective material.
2. Delineators shall be affixed in a flexible manner to the base units and shall be able to withstand wind speeds of at least 60 km/h without overturning. The bases shall be stabilised by placing of sandbags.
3. The bottom edge of the delineator shall not be more than 200 mm above the road surface.

Cones (red-orange, fluorescent) with minimum height of 750 mm may be used as supplementary traffic-control facilities to delineators, but only for short-term lane deviations during daylight. Lane closures or deviations continuing into night time shall be demarcated by delineators. The maximum spacing between delineators or cones is 30 m.

***Add the following sub-clauses:***

1. **Worker clothing and safety jackets**

All construction workers shall wear high visibility clothing when on the construction site. Any worker working on or adjacent to a trafficked road shall wear a safety jacket (reflective vests). Overalls shall be either orange or red-orange or yellow in colour with retro-reflective strips. Raincoats shall be bright orange or red-orange.

In addition, all flagmen are to be distinctly dressed in high visibility orange overalls, a safety jacket similar to those worn by traffic officers as supplied by Sparks and Ellis or similar approved.

Safety jackets shall also be made available to the Engineer and all his staff free of charge.

**PS 1517: Measurement and Payment**

Pay item 15.09 is not applicable and deleted. Pay items 15.01, 15.02, 15.03, 15.04, 15.05, 15.06, 15.07, 15.07, 15.08, 15.09, 15.10, 15.11, and 15.12 are combined and included into one pay item 15.01.

**Item Unit**

## PS15.01: Accommodating traffic, including all

## notices, signing, construction, providing, maintaining

## and reinstating temporary diversions ………………………................................……… km

**SECTION 1600 OVERHAUL**

**PS1601 Scope**

Free-haul distance for this contract will be unlimited. Subsequently no separate payment will be made for overhaul irrespective of the material or the distance hauled.

**SECTION 1700 CLEARING AND GRUBBING**

**PS1703 EXECUTION OF THE WORK**

**(a) Areas to Be Cleared, Grubbed and Stripped**

At the end of this sub-clause add the following:

Removing topsoil too far in advance of excavation or filling operations may also cause re-clearing and re-grubbing. Payment for clearing and grubbing shall be made only once. Re-clearing and re-grubbing shall be at the Contractor’s own cost.

**(b) Cutting of Trees**

At the end of this sub-clause add the following:

Individual trees designated in writing by the Engineer shall be left standing and uninjured. Penalty, depending on its size and age, shall be imposed for every tree which is unnecessarily removed or damaged. The branches of trees to be left standing shall be trimmed so as to leave a 7 m clearance above the carriageway.

**PS 1704: Measurement and Payment**

The tendered rate for Item No. 17.01 shall also include the full compensation for safe removal of existing road signs with the resulting holes backfilled with acceptable material. The removed road signs shall be properly stacked and stored; the Engineer shall give an instruction for the final custody. Waste material shall be disposed of in accordance with the Specifications.

***Add the following new pay items:***

**PS 17.04: Demolition, dismantling, removal and clearing of existing structures**

**Item Unit**

PS 17.04(a): Masonry structures ………………………………..………………….. m3

PS 17.04(b): Concrete structures …………………………..…………...…………. m3

PS 17.04(c): Gabions ………………………………………...…………...…………. m3

PS 17.04(d): Steel Bailey Bridge ………………………………………...……….….. No.

The tendered rate shall include full compensation for demolition or dismantling of the existing structures, proper stacking of Bailey Bridge parts, delivery of all the steel bridge parts to a physical address to be provided by the Employer, clearing and disposal of the waste material from site including unlimited haulage costs.

***Create the following new section:***

**SECTION PS 1800: DAY WORKS**

**PS1801 SCOPE**

This section covers the listing of day work items in accordance with the General and/or Special Conditions of Contract determining payment for work which cannot be quantified in specific units in the Schedule of Quantities, or for work ordered by the Engineer during the construction period which was not foreseen at tender stage and for which no applicable rate exists in the Schedule of Quantities.

**PS1802 ORDERING OF DAYWORK**

No day work shall be undertaken unless written authorisation has been obtained from the Engineer.

**PS1803 MEASUREMENT AND PAYMENT**

**Item Unit**

**PS18.01 PERSONNEL DURING NORMAL WORKING HOURS**

|  |  |  |
| --- | --- | --- |
| (a) | Unskilled labour | Hr |
| (b) | Semi - skilled labour | Hr |
| (c) | Skilled labour | Hr |
| (d) | Ganger | Hr |
| (e) | Flagmen | Hr |
| (f) | Operators | Hr |
| (g) | Foremen | Hr |
| (h) | Surveyor | Hr |
| (i) | Lab technician | Hr |
|  |  |  |

**Item Unit**

**PS18.02 PERSONNEL OUTSIDE NORMAL WORKING HOURS**

|  |  |  |
| --- | --- | --- |
| (a) | Unskilled labour | Hr |
| (b) | Semi - skilled labour | Hr |
| (c) | Skilled labour | Hr |
| (d) | Ganger | Hr |
| (e) | Flagmen | Hr |
| (f) | Operators | Hr |
| (g) | Foremen | Hr |
| (h) | Surveyor | Hr |
| (i) | Lab technician | Hr |

**Item Unit**

**PS18.03 PLANT**

|  |  |  |
| --- | --- | --- |
| (a) | Tip Truck 6m³ | Hr |
| (b) | Tip truck 10m³ | Hr |
| (c) | Motor grader (type specified) | Hr |
| (d) | Wheeled loader (type specified) | Hr |
| (e) | LB (type specified). | Hr |
| (f) | Water bowser self-propelled (capacity specified) | Hr |
| (g) | Vibratory roller | Hr |
| (h) | Pneumatic roller | Hr |
| (i) | Grid roller with tractor (type specified) | Hr |
| (j) | Tractor (type specified) | Hr |
| (k) | Tracked excavator (type specified) | Hr |
| (l) | Bulldozer (type specified) . | Hr |
| (m) | Excavator | Hr |
| (n) | Concrete Mixer | Hr |
| (o) | Water Pump | Hr |

The unit of measurement for items PS18.01 to PS18.03 shall be the hour for the item of plant or personnel. Non- working hours for the plant breakdown, lack of operator or any other reason shall not be measured. The item shall be taken from the time that the personnel and /or plant depart until return.

Measurement shall only be for work instructed and directed by the Engineer where the Engineer may consider no other appropriate rates is available in the schedule of quantities. Prior to the commencement of any work by the labourers described under items PS18.01 and PS18.02, the Contractor must obtain written consent from the Engineer regarding the classification of all labourers in terms of “unskilled”, “semi-skilled”, and “skilled labourers”

The tendered rates for labour for the items PS18.01 and PS18.02 shall include full compensation to cover overhead charges and profit, leave pay, bonuses, subsistence allowances, Employer’s contributions, additional payment for over overtime where applicable, insurances, housing, site supervision, use of small hand tools and appliances, non-mechanical plant, operative and contingent costs relating to the supply of personnel.

The tendered rates for Plant for item PS18.03 shall be all-inclusive hire charge for the use of trucks or plant/equipment including driver or operator and shall apply only to vehicles, plant and equipment nominated in writing by the Engineer. The tendered rate for item PS18.04 shall include full compensation for the operating costs including fuel, maintenance, depreciation, administrative and contingent costs as well as profit

**Item Unit**

**PS18.04 Materials**

(a) Procurement of materials ………………...... Provisional Sum

(b) Contractor’s handling costs, profit

and all other charges in respect of

sub item PS18.04(a). ………………………. Percentage (%)

The Unit of measurement for sub-item PS18.04(a) shall be the amount actually paid for the procurement of materials to be purchased and shall be made in accordance with the provision of the General Condition of Contract. Only the actual quantities of materials used, as verified by the Engineer, shall be paid for.

The percentage tendered for sub-item PS18.04(b) shall be the percentage of the amounts actually paid for the procurement of the materials as ordered under the sub-item PS18.04(a) and shall be in full and final compensation in respect of the Contractor’s handling costs, profit, and all other charges in connection with the procurement and supply of the materials to the point of usage.

**Item Unit**

**PS18.05 Transport**

1. LDV …………………..………………………... kilometre (km)
2. Flatbed truck ……………………………………... kilometre (km)

The unit of measurement for item PS18.05 shall be the kilometre distance that the vehicle travelled for transporting personnel and/or Plant. All travelling shall be approved by the Engineer.

The tendered rate for item PS18.05 shall include full compensation for the cost of the vehicle including fuel, maintenance, depreciation and running costs.

The above-mentioned tendered rates shall be in full compensation for the various items, as specified and not additional compensation shall be considered

**SERIES 2000: DRAINAGE**

**SECTION 2100 DRAINS**

**PS 2102 OPEN DRAINS**

Add the following at the end:

Existing open drains over which proposed road works must take place must be backfilled using selected granular material compacted to 90% modified AASHTO density (100% for sand). The item shall include backfilling narrow drains of width not exceeding 1000mm.

**PS 2103 BANKS AND DYKES**

**Add the following after the last paragraph:**

Mitre banks, catch water banks and dykes shall be constructed using manual labour with the exception of hauling operations when haul distance in the opinion of the Engineer preclude the use of wheelbarrows.

The Contractor may, however, construct certain banks and dykes using conventional plant-based methods where manual methods are not feasible provided that his reasons for using these conventional methods are adequately motivated in writing and approved by the Engineer.

**PS 2107 MEASUREMENT AND PAYMENT**

**Add the following pay item:**

Item Unit

PS21.20 Backfill existing drains within road prism ................................................. m3

The unit of measure shall be the cubic metre. The tendered rate shall include for full compensation for procurement of the specified material from the Contractor’s borrow pit, placing it in existing drains after the drains have been cleared to the approval of the Engineer in layers and compacting it to specified densities.

**SECTION 2200: PREFABRICATED CULVERTS**

**PS2203 MATERIALS**

**Add the following sub-clause:**

**(j) Steel reinforcement**

Steel reinforcement for inlet and outlet structures, manholes and other appurtenant structures shall comply with the requirements of Section 6300 of the standard specifications.

**PS 2204 CONSTRUCTION METHODS**

**Add the following at the head of this sub-clause:**

Culverts shall be constructed using the trench method as described in paragraph (a) below.

**PS 2208 CLASSIFICATION OF EXCAVATION**

**Delete the wording of this Clause and substitute with the following wording:**

All excavations for prefabricated culverts shall be classified as follows for payment purposes:

Hard Material: Material which cannot be removed except by drilling and blasting, or with the use of pneumatic tools or mechanical breakers.

Soft Material: All material not classified as hard material shall be classified as soft material.

Notwithstanding the above classification, all material excavated from previously constructed fills, subgrades, and natural granular bases shall be classified as soft material.

**PS 2209 DISPOSAL OF EXCAVATED MATERIAL**

Delete last paragraph. Disposal of excess excavated material will not be paid for separately. The cost of this work shall be allowed for in the tendered rate for excavation and/or backfilling of culverts.

**PS 2210 LAYING AND BEDDING OF PREFABRICATED CULVERTS**

Item (a)(i) and (a)(ii), the minimum bedding thickness shall be 100mm.

In item (b) (ii), substitute “75mm” with **“100mm”**

In item (c), substitute “75mm” with **“100mm”**

**PS 2211 BACKFILLING OF PREFABRICATED CULVERTS**

**Amend the first paragraph of sub-clause (a) to read as follows:**

Unless shown otherwise on the drawings, all bedding and backfill to stormwater pipes placed off the road shall be compacted to 93% MOD AASHTO density. Materials shall be G7 quality.

The bedding compaction for all pipes crossing the road shall be 98% MOD AASHTO density and the backfill shall be compacted to 95% MOD AASHTO density. Materials shall be subbase quality except at the level of layer works where they shall be of similar quality and compacted to density specified for respective layer but in any event not less than subbase quality.

**PS 2218 MEASUREMENT AND PAYMENT**

**Item Unit**

PS22.02 Backfilling:

1. Using the excavated material…………………………………………………… m3
2. Using selected imported material ……………………………………………… m3
3. Extra over Subitems 22.02(a) and (b) for soil cement backfilling

(3% cement)…………………………………………………………………………. m3

**Delete the last but one paragraph and substitute with the following:**

The tendered rates shall include full compensation for backfilling under, alongside and over conduits, for disposing of excess excavated material, for watering and compacting the backfill material to the specified densities. In addition the rates tendered for sub item (b) shall include full compensation for supplying selected material of subbase quality from approved sources, including the free haul distance stated in Clause 1600 and as amended herein.

**Item Unit**

PS22.07 Cast in situ concrete and formwork:

**Add the following items:**

(f) In infill concrete between portals (class 20/19 concrete) ......................... m3

(g) In topping slabs (class 20/19 concrete) ................................................... m3

**Amend the description of Item 22.14 to read:**

**Item Unit**

PS22.14 Removing and stacking existing culverts of all sizes and types............ m

**SECTION 2300: CONCRETE KERBING, CONCRETE CHANNELLING, OPEN CONCRETE CHUTES AND CONCRETE LINING OF OPEN DRAINS**

**PS 2304 CONSTRUCTION**

In item (a)(i), substitute “75mm” with **“100mm”**

**PS 2306 CONSTRUCTION TOLERANCES AND SURFACE FINISH**

In item (a)(i), first paragraph, substitute “25mm with **“15mm”**

In item (b)(i), substitute “25mm with **“15mm”**

In item (b)(ii), substitute “25mm with **“15mm”**

**PS 2307 MEASUREMENT AND PAYMENT**

**Replace Pay Item 23.08 with the following new pay item:**

**Item Unit**

S23.08 Concrete lining for open drains:

(a) Cast in situ concrete lining (Concrete Class 20/19) for open drains

(All types of drains including formwork Class F2 surface finish,

sealing of joints with approved sealant and weep holes):

(i) 75mm thick to vertical or inclined surfaces............................................ m2

(ii) 100mm thick to horizontal surfaces....................................................... m2

The unit of measurement shall be the square metre of the drain surface lined as specified in drawings. The tendered rate shall include full compensation for painting open joint surfaces as specified.

The tendered rate shall include full compensation for casting concrete of the specified thickness and class, for supplying and fixing formwork, for weep holes, for forming and sealing joints, all as specified in the drawings.

**Pay Items 23.09, 23.10 and 23.11 shall not apply.**

**Add the following Pay Items:**

**Item Unit**

PS23.16 Access bridges Refer to Drawing No. MRA/KAPH-DWA/SW/03 & MRA/KAPH-DWA/SW/04

(a) Pedestrian bridges

(i) Type 1................................................................................................... No

(ii) Type 2................................................................................................... No

(b) Vehicular bridges

(i) Type 1................................................................................................... No

(ii) Type 2................................................................................................... No

PS23.17 Splash drains

(i) Type 1................................................................................................... No

(ii) Type 2................................................................................................... No

PS23.18 Precast concrete class 25/19 cover panels including

formwork, F2 surface finish, as detailed in the relevant drawings

(a) 150mm thick

(i) Width not exceeding 2360mm.............................................................. m

(ii) Width not exceeding 2060mm.............................................................. m

(b) 200mm thick

(i) Width not exceeding 2360mm.............................................................. m

(ii) Width not exceeding 2060mm.............................................................. m

PS23.19 Extra over Item S23.18 for:

(a) Panels with grates and frame.............................................................. No

(b) Panels with lifting hooks at the specified interval.............................................. No

**SECTION 2400: ASPHALT AND CONCRETE BERMS**

**PS 2407 MEASUREMENT AND PAYMENT**

**Add the following in pay item 24.01:**

**Item Unit**

PS24.01 Asphalt berms:

(c) Speed humps as per drawing, constructed of continuously graded asphalt mix us=(m3

**SERIES 3000 EARTHWORKS, AND PAVEMENT LAYERS OF GRAVELL OR CRUSHED STONE**

**SECTION 3100 BORROW MATERIAL**

**SERIES 3000: EARTHWORKS, SUBBASE, SHOULDERS AND BASE**

**SECTION 3100: BORROW MATERIALS**

Delete the entire Section and insert the following requirements which shall apply:

(a) The Contractor shall obtain material of the specified quality from any source of its choice.

(b) Prior to opening any borrow pit or quarry, the Contractor shall submit to the Engineer a scanned original of the mining permit or a copy certified by the Chief Mining Engineer.

**SECTION 3200: SELECTION, STOCKPILING AND BREAKING-DOWN THE MATERIAL FROM BORROW PITS AND CUTTINGS, AND PLACING AND COMPACTING THE GRAVEL LAYERS**

**PS 3202 SELECTING THE MATERIALS**

**Add the following:**

The quality of the materials in the borrow pit is normally inconsistent. Good quality material is often limited to small pockets. It may therefore be necessary to stockpile and mix materials to ensure that the quality of the material will comply with the specified requirements for a particular layer for which it will be used. The cost for these processes shall be deemed to be covered by the rates for the various items of work for which these materials are used.

**PS 3206 CONTROLLING THE MOISTURE CONTENT OF MATERIALS**

**Add the following to the third paragraph:**

The time required for doing work to accelerate the drying out of wet material or for dealing with wet material as described above, shall not be regarded as part of a delay caused by inclement weather in terms of Clause PS 1215.

**SECTION 3300: MASS EARTHWORKS**

**PS 3301 SCOPE**

**Add the following at the end:**

This shall apply to widened areas of the cross section, bus bays and road sections falling on new alignment. Fills may be required on sections along the existing alignment which need to be raised substantially to avoid flooding. This may include existing bus bays.

Bus bays shall be constructed concurrently and using the same materials as for the road pavement.

**PS 3303 CLASSIFICATION OF CUT AND BORROW EXCAVATION**

**3303(a) Classes of Excavation**

Delete all paragraphs of Sub Clause 3303(a) and substitute with the following:

Only two types of excavation are specified in this Section and shall be classified as follows for the purposes of measurement and payment:

**(i) Hard Excavation**

Hard excavation shall be excavation in material which can only be removed by drilling and blasting or with the use if pneumatic tools. This excavation specifically excludes material which can be excavated by the use of mechanical excavators or by ripping and dozing using a bulldozer of approximately 35 ton mass or larger when fitted with a single tine ripper and having a flywheel power of 250kW or more.

**(ii) Soft Excavation**

Soft excavation shall be all excavated material other than hard excavation.

**3303(b) Method of Classification**

Delete all paragraphs of Sub Clause 3303(b) and substitute:

The Contractor shall be at liberty to use any method he wishes to excavate any class of material, but the method of excavation shall, however, not dictate the classification of the excavation.

The Engineer shall decide under which of the above classes any excavation shall be classified and paid for. The classification shall be based on inspection of the material to be excavated and the method of excavation proposed by the Contractor. The decision of the Engineer as to the classification shall thereafter be final and binding.

The Contractor shall immediately inform the Engineer as and when the nature of the material being excavated changes to the extent that a new classification for further excavation is warranted.

Failure of the part of the Contractor to timeously advise the Engineer shall entitle the Engineer to classify, in his sole discretion, such excavation as may have been executed in material of a different nature.

The Contractor shall, if required, make available free of charge the necessary mechanical equipment specified in PS 3303(a) in order to test the removability or otherwise of the material.

**PS 3305 TREATING THE ROADBED**

**3305(a) Removal of Unsuitable Material**

Add the following new paragraph at the end of Sub Clause 3305(a):

Roadbed material within 1.0 m of the finished road level shall have a minimum CBR of 3 at 90% of modified AASHTO density, after compaction. Any material which does not meet this requirement shall be treated as unsuitable and removed.

Any anthill or termite working encountered within the road prism shall be excavated as specified in SP1703(e) and the material so excavated shall not be used in the fill. When the working is active the excavated area shall be treated with an approved chemical. No separate payment will be made for excavation and removal of anthill or termite working.

Payment for chemical treatment shall be in accordance with pay item 17.04.

**PS 3312 MEASUREMENT AND PAYMENT**

Delete in pay – items 33.01, 33.02, 33.04, 33.07 and 33.08 the wording “including free – haul up to 0.5 km” and replace with: “including unlimited free – haul distance”.

Delete the third paragraph of Pay Item 33.01 and substitute the following:

The tendered rates shall include full compensation for procuring, furnishing and placing the material, including excavating as if in soft excavation, for transporting the materials for unlimited free haul distance, for preparing, processing, shaping, watering, mixing and compacting the materials to the densities or in the manner specified herein and for removing and disposing oversize materials from the road after processing.

**Amend description of Pay Item 33.07 to read:**

**Item Unit**

PS33.07 Removal of unsuitable material obtained from any

type of material and excavation at any layer thickness,

unlimited free haul................................................................... m3

**SECTION 3400: PAVEMENT LAYERS OF GRAVEL MATERIAL**

**PS 3402 MATERIAL**

**3402(a) General**

**Add the following:**

The Contractor shall be responsible for identifying suitable sources of construction materials.

**3402(c) Subbase**

**Add the following:**

The subbase shall be formed from both imported material and material recovered from the existing pavement layers. The Contractor shall import material from approved sources identified by him. The imported subbase material may be blended with the base material recovered from the existing pavement or used separately provided the material meets the specifications.

**3402(f) Compaction Requirements**

The minimum in situ compaction of pavement layers shall be as specified in the drawings. The compaction effort shall apply to both the carriageway and shoulders.

**PS 3403 CONSTRUCTION**

**3403(b) Placing and compaction**

(ii) Shoulders

**Add the following:**

Shoulders shall be constructed from the same material as the base course layer.

**Delete Sub-clause (e) and substitute with the following:**

**3403(e) Reconstruction of pavement layers**

It is intended that the existing surfacing shall be removed to spoil. If milled then the surfacing and crushed stone base course shall be ripped and removed to stockpile temporarily on site for re-use as subbase material. The exposed layer shall be scarified to 150mm deep, watered and compacted to the density shown on the drawings. The widened sections shall be constructed to below subbase layer. The excavated crushed stone base course materials shall be broken down to conform to grading requirements, blended with imported subbase quality materials to make-up the required quantities, relayed over the entire widened cross section, stabilised with lime or cement, watered, mixed and compacted to the thickness and density shown on the drawings to form new subbase course layer. Base course layer shall be constructed using imported crushed stone materials from fresh rock compacted to thickness and density shown on the drawings.

The Contractor shall ensure that during the removal of the existing base to stockpile the materials is not contaminated with plastic shoulder and underlying materials. Any material that in the opinion of the Engineer is contaminated shall be replaced with suitable material at the Contractor's expense.

**3403(f) Classification of layers for payment purposes**

Insert in the first paragraph the word "not" between the words "shall distinguish" to read "shall not distinguish".

**PS3407 MEASUREMENT AND PAYMENT**

**Amend the wording of pay item 34.01 to read as follows:**

**Item Unit**

PS34.01 Pavement layers constructed from gravel taken from cut or

borrow, including unlimited free haul, all types of excavation,

excess overburden and finishing off borrow areas:

**Delete the second paragraph (payment paragraph) of item 34.01 and substitute with the following:**

The tendered rates shall include full compensation for mixing, watering, placing and compacting the material supplied under item S34.01, and the protection and maintenance of the layer and the conducting of control tests, all as specified.

**Delete Pay Item 34.02.**

**SECTION 3500: STABILIZATION**

**PS 3502 MATERIALS**

**3502(a) Chemical Stabilizing Agents**

Add the following to Clause 3502:

The stabilizing agent to be used on this project, if instructed, shall be lime. Optimum quantities of stabilizing agent shall be determined by laboratory tests on site during construction.

**PS 3503 CHEMICAL STABILIZATION**

**3503(h) Construction limitations**

Add the following at the end of the Clause 3503:

The Contractor shall prepare for every different type of material a successful trial section on which he shall demonstrate his proposed mixing operations before commencing any large-scale mixing. No additional payment will be made for trial sections.

Once accepted, the mixing process and equipment shall remain unchanged unless a different process is approved by the Engineer.

The Engineer’s acceptance of a mixing process shall not relieve the Contractor of any of his obligations in complying with the specification and shall serve only as a guide that the specified requirements can be achieved.

**SECTION 3600: CRUSHED-STONE BASE OR SUBBASE**

**PS 3602 MATERIALS**

**Add the following:**

Existing crushed stone base shall be scarified and removed to stockpile for re-use as subbase material in the new construction.

The crushed stone material for base course shall be obtained from commercial sources or from approved quarry pits and crushed by the Contractor.

**PS 3608 MEASUREMENT AND PAYMENT**

Add the following item under pay item 36.01:

**Item Unit**

PS36.01 Crushed-stone base:

(c) Constructed from existing crushed stone base course materials

compacted to 102% modified AASHTO density, 37mm nominal

maximum aggregate size............................................................................. m3

Add the following item under pay item 36.02:

**Item Unit**

PS36.02 Crushed-stone subbase:

(c) Constructed from existing crushed stone base course materials

compacted to 95% modified AASHTO density, 37mm nominal

maximum aggregate size............................................................................. m3

**SECTION 4100 BREAKING UP EXISTING PAVEMENT LAYERS**

**PS 3805 CONSTRUCTION**

**Add the following:**

1. **Milling**
2. Sealed base material

The existing surfacing shall be milled with the base layer to a depth of 150mm and stockpiled. The stockpiled milled material shall be mixed with subbase qualifying granular material and used as a subbase material.

Payment shall be per cubic meter and the rate shall include the full compensation for all costs associated with milling, provision of the milling machine, any additional breaking-down required to make the milled material suitable for re-use, stockpiling, protection from contamination, etc. No additional payment shall be made.

**SERIES 4000: ASPHALT PAVEMENTS AND SEALS**

**SECTION 4100: PRIME COAT**

**PS 4102 MATERIALS**

**4102(a) Priming material**

**Add the following:**

The prime coat shall be MC 30 cut-back bitumen. The nominal rate of application for tender purposes shall be 0.8 litre/m2.

**PS 4103 EQUIPMENT**

**4103(a) Binder Distributor**

**Add the following paragraph:**

(viii) The distributor shall comply with the latest BS 1707 for mobile tank spraying units and shall have a valid CAS or SABS or other approved calibration certificate.

**PS 4110 MEASUREMENT AND PAYMENT**

**Add the following at the end of the Pay Item 41.01(c) - Prime Coat MC-30 cut-back bitumen:**

Where the Engineer decides that payment will be made at 80% of the tendered rate/litre, because the application rate has deviated considerably from the specification, the rate will be 0.8 times the rate tendered for item 41.01(c).

**SECTION 4200: ASPHALT BASE AND SURFACING**

**PS 4214 MEASUREMENT AND PAYMENT**

**Amend the wording of pay item 42.02 to read:**

**Item Unit**

PS42.02 Asphalt surfacing, 50mm thick, using 70/100 penetration grade

bitumen, including binder and active filler variations:

**SECTION 4300: MATERIALS AND GENERAL REQUIREMENTS FOR SEAL**

**PS 4303 PLANT AND EQUIPMENT**

**4303(a) General**

**Add the following:**

The Contractor shall ensure that he has a very good competent surfacing team, which is capable of delivering a high quality standard of workmanship; i.e. Competent and experienced Asphalt Foreman, operators and attendants, who have abilities of carrying out binder distribution and asphalt surfacing operations within specified tolerance of applications and according to final product requirements.

The Engineer will instruct the removal of incompetent staff from site and a replacement thereof with a competent staff if satisfactory performance is not achieved and maintained.

**4303(b) Binder distributor**

**Add the following:**

The binder distributor shall be capable of spraying the binder to the specified application rates and to the satisfaction of the Engineer. It is important that the pump of the distributor shall be capable of delivering the binder at the spray bar nozzles at the correct pressure to obtain the specified application rates, irrespective of the viscosity properties of the proposed binder. The spray bar of the distributor shall be fitted with fishplates at the outside edge of the bar to prevent over spraying onto shoulders or staining of concrete elements on the edge of the surfacing of the road. If instructed by the Engineer, the outside nozzles of the spray bar shall be turned to a 45o angle to achieve a thickened edge of binder along the outside limits of the seal area.he variation in the rate of application between two adjoining 100 mm strips shall not exceed 5%, excluding the outside 300 mm on either side of the spray bar. The coefficient of the variation shall not exceed 10%. The test procedure shall be as prescribed in the Modified Tray-test contained in TRH 3 and shall be carried out each time the distributor is established on site or at least once per week. The binder distributor shall thus carry a set of troughs at all times in order to allow the execution of this test.

A calibration certificate, not older than 3 months, for the binder distributor shall be presented to the Engineer in order to ensure accurate application rates.

The binder distributor shall be fitted with a suitable valve or other access gate for taking of samples of the binder for testing purposes.

**4303(c) Chip spreaders**

**Add the following at the end of the first paragraph:**

The chip spreader shall be capable of delivering a proper and uniform transverse distribution of chips across the width of the hopper. The chip distribution shall be tested by means of canvas patches each 1.0 by 1.0m and placed side by side. The mass of chips spread into each individual canvas patch shall not deviate by more than 10% from the calculated average spread per canvas patch.

**Add the following to the last paragraph:**

A non-self-propelled chip spreader may only be used in the event of a breakdown of the self-propelled chip spreader and shall be limited to the completion a distributor load. No further application of binder shall be permitted until such time as the self-propelled chip spreader is repaired or replaced.

**At the end of the clause add the following paragraphs:**

It is the Contractor’s responsibility to incorporate, service and maintain all the necessary, adequate and sufficient equipment to carry out all his sealing operations. The Contractor may use the same bitumen distributor and heater described in Sub-Clauses 4103(a) and (d).

The Engineer shall be entitled to instruct the removal, substitution or addition of equipment should there be any doubt as to the efficiency or capability of the equipment provided. No sealing work shall commence or continue if, in the opinion of the Engineer, all the required equipment is not on the site or in good operational condition.

**PS 4304 GENERAL LIMITATION AND REQUIREMENTS**

**4304(a) Weather limitations**

(i) Conventional Binders

(2) Bitumen

**Add the following:**

70/100 penetration grade bitumen ......................... 250 C

MC-30 cut-back bitumen ....................................... 100 C

(ii) Non-homogeneous Modified Binders (summer grade)

The minimum road surface temperature for applying bitumen-rubber binder shall be 25°C, and if below 25°C, the air temperature shall be at least 20°C and rising. As soon as the minimum air temperature at night is recorded to fall below 10°C, seal work shall cease until warmer weather conditions are experienced.

Application of binders shall not be allowed if the existing cracks in the road contain moisture after rain.

**4304(d) Preparation of areas to be sealed**

(ii) Newly constructed seals

For the repair and filling of uneven spots in the completed base shallower than 12mm, a slurry complying with the requirements of clause 4604 (c) shall be used, based on one of the grading of a Fine slurry.

60% stable mix-grade emulsion prepared from 80/100 penetration grade bitumen shall be used as binder.

The mix of fine aggregate, which shall be used for repairs shall comply with the following requirements by volume in the case of the irregularities exceeding 12mm in depth:

9.5mm nominal sized aggregate 1 part

6.7mm nominal sized aggregate 1 part

Fine-graded crusher sand 1 part

Each patch shall be compacted by means of two passes of the steel-wheeled roller of minimum mass of one comma five (1.5) tons, which compaction must be applied within four (4) hours after the emulsion has broken.

**PS 4305 HEATING AND STORAGE OF BITUMINOUS BINDERS**

**4305(b) Non- homogenous (heterogeneous) modified binders (summer grade)**

Bitumen rubber binder shall not be stored at all. Once the rubber is added to the base bitumen, the product shall be applied to the road as soon as it is adequately digested and at spraying temperature. Any binder left in the distributor at the end of the allowable spraying period, or not applied due to an unforeseen stoppage lasting till beyond the spraying period, shall be removed from site. Even a forced stoppage in the blending period between addition of the rubber and heating to spraying temperature shall not be considered as a reason for the approval of storing the binder for later use. Reference shall be made to the specified limitations regarding the programme of work and lengths of construction areas described in section 1200 and 1500 of these specifications.

The Engineer’s supervisory staff shall, through timeous notification by the Contractor, be afforded the opportunity to attend to all bitumen rubber blending operations in order to exercise control sampling and testing on the binder from the stage just prior to the addition of the rubber to the base bitumen up to the end of the allowable spraying period. Failure to conform to the requirements will be considered reason enough by the Engineer to reject the batch of binder.

**PS 4310 DUST CONTROL**

Delete paragraph two. Payment for dust control shall be deemed included in the unit rates tendered for sealing work.

**SERIES 5000: ANCILLARY ROADWORKS**

**SECTION 5100: MARKER AND KILOMETRE POSTS**

**PS 5101 SCOPE**

**Add the following:**

Road reserve beacons shall be constructed according to details on the drawings at an interval of 200m on either side of the road. The unit of measurement shall be the number of beacons installed to the satisfaction of the Engineer.

**PS 5106 MEASUREMENT AND PAYMENT**

**Add the following pay item:**

Item Unit

PS51.03 Road reserve demarcation beacons ……………………… No

The unit of measurement shall be the number of beacons installed to the satisfaction of the Engineer

The tendered rate shall include full compensation for excavation, materials, masonry construction, backfilling, plastering, engraving and painting of the beacon.

**SECTION 5200: GUARDRAILS**

**PS 5202 MATERIALS**

**5202(b) Guardrail posts**

**Add the following:**

(iii) Concrete posts

Guardrail posts shall be of prefabricated concrete according to the detail on the drawings. Timber spacer blocks shall comply with specifications of Clause 5202.

**PS 5203 CONSTRUCTION**

**5203(a) Erection**

**Add the following to the 3rd paragraph:**

The bolts shall be tack welded to the nuts in order to reduce the risk of vandalism.

**PS 5206 MEASUREMENT AND PAYMENT**

**Add the following pay item:**

Item Unit

PS52.13 Galvanised and painted guardrails on concrete posts including end units and reflective

posts ........................................................................................ metre (m)

The unit of measurement shall be the metre of guardrail erected including end units.

The tendered rate shall include full compensation for furnishing all materials and labour and for erecting the galvanized guardrails painted as specified on the drawings or as directed by the Engineer, complete with prefabricated concrete posts, spacer blocks, bolts, nuts, washers and reinforcing plates, bull noses and for excavating and backfilling post holes with 15Mpa concrete and/or selected excavated material and removing surplus excavated material.

**SECTION 5400: ROAD SIGNS**

**PS 5401 SCOPE**

**Substitute the second paragraph with the following:**

All Road Traffic Signs shall comply with the South African Development Community (SADC) Road Traffic Sign Specifications.

(1) The Traffic Sign details shown on the drawings give general information on the erection, placing and details of several of the required signs. Details of signs not shown on the drawing shall be in accordance with Regulations. The specifications information regarding the dimensions and locations of signs reference should be made to "The SADC Road Traffic Signs Manual”.

(2) The exact location of signs shall be as directed by the Engineer.

(3) Sign faces will be constructed of sheet steel of a minimum thickness of 1.6 mm and the back of the sign shall be painted grey.

1. Regulatory and warning signs shall be similarly mounted; larger signs shall be mounted on two or more 75mm diameter galvanised mild steel posts. Where the horizontal or vertical dimension exceeds 900mm, the sign shall be stiffened by means of 25mm x 25mm rectangular hollow sections as detailed on the drawings. All guide or information sign posts are to be painted grey. Sign posts for regulatory and warning signs shall be painted with alternating bands of yellow and black.

(5) The size of guide or information signs shall be as specified in the regulations. The layout of the sign (letter spacing, size, border size, etc.) and colours shall be as given in the SADC Regulations.

1. The size, colours and letter series type for regulatory signs will be as given in the SADC Regulations, or as shown on the drawings or as instructed by the Engineer.

All warning and regulatory traffic signs on the Main Road shall be at least size 1200mm for the design speed of 120km/hr.

All warning and regulatory traffic signs on the Access Roads shall be at least size 914mm for the design speed of 80km/hr.

(7) Warning signs will be on an equilateral triangle with a white reflectorized symbol on a blue reflectorized background. The size of the triangle will be as given in the SADC Road Traffic Sign Specification or as shown on the drawings or as instructed by the Engineer.

(8) All signs are to be reflectorized with engineering grade retro reflective materials. The material is to be good quality and is to be affixed to the sheet metal according to the manufacturer’s recommendations".

**PS 5409 MEASUREMENT AND PAYMENT**

**Delete pay items 54.01, 54.02 and 54.03 and replace with the following:**

**Item Unit**

PS54.01 Road sign boards with painted or coloured background.

Symbols, lettering and borders in Class 1 retro-reflective material,

complete with posts and supports pre-painted galvanised steel

plate (Chromadek or approved equivalent) position as shown on

the drawings:

(a) Area not exceeding 2m2.......................................................................... m2

(b) Area exceeding 2m2 but not 10m2.......................................................... m2

(c) Area exceeding 10m2............................................................................. m2

**Add the following new pay item:**

**Item Unit**

PS54.10 Erection of Standard Road Signs........................................................... No

The unit of measurement shall be the number of specified road signs erected. The tendered rate shall include full compensation for the provision and fixing in position of sign faces, posts, nuts, for painting the surfaces, lettering, excavation for posts, concreting, backfilling, removal of excess excavated materials, etc. and all that is necessary to make the work comply with the specifications.

**SECTION 5500: ROAD MARKINGS**

**PS 5501 SCOPE**

**Add the following: -**

After sections of road are completed and before being opened to traffic all road markings are to be completed. The road studs will not be placed at this stage. The Contractor shall return during the Defects Liability Period to re-paint all road marking as specified as well as the placement of road studs.

All Road Traffic Markings shall comply with the South African Development Community (SADC) Road Traffic Sign Specifications.

The Contractor may use either retro reflective paint or a propriety brand road marking material and shall provide a three year guarantee for the road traffic markings. Towards the end of the Defects Liability period the Contractor shall repaint all road traffic markings. No separate payment shall be payable. The Contractor shall make appropriate allowance in his programme and his tender rates for re-painting at the end of the Defects Liability Period.

The Employer shall withhold retention monies due until the Contractor has repainted the road markings to the satisfaction of the Engineer. Should the Contractor fail to remobilize the road marking unit team and attend to the notified defects within the Defects Liability Period, the Employer may use the retention money to engage other Contractors to carry out the outstanding work and deduct these costs from the retention monies. Should these retention moneys be insufficient to cover the cost of correcting the road traffic markings then the Employer may recover the shortfall from the Contractor by legal processes.

**PS 5502 MATERIALS**

**5502(a) Paint**

(ii) Retro-reflective road marking paint

Road marking paint shall comply with the requirements of SABS 731-1 for type 1 paint

During actual painting the Contractor must supply sealed samples of the paint to be used to the Engineer together with details of the paint batch numbers and testing carried out on these particular batches by the paint manufacturer to prove compliance with this specification. These samples shall be kept until the end of the period of maintenance.

**5502 (b) Road studs**

**Delete the first paragraph of the sub clause and substitute with the following:**

Road studs shall consist of an acrylic plastic shell filled with a tightly adherent potting compound. The shell shall contain two prismatic retro-reflective faces to reflect incident light from opposite directions. The colour shall conform to the colour requirements of ASTM D4280.

The shell shall be moulded of methyl methacrylate conforming to ASTM D788 Grade 8. The outer surface of the shell shall be smooth. The base of the marker shall be substantially free from gloss and substances that may reduce its bond to adhesive.

The filler shall be a potting compound capable of supporting a minimum load of 909 kg when tested in accordance with ASTM D4280.

The size, colour and spacing of road studs shall be as indicated on the Drawings or directed by the Engineer.

**PS 5504 MECHANICAL EQUIPMENT FOR PAINTING**

**Insert the following additional paragraph after the first paragraph:**

Equipment for thermoplastic marking shall consist of at least one truck mounted storage boiler, a screed box on wheels and an extruder or spraying machine. A steel manual screed shall be used to paint arrows and other symbols. The extruder may be truck-mounted or self-propelled. Boilers must be fitted with mechanical stirrers to keep the mineral matter and glass beads in suspension. Accurate thermometers and thermostats are required on all boilers.

**PS 5507 APPLYING THE PAINT**

**Add the following at the end of the third paragraph:**

The thickness of thermoplastic laid in the trial and for each day’s work shall be checked by applying the material to a clean steel plate. The plate sample shall be taken while marking is in progress by positioning the plate on the road in the projection of the line which is about to be marked. The thickness shall then be confirmed with callipers. Gaps left within the road markings due to testing shall be immediately reinstated.

**Add the following to end of the last but one paragraph:**

The rate of application of thermoplastic road paint shall be related to volume and be that amount sufficient to achieve the specified nominal line thickness.

**Add the following to the last paragraph:**

After completion of a section of asphalt surfacing and before opening the section to traffic, the pre-marking of the centre and edge lines shall be done. At least two weeks shall elapse after completion of the surfacing before the permanent road markings shall be applied, unless otherwise directed by the Engineer.

**PS 5508 APPLYING THE RETRO-REFLECTIVE BEADS**

**Add the following to the end of the first paragraph:**

In the case of thermoplastic paint, the rate of application of beads shall be 0.5kg/m2 of marking. This amount shall be in addition to the quantity already mixed within the composition of the thermoplastic.

**PS 5514 MEASUREMENT AND PAYMENT**

Delete pay item 55.04: Variation in the rate of paint application.

The Contractor shall be deemed to have included the cost of this item in the rates tendered for road marking.

**SECTION 5700: LANDSCAPING AND GRASSING**

**PS 5702 MATERIALS**

**Add/amend the following to the relevant sub-clauses:**

**5702(g) Topsoil**

**Delete paragraphs two, three and four, and replace them with the following:**

Topsoil shall be obtained from stripping operations under embankments and in cuttings in accordance with Sub-Clauses 1702(c) and 1703(a). Topsoil stripped from borrow areas shall not be used for topsoiling elsewhere but must be used to rehabilitate the borrow areas themselves. If the Contractor fails to conserve the topsoil as prescribed in Sub-Clause 1702(c) he shall obtain suitable topsoil from other sources at his own cost.

Care shall be taken to prevent the compaction of the topsoil in stockpiles or in the Works in any way, particularly by trucks driven over such material.

**PS 5704 PREPARING AREAS FOR GRASSING**

**5704(c) Areas Which Require Topsoil**

**Add the following to this sub-clause:**

All surfaces to be grassed shall immediately before grassing be roughened to ensure a proper bond with the topsoil. Topsoil free from stones shall be placed on the prepared surface and trimmed to a thickness slightly higher than the final thickness.

Where shown on the Drawings or directed by the Engineer the verges and the slopes of cuttings and embankments shall be covered with topsoil and lightly rolled to the required final thickness.

**PS 5705 GRASSING**

The Contractor shall choose the method of establishing grass. No additional payment shall be made regardless of the method of grassing employed by the Contractor.

**5705(a) Planting Grass Cuttings**

**Add the following to this sub-clause:**

Fresh grass cuttings of the “Kapinga” species or other approved species shall be planted by the Contractor at 250 mm centres and watered at frequent intervals to ensure the grass takes root and spreads out quickly. Grass cuttings that have been allowed to dry out shall not be planted.

**5705(c) Hydroseeding**

**Add the following to this sub-clause:**

The Engineer shall approve the types and mixtures of seeds to be used before the Contractor orders any seed. Hydroseeding shall be carried out with an approved hydroseeding machine at a rate of application of not less than 38 kg of seed mixture per hectare. A mulch shall be added to the hydroseeding mix at an approved rate.

**5705(e) Grassing with an Approved Grassing Machine**

**Add the following to this sub-clause:**

Grassing shall be done with an approved grassing machine which plants the seeds in rows spaced not more than 250 mm apart. The machine shall plant the seeds approximately 6 mm deep and shall lightly compact the topsoil.

**PS 5706 MAINTAINING THE GRASS**

**5706(a) Watering, Weeding, Mowing and Replanting**

On line one of paragraph two delete “mow” and replace with “cut”.

**5706(b) Acceptable Cover**

**At the beginning of this sub-clause add the following as first paragraph:**

The Contractor shall be solely responsible for establishing an acceptable grass cover and for the cost of re-establishing grass by any method where no acceptable cover has been established.

**5706(c) Maintenance Period**

The maintenance period in respect of grass shall commence when an acceptable grass cover as defined in (b) above has been established and shall last one year or to the end of the period of the Contract, whichever expires later.

The Contractor shall be responsible for watering, cutting and maintenance of all grassed areas during the period of maintenance.

**PS 5709 MEASUREMENT AND PAYMENT**

**Merge pay items 57.01 and 57.02 as follows:**

**Item Unit**

PS57.01 Trimming and shaping by hand and/or machine ................ kilometer (km)

The unit of measurement shall be the kilometre of road trimmed on both sides. The tendered rate shall include the full compensation for ripping, ploughing (as described in Clause 5707) including topsoiling by using topsoil obtained from road reserve with unlimited free haul.

**Add the following pay item:**

Item Unit

PS57.12 Paving:

(a) On walkway with 60mm thick, 25Mpa interlocking bricks.................... m2

(b) 30mm thick sand bedding for interlocking bricks.................................. m2

The tendered rates shall include the full compensation for the supply and laying of approved sand bedding and paving units in accordance with the specifications. Sand and paving bricks shall be obtained from sources identified by the Contractor and haulage distance shall be unlimited.

**SECTION 5800: FINISHING THE ROAD AND ROAD RESERVE AND TREATING OLD ROADS**

**PS 5804 MEASUREMENT AND PAYMENT**

Delete pay items 58.01 and 58.02. The Contractor shall be deemed to have included the cost of these works in Item 15.01, in related or in any other tendered rates.

**SERIES 6000: STRUCTURES**

**SECTION 6100: FOUNDATIONS FOR STRUCTURES**

**PS 6115 MEASUREMENT AND PAYMENT**

In pay Items 61.18 and 61.23 - the casings shall be permanent.

**SECTION 6200: FALSEWORK, FORMWORK AND CONCRETE FINISH**

**PS 6204 DESIGN**

**6204(b) Falsework**

**Add the following:**

In the view of the possibility of flooding of the river during construction of the bridge decks, the Contractor shall not be permitted to adopt a method of construction or arrangement for supporting the deck formwork which is vulnerable to damage during flooding. Although the Contractor is free to select suitable arrangements for the support work, the arrangements shall be subject to acceptance by the Engineer. Should the Engineer consider the proposed arrangement unsuitable, the Contractor shall be required to amend and resubmit alternative arrangements acceptable to the Engineer. The Contractor shall not be entitled to additional payment or extension of time arising from the Engineer’s rejection of his proposals.

The following conditions shall apply:

1. Where the deck formwork support is provided by a system of girders, the girders are required to be supported by temporary supports mounted on the pier/abutment foundations or by approved temporary connections to the pier/abutment walls. Girders shall also be supported by sufficient intermediate temporary support to ensure that the deflections remain within limits acceptable to the Engineer. All temporary supports shall be designed and braced to resist horizontal flood loading and shall incorporate measures to prevent erosion and undermining. A minimum clear distance of 3,2m measured perpendicular to the direction of the river flow shall be maintained between all temporary supports to allow the passage of water and flood debris.
2. Where the deck formwork consists of conventional staging of closely spaced braced supports, measures shall be taken to deviate the river flow around the staging. Such measures shall provide adequate scour protection, foundation platforms and flow deflection walling to protect the staging from damage or undermining during flooding and shall be subject to acceptance by the Engineer.

The Contractor’s proposals for the falsework and formwork arrangement shall be subject to the approval of the Engineer and shall be timeously submitted for approval. The design calculations and drawings for the falsework shall be signed by a qualified and registered Structural Engineer employed by the Contractor.

**Note: Tenderers are required to submit with their tender, concept details of their intended method of accommodating the flow of the river and supporting the deck formwork.**

**6204(c) Formwork**

**Add the following:**

The design and construction of the deck soffit formwork shall ensure that no cracking of the deck concrete occurs at an early age as a result of localized movement constraints. This may be achieved by utilizing a number of continuous longitudinal formwork bearers with suitable connections to the concrete piers, or by other means acceptable to the Engineer. All details shall be subject to the Engineer’s approval.

At all deck construction joints special attention should be paid to the attachment of the formwork assembly to the sections of concrete cast first.

The Contractor shall allow for the above requirements in his tendered rates for formwork.

**PS 6205 CONSTRUCTION**

**6205(b) Formwork**

(i) General

**Add the following:**

In order to obtain a high-quality uniform finish to the exposed side faces of the parapet, it is required that the formwork for these elements be constructed from custom built steel formwork or approved new timber boarding with a high quality sealed (impermeable) facing. Custom built steel formwork shall be constructed from plate of minimum thickness 4mm.

Formwork to the deck and parapet soffits and the sides of the deck may be constructed from timber or steel formwork panels. The formwork panels must be in a new condition, or must be selected used panels in an “as-new” condition.

(ii) Formwork to exposed surfaces

**Add the following to the first paragraph:**

The arrangement of formwork and boards is required to present a neat and regular appearance. The Contractor is required to submit his proposed arrangement to the Engineer for approval.

**PS 6209 UNFORMED SURFACES: CLASSES OF FINISH**

**6209(c) Class U3 surface finish (smoothly finished)**

**Add the following paragraph:**

The unformed surfaces of the parapet and kerb shall receive a Class U3 finish.

**SECTION 6300: STEEL REINFORCEMENT FOR STRUCTURES**

**PS 6310 MEASUREMENT AND PAYMENT**

**Reword Pay Item 63.01 as follows:**

**Item Unit**

PS63.01 High yield stress deformed steel reinforcement bars, 450MPa for:

(i) Superstructure slab, footwalks and parapet walls..................... tonne

(ii) etc.

**SECTION 6400: CONCRETE FOR STRUCTURES**

**PS 6407 PLACING AND COMPACTING**

**6407(b) Placing**

**Add the following:**

The Contractor's method of placing and compacting the fresh concrete shall be carefully planned and shall be subject to the Engineer's approval.

**PS 6409 CURING AND PROTECTING**

**Add the following:**

Unless specifically approved by the Engineer, the following curing methods shall be employed:

1. Piers and abutments shall be cured by retaining the formwork in place for a period not less than two (2) days (extended to three (3) days in the case of cold weather), thereafter the concrete shall be cured for a further five (5) days in accordance with methods (d), (e) or (f) of this sub-clause, subject to the Engineer’s approval. Where plastic sheeting is used, the concrete shall be wrapped in white plastic of minimum thickness 250μm. The tops of the piers and abutments shall be kept continuously wet.
2. The top surfaces of the deck slabs shall be kept continuously wet for a minimum period of five (5) days after casting.
3. The parapets shall be kept continuously wet for a minimum period of five (5) days after casting.

**PS 6416 MEASUREMENT AND PAYMENT**

**SECTION 6600: NO-FINES CONCRETE, JOINTS, BEARINGS, PARAPETS AND DRAINAGE FOR STRUCTURES**

**PS6603 JOINTS IN STRUCTURES**

**6603(d) Plug Type Expansion Joints**

**Add the following paragraph:**

The expansion joints shall be installed by an approved specialist sub-contractor and the installed joints shall be guaranteed to provide a stable, completely watertight, corrosion and maintenance free system for a period of fifteen years from the date of final acceptance by the Engineer. The guarantee shall confirm that any defect resulting from defective materials, installation and/or workmanship shall be repaired by the Contractor at his cost.

**PS6608 MEASUREMENT AND PAYMENT**

**Add Pay Item 66.27 as follows:**

**Item Unit**

PS66.27 Dismantle existing steel posts and railings of all types and

Sizes, haul and stack them at nearest Employer’s depot free

Haul distance................................................................................................ m

**Add the following section:**

**SECTION 6900: CONCRETE FOR BUS BAY PLATFORMS**

The bus bays platforms are as detailed on the drawings. The construction shall include but not limited to:

(i) necessary excavation in any material and at any depth and preparation of the excavated surface;

(ii) pavement layers laid and compacted in 150mm layers to 95% modified AASHTO density using subbase quality materials;

(iii) laying edge kerbs around the platform or fixing formwork for casting concrete all as shown on the drawings;

(iv) fixing reinforcement and casting concrete with shrinkage joints and hard broom surface finish;

(v) curing the concrete in accordance with the relevant specifications.

**SP 6901 MEASUREMENT AND PAYMENT**

**Item Unit**

PS69.01 Concrete Pavements for Bus Bays

(a) Class 30/19 cast in situ concrete reinforced with mesh Ref 617 in

bus bays............................................................................................................. m3

The unit of measurement shall be the cubic metre of reinforced concrete placed, cured and approved by the Engineer. The tendered rate shall include full compensation for carrying the works items listed above including any other works, operation or activity necessary for completing the bus bay platform in compliance with the specifications and drawings.

**SECTION 9200: TESTING OF MATERIALS AND WORKMANSHIP**

Add the following Clause.

**Clause 9214: Testing by Independent Parties**

(a) The Contractor shall not appoint a third party to carry out any tests without the Engineer’s approval. The Engineer reserves the right to reject the results of any tests carried out by parties not approved by him. All in-situ tests shall be carried out in the presence of the Resident Engineer or a representative appointed by him.

(b) The Engineer may from time to time appoint an independent organization or person to carry out any tests and the Contractor shall accord such organization or person full cooperation and assistance he may require.

**SECTION 7 B:**

**TECHNICAL SPECIFICATIONS**

OTHER SPECIFICATIONS FOR BUILDING WORKS

**Table of Contents**

[PART 1 – CIVIL WORKS iii](#_Toc115189051)

[PART 2 – ELECTRICAL WORKS 147](#_Toc115189052)

[PART 3 – MECHANICAL WORKS 175](#_Toc115189053)

**SPECIFICATION FOR CIVIL WORKS**

**1.0 BUILDINGS...........................................................................................1**

1.1 GENERAL INFORMATIO...........................................................................................1

1.1.1 MATERIALS GENERALLY ..............................................................................1

1.2 DEMOLITIONS AND ALTERATION..........................................................................4

1.2.1 DEMOLITION...................................................................................................4

1.2.2 PROTECTION ...................................................................................................4

1.2.3 LAYING THE DUST .........................................................................................4

1.2.4 MAKING GOOD ...............................................................................................4

1.2.5 CREDIT FOR MATERIALS ..............................................................................4

1.2.6 DEFINITIONS OF TERMS ...............................................................................4

1.3 EXCAVATIONS AND EARTHWORK .........................................................................9

1.3.1 CODES OF PRACTICE......................................................................................9

* + 1. INSPECTION OF SITE .....................................................................................9
    2. PROCEDURE ....................................................................................................9
    3. EXISTING TREES AND SHRUBS....................................................................9

1.3.5 SITE CLEARANCE............................................................................................9

1.3.6 WHITE ANT INSECTICIDE TREATMENT .....................................................9

1.3.7 EXCAVATION .................................................................................................10

1.3.8 ROCK................................................................................................................10

1.3.9 BLASTING ........................................................................................................10

1.3.10 BORROW PITS ................................................................................................10

1.3.11 HARDCORE FILLING ....................................................................................10

1.3.12 FILLING OBTAINED FROM THE EXCAVATIONS.......................................11

1.3.13 MATERIALS FOUND IN THE EXCAVATIONS .............................................11

1.3.14 INSECTICIDE TREATMENT ..........................................................................11

1.3.15 ROTECTION OF PIPES, CABLES ETC. ...........................................................11

1.3.16 RATES FOR EXCAVATIONS..........................................................................12

1.3.17 RATES FOR DISPOSAL ..................................................................................12

1.3.18 POLYTHENE SHEETING ..............................................................................13

1.3.19 GRASSED AREAS ...........................................................................................13

1.4 CONCRETE WORK ........................................................................................................13

1.4.1 GENERALLY ......................................................................................................13

1.4.2 MATERIALS .......................................................................................................13

1.4.3 MANUFACTURERS RECOMMENDATIONS....................................................14

1.4.4 STANDARDS......................................................................................................14

1.4.5 LOCAL CONDITIONS .......................................................................................14

1.4.6 SINGLE SOURCES .............................................................................................14

1.4.7 SAMPLES ...........................................................................................................15

1.4.8 ARCHITECT/ENGINEER ..................................................................................15

1.4.9 CODE OF PRACTICE .........................................................................................15

1.4.10 SUPERVISION ...................................................................................................15

1.4.11 CONTRACTORS PLANT, EQUIPMENT AND CONSTRUCTION PROCEDURES .....................................................................................................................15

1.4.12 TOLERANCES ....................................................................................................16

1.4.13 MATERIALS IN GENERAL ...............................................................................16

1.4.14 SAMPLES ...........................................................................................................17

1.4.15 CEMENT ............................................................................................................17

1.4.16 AGGREGATES ...................................................................................................18

1.4.17 WATER ...............................................................................................................18

1.4.18 READY-MIXED CONCRETE .............................................................................19

1.4.19 EXPANSION JOINTING ...................................................................................19

1.4.20 JOINT SEALER..................................................................................................19

1.4.21 CONCRETE STRENGTHS .................................................................................19

1.4.22 MEASURED PROPORTIONS OF CONCRETE ........................ .......................20

1.4.23 WEIGH BATCHING MACHINE.......................................................................20

1.4.24 CONCRETE CLASSES 40 TO 25 .......................................................................20

1.4.25 WATERPROOF CONCRETE .............................................................................21

1.4.26 WATERBAR .......................................................................................................21

1.4.27 ESTING EQUIPMENT.......................................................................................22

1.4.28 WORK CUBE TEST ...........................................................................................22

1.4.29 MIXING AND PLACING OF CONCRETE ........................................................23

1.4.30 COMPACTION...................................................................................................25

1.4.31 CONSTRUCTION JOINTS ................................................................................26

1.4.32 CURING AND PROTECTION............................................................................27

1.4.33 FAULTY CONCRETE .........................................................................................27

1.4.34 ROD REINFORCEMENT ..................................................................................28

1.4.35 FABRIC REINFORCEMENT ............................................................................28

1.4.36 FIXING ROD REINFORCEMENT ...................................................................28

1.4.37 POSITION AND CORRECTNESS OF REINFORCEMENT ..............................29

1.5 CARPENTRY AND JOINERY........................................................................................29

1.5.1 GENERALLY .....................................................................................................29

1.5.2 QUALITIES OF TIMBER ...................................................................................29

1.5.3 INSECT DAMAGE .............................................................................................30

1.5.4 SEASONING OF TIMBER ................................................................................30

1.5.5 PREPARATION AND PROTECTION OF TIMBER ..........................................30

1.5.6 SPECIES OF TIMBER ........................................................................................31

1.5.7 PRESSURE IMPREGNATED TIMBER .............................................................31

1.5.8 HARDWOOD......................................................................................................31

1.5.9 SOFTWOOD .......,,,,............................................................................................31

1.5.10 PLYWOOD .........................................................................................................32

1.5.11 CHIPBOARD .....................................................................................................32

1.5.12 LOCK BOARD ....................................................................................................33

1.5.13 FIBREBOARD …................................................................................................33

1.5.14 TEMPERED HARDBOARD ..............................................................................33

1.5.15 WOOD BLOCK FLOORS ...................................................................................33

1.5.16 TIMBER DOORS ...............................................................................................33

1.5.17 FLUSH DOORS ..................................................................................................34

1.5.18 HARDWOOD VENEERS...................................................................................34

1.5.19 LAMINATED PLASTIC VENEERS ...................................................................34

1.5.20 MISCELLANEOUS MATERIAL........................................................................35

1.5.21 NAILS AND SCREWS .......................................................................................35

1.5.22 TOLERANCES ...................................................................................................35

1.5.23 JOINTING .........................................................................................................35

1.5.24 FRAMED WORK ...............................................................................................36

1.5.25 PLUGGING ........................................................................................................36

1.5.26 CARPENTRY WORK..........................................................................................36

1.5.27 JOINERY WORK ...............................................................................................37

1.5.28 SOFTWOOD ......................................................................................................38

1.5.29 HARDWOODS ...................................................................................................38

1.5.30 PLYWOOD .........................................................................................................38

1.5.31 CHIPBOARD .....................................................................................................38

1.5.32 BLOCK BOARD .................................................................................................39

1.5.33 LAMINATED PLASTIC VENEER ......................................................................39

1.5.34 FIXING DOORS AND FRAMES .......................................................................39

1.5.35 CONSTRUCTION OF DOORS ..........................................................................40

1.5.36 FITTINGS AND FIXTURES .............................................................................40

1.5.37 MOULDINGS ....................................................................................................40

1.5.38 CIRCULAR WORK .............................................................................................41

1.5.39 SCRIBING ...........................................................................................................41

1.5.40 FINISH ...............................................................................................................41

1.5.41 COMPLETION OF WORKS ...............................................................................41

1.5.42 DEFECTIVE WORK ...........................................................................................41

1.5.43 GENERALLY ......................................................................................................41

1.6 METALWORK........................................................................................................42

**MATERIALS ..................................................................................................................42**

1.6.1 GENERALLY .....................................................................................................42

1.6.2 MILD STEEL ......................................................................................................42

1.6.3 HALLOW SECTION TUBING ...........................................................................42

1.6.4 BOLTS, NUTS AND WASHERS ........................................................................43

1.6.5 GALVANIZED SHEET STEEL ..........................................................................43

1.6.6 ALUMINIUM.....................................................................................................43

1.6.7 STAINLESS STEEL............................................................................................43

1.6.8 METAL DOOR FRAMES ...................................................................................43

1.6.9 STEEL WINDOWS.............................................................................................43

1.6.10 ALUMINIUM WINDOWS .................................................................................44

1.6.11 WELDING .........................................................................................................45

1.6.12 PAINTING..........................................................................................................46

1.6.13 FIXING OF STEEL WINDOWS ........................................................................46

1.7 FINISHINGS ..........................................................................................................47

1.7.1 OTHER SPECIFICATIONS ................................................................................47

1.7.2 SAMPLES .......................................................................................................................47

1.7.3 FINISHED THICKNESSES ...............................................................................47

1.7.4 MATERIALS GENERALLY ...............................................................................48

1.7.5 BONDING ..........................................................................................................48

1.7.6 CHASES, OPENINGS AND HOLES ..................................................................48

1.7.7 IN-SITU FINISHINGS.......................................................................................48

1.7.8 TILES SLAB AND BLOCK FINISHINGS ..........................................................57

1.7.9 SUSPENDED CEILINGS ...................................................................................58

1.8 GLAZING .......................................................................................................................59

1.8.1 GENERAL..........................................................................................................59

1.8.2 STANDARDS.....................................................................................................60

1.8.3 CLEAR SHEET GLASS ETC. .............................................................................60

1.8.4 PLATE GLASS ...................................................................................................60

1.8.5 OBSCURED GLASS ...........................................................................................60

1.8.6 GLAZING GASKETS .........................................................................................60

1.8.7 WASHLEATHER ..............................................................................................60

1.8.8 PUTTY ...............................................................................................................60

1.8.9 MIRRORS ...........................................................................................................61

1.9 WORKMANSHIP ...........................................................................................................61

1.9.1 GENERAL...........................................................................................................61

1.9.2 MEASUREMENTS ............................................................................................61

1.9.3 SINGLE GLAZING .............................................................................................61

1.9.4 WIRED GLASS ...................................................................................................61

1.9.5 STORAGE AND HANDLING .............................................................................62

1.9.6 PROTECTION ....................................................................................................62

1.9.7 DAMAGE ...........................................................................................................62

1.9.8 DEFECTIVE WORK...........................................................................................62

1.9.9 GLAZING TO WOOD .........................................................................................62

1.9.10 GLAZING TO METAL…………….....................................................................................63

1.9.11 GLASS THICKNESS ..........................................................................................63

1.9.12 CLEANING ........................................................................................................63

1.10 PAINTING AND DECORATING ...................................................................................63

1.10.1 MANUFACTURERS ..........................................................................................63

1.10.2 GENERAL......................................................................................................................63

1.10.3 EMULSION PAINTS ........................................................................................64

1.10.4 GLOSS PAINT ...................................................................................................64

1.10.5 LEAD BASED PAINTS ......................................................................................64

1.10.6 CLEAR FINISHES .............................................................................................64

1.10.7 PRIMERS AND UNDERCOATS .......................................................................64

1.10.8 KNOTTING ........................................................................................................64

1.10.9 WHITE SPIRIT..................................................................................................64

1.10.10 TIMBER STAIN .................................................................................................65

1.10.11 STOPPING .........................................................................................................65

1.10.12 FILLERS .............................................................................................................65

1.10.13 TEXTURED COATING ......................................................................................65

1.11 WORKMANSHIP …………...............................................................................................66

1.11.1 GENERAL..........................................................................................................66

1.11.2 BRUSHWORK ...................................................................................................67

1.11.3 STOPPING AND FILLING.................................................................................67

1.11.4 STIRRING ..........................................................................................................67

1.11.5 INSPECTION .....................................................................................................67

1.11.6 PAINT APPLICATION.......................................................................................67

1.11.7 DRYING .............................................................................................................68

1.11.8 UNPRIMED WOODWORK...............................................................................68

1.11.9 PRIMED WOODWORK ....................................................................................68

1.11.10 PLYWOOD AND BLOCKBOARD .....................................................................68

1.11.11 CLEAR FINISHED WOODWORK....................................................................68

1.11.12 BARE METALWORK.........................................................................................69

1.11.13 GALVANIZED METALWORK ..........................................................................69

1.11.14 PRIMED METALWORK ...................................................................................69

1.11.15 COPPER ……......................................................................................................69

1.11.16 BRICKWORK, CONCRETE, ETC. ......................................................................69

1.11.17 COLOURS..........................................................................................................70

1.11.18 TOXIC WASH ....................................................................................................70

1.11.19 PROTECTION ....................................................................................................70

1.11.20 DAMAGE ...........................................................................................................70

1.11.21 CLEANLINESS ...................................................................................................71

1.11.22 PERFORMANCE ................................................................................................71

1.11.23 PACKING, DELIVERY AND STORAGE ............................................................72

1.11.24 VINYL EMULSION PAINT ...............................................................................72

1.11.25 GLOSS FINISH PAINT .....................................................................................72

1.11.26 CLEAR POLYURETHANE VARNISH ...............................................................72

1.11.27 TEXTURED COATING ......................................................................................72

1.12 ELECTRICAL INSTALLATIONS ...................................................................................73

1.12.1 GENERAL ..........................................................................................................73

1.12.2 REGULATIONS .................................................................................................73

1.12.3 QUALITY OF MATERIALS AND MANUFACTURING STANDARDS........................................................................................................................74

1.12.4 INSTALLATION REQUIREMENTS .................................................................75

1.12.5 STANDARDS......................................................................................................76

1.12.6 RECORD DRAWINGS ...........................................................................................77

1.12.7 CONTRACT DRAWINGS ..................................................................................78

1.12.8 WORKING DRAWINGS ...................................................................................78

1.12.9 CO-ORDINATION OF ENGINEERING SERVICES .........................................79

1.12.10 LABELS..............................................................................................................79

1.12.11 INSTRUCTION OF EMPLOYER‟S STAFF........................................................79

1.12.12 OPERATING AND MAINTENANCE INSTRUCTION MANUALS ...................80

1.12.13 APPROVAL/CHECKING PROCEDURES .........................................................80

1.12.14 EQUIPMENT GUARANTEES............................................................................81

1.12.15 PLANT AND EQUIPMENT PERFORMANCE TESTING ..................................81

1.12.16 SCOPE OF WORK..............................................................................................82

1.12.17 POWER SUPPLY ...............................................................................................83

1.12.18 LOW VOLTAGE SWITCHBOARD, DISTRIBUTION BOARD AND CONSUMER UNITS…………………………………………………...................................................88

1.12.19 PARTICULAR REQUIREMENTS FOR SWITCHBOARDS ..............................96

1.12.20 DISTRIBUTION BOARD ......................................................................................96

1.12.21 CABLES.................................................................................................................97

1.12.22 STANDBY GENERATOR SET ............................................................................103

1.12.23 TESTING AND INSPECTION .............................................................................106

1.12.24 COMMISSIONING AND SYSTEM DEMONSTRATION ...................................108

1.13 PLUMBING AND DRAINAGE INSTALLATION ............................................................109

1.13.1 GENERAL............................................................................................................109

1.13.2 MATERIALS ........................................................................................................110

**2.0 ROADS ...................................................................................................120**

2.1.1 GENERAL............................................................................................................120

2.1.2 EARTHWORKS ..................................................................................................120

2.1.3 ROAD WORKS ....................................................................................................123

2.1.4 DRAINAGE AND STRUCTURES .......................................................................130

1. BUILDINGS

# 1.1 GENERAL INFORMATION

1.1.1 MATERIALS GENERALLY

All materials used in the works shall be new and of the qualities and kinds specified herein and equal to approved samples. Deliveries shall be made sufficiently in advance to enable samples to be taken and tested if required. All materials which are not approved, or which are damaged, contaminated or have deteriorated in any way or do not comply in any way with the requirements of this specification shall be rejected and shall be immediately removed from the site at the Contractors expenses.

### *1. 1. 1. 1* MAT ERIAL FOR WHICH THEREIS A MALAWI BUREAU OF STANDARDS S P E C I F I C A T I O N

The Works shall be constructed and tested in conformity with the standards indicated in these specifications. Wherever reference is made in the contract to specific standards and codes to be met by the materials, plant, and other supplies 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 are national or relate to a particular country or region, other authoritative standards which ensure substantially equal or higher performance than the standards and codes specified will be accepted subject to the Engineer’s prior review and written approval. The alternative standards and codes proposed shall be translated by the contractor into the English language prior to submission for 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 30 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 substantially equal performance, the Contractor shall comply with the standards specified in the documents.

For convenience and for reference purposes, certain equipment, articles, materials, or processes are designated in the Specifications by brand name, trade name or catalogue name and number. Such designation shall be deemed to be followed by the words “or approved alternative” whether such words are shown or not. The contractor may offer other equipment, articles, material, or processes which have similar characteristics, and which provide performance at substantially equivalent or better than to those specified, which will be accepted, subject to the Engineer’s prior review and written approval. The burden of providing evidence as to comparative quality and suitability of alternatives shall be upon the Contractor and such evidence must be submitted to the Engineer at least 30 days prior to the date when the Contractor desires approval. No such alternative shall be used without prior written approval by the Engineer.

### *1. 1. 1. 2 MATERIALS FOR WHICH THERE IS NO MALAWI BUREAU OF STANDARDS SPECIFICATION*

All Materials used in the works for which no Malawi Bureau of Standards specification has been published shall conform to the British Standard specification for such materials. If there is no published standard as specified for any materials, the quantity of such material shall be generally of a standard equal to those for which there is a Malawi Bureau of Standards or British Standard specification.

### *1. 1. 1. 3 ALTERNATIVES TO PROPRIETARY BRANDS*

Where materials are specified by their proprietary names or where catalogue numbers or descriptions specify fittings, the Contractor may offer materials or fittings of alternative manufacture, which are of equal quality. Such alternatives must be approved before being used in the works and the Contractor shall allow for this. But, prior to tendering he may submit to the Architect the names of any supplier or manufacturer whose products he intends to use, together with catalogue numbers and descriptions and/or samples or samples decision of the Architect will be final.

### *1. 1. 1. 4 SAMPLES*

The Contractor shall furnish for approval with reasonable promptness all samples of materials and workmanship required by the Architect. The Architect shall check and approve such samples for conformance with the design concept of the work and for compliance with the information given in the Contractor Documents. The work shall be in accordance with approved samples. The following conditions shall apply in respect of samples:

1. All Materials samples shall be delivered to the Architects Office with all charges in connection therewith paid by the Contractor.
2. Duplicate final approval samples, in addition to any required for the Contractors use, shall be furnished to the Architect, one for office use and one for the site.
3. Samples shall be furnished so as not to delay fabrication, allowing the Architect reasonable time for consideration of the sample submitted.
4. Each sample shall be property labelled with the name and quality of the material, manufacturers name, name of project, the Contractors name and the date of submission and the specification number to which the sample refers.

### *1. 1. 1. 5 MEASURING AND TESTING EQUIPMENT*

The Contractor shall provide the following equipment for carrying out measuring and control tests on the site and maintain all the equipment in full working order.

1. Straight edges 2m and 4m long for testing the accuracy of the finished concrete.
2. A glass graduated cylinder for use in the site test of organic impurities in the sand.
3. Slump test apparatus.
4. 150mm steel cube molds with base plates and tamping rod to BS 1881.
5. Two 30m steel tapes.
6. One dumpy or quickest level and staff.
7. Micrometer
8. Electronic distance meters
9. Timber moisture content testing meter.

1.2 DEMOLITIONS AND ALTERATIONS

1.2.1 DEMOLITION

Demolition, taking out, and cutting away shall be carefully performed and every precaution shall be taken to ensure the safety of the works. If damage should occur in the carrying out of the demolitions or alterations the contractor shall reinstate and make the same good at his own expense.

1.2.2 PROTECTION

Supply, erect and maintain during the cutting of openings etc., all necessary protection to the existing premises against damage by weather or other causes.

1.2.3 LAYING THE DUST

Allow for laying the dust as far as possible during the alteration, by watering with a hose or other means.

1.2.4 MAKING GOOD

All making good of blockwork, building up of openings etc., shall be in solid blockwork unless otherwise described, in cement mortar (1.4) properly cut, toothed and bonded and pinned up to existing work and pointed where necessary.

1.2.5 CREDIT FOR MATERIALS

Unless otherwise specified materials arising from the demolitions and alterations will become the property of the Contractor. If the Contractor wishes to allow a credit for any such materials the appropriate allowance should be included in the credit column of the Bills of Quantities. In the event that the Employer wishes to take possession of any such materials the Contractor will only be entitled to receive compensation for the amount of credit indicated.

1.2.6 DEFINITIONS OFTERMS

The following definitions explain and simplify the terms indicated in the description of the works.

i. Removal shall mean

* Dismantling/pulling down, taking down/taking out, taking up/stripping, etc. at the site of the works, getting from the site of the works to the outside of building by whatever means is necessary and disposal.

ii Disposal shall include:

* Handling on site to store or to pick up points for loading.
* Loading into skips or lorries.
* Transporting away from site to yard. Store or tip.
* Payment of all tip charges.

iii Making good shall include:

* Work as last described consequent on the like and matching materials and construction to existing.

iv. Form opening in brickwork or block work shall include:

* Shoring up and needing as required cutting the opening.
* Designing, providing, and inserting required beam or lintel and providing any calculations if required and obtaining building regulation approval.
* Providing and inserting cavity gutters and the like.
* Forming new arches and the like in facework to match existing.
* Quoting up jambs.
* Sealing cavity of hollow walls at jambs and cills and providing and inserting damp proof course.
* Making good facework and features to match existing.
* Forming new external sub-cills or sub thresholds to match existing.
* Making good the plaster work or other applied finishes including making out into reveals and providing metal angle beads to arises where required.
* Removing debris.

v Block/Blank off/fill in opening in brick work or block work shall include:

* Carefully cutting out any flooring opening and leveling and preparing for raising new work.
* Cutting toothings for bonding in new work.
* Filling the opening with brickwork or blockwork, to match existing.
  + - Making out facework including cutting out arches, cills or ornamentation around the opening and continuing any general facework pattern.
* Wedging and pinning to existing soft.
* Providing and inserting matching damp proof course.
* Making out any plaster work including continuing any existing patterns or labors and making good between new and old work so that after decoration or weathering the original opening cannot be discerned.
* Remove debris

1. Remove partition shall include:

* Shoring up if required.
* Sizing providing and inserting required timber beam if the partition is loading.
* Taking off skirting, picture rails and the like.
* Stripping off lath plaster or other finished and insulation quits.
* Taking outdoors, borrowed lights, hatches and the like, frames linings and architraves and the like within any area of partitioning to be removed.
* Dismantling and taking down studding or framed works.
* Making good plasterwork or other wall and ceiling finishes including cornices and other enactments.
* Making good or making out floor boarding and any applied finishes.
* Taking out timber skirting, picture rails and the like.

vii. Repair roof covering shall include:

The term repair as applied to a tiled or slated roof includes any or all of the following operations as are necessary:

* Renew broken or missing tiles /slates to match existing including nailing with composition nails or securing with copper tingles.
* Re-wedge and repaint flashings and making out with new as required.
* Re-make tile/slate verges or eaves, including any bedding and painting.
* Renew defective or missing ridge or hip tiles.
* Remove debris

1. Renew roof covering shall include:

The term renew roof covering as applied to a tiled or slated roof includes:

* Lift and afterwards refix flashings, soakers, ridge, hip and valley covering etc.
* Strip existing roofing and battens, sort and set aside sound tiles/slates.
* Renew battens and relay existing tiles/slates together with new tiles/slates as required all to match existing including sacking felt underlay whether previously provided or not and including any special tiles/slates to eaves verges ridges and valleys.
* Re-wedge and repaint flashings.
* Remove debris.

The term „renew of roof covering‟ as applied to a sheet metal, felt or asphalt roof

includes:

* Strip existing roofing.
* Renovate sub-base as required.
* Lift and afterwards refix flashings.
* Renew roof covering to match existing.
* Re-wedge and repaint flashing.
* Remove debris.

ix. Renew flashings and the like shall include:

* The term renew flashings and the like as applied to pitched or flat roofs shall include any or all of the following as may be applicable:
* Strip existing flashings soakers, gutters, ridge and hip coverings.
* Renew all work previously removed in material or similar quality and substance.
* Re-wedge and repaint all new flashings.
* Remove debris.

x. Ease and adjust shall include:

The term ease and adjust as applied to doors, cupboard doors, casement sashes and the like includes:

* Re-hanging on existing hinges
* Planning edges as necessary.
* Oiling locks and hinges and leaving in working order

xi. Overhaul shall include:

The term overhaul applied to doors, cupboard doors, casement sashes and the like includes any or all of the following operations as are necessary:

* Cramp up loose tenon joints and wedge or re-wedge including gluing wedges.
* Piecing in any damaged timber to door frame and linings or architraves.
* Re-hanging existing hinges or renewing hinges if required plane edges.
* Plane off protruding tenons.
* Refix ironmongery and locks or renew if required.
* Oil locks and hinges
* Renew glass where cracked or broken.
* Renew putties where loose, missing or defective

xii. Strip existing installation shall include:

* The term strip existing installation in relation to electrical installation includes:
* Disconnecting at mains and making safe.
* Disconnection and taking out all existing conduiting and fittings except where conduit is to be re-used.

Strip existing installations in relation to plumbing and engineering installations shall include:

* Turning off incoming suppliers.
* Disconnecting and taking out all existing appliances, fittings and pipework.
* Removing defunct pipeclips, fixings, and the like.
* Making good walls, floors, ceilings as required.
* Removing debris.

1.3 EXCAVATIONS & EARTHWOR

1.3.1 CODES OF PRACTICE

The Contractor shall comply with the following codes of practice:

Site investigations BS 5930

Earthworks BS 6031

Foundations BS 8004

Protection of building against water from the ground BS 2002

1.3.2 INSPECTION OF SITE

The Contractor is deemed to have visited the site and to have ascertained the nature of the soil and sub-soils to be excavated. No claim will be allowed on account of these being of a different nature from that for which he has allowed in his prices.

1.3.3 PROCEDURE

The excavations and fillings shall be carried out in such a manner and order as the Architect may direct.

1.3.4 EXISTING TREES AND SHRUBS

Cut down and remove shrubs and trees as directed. No shrubs trees plants etc. shall be removed except as directed by the Architect and the Contractor shall be held responsible for any damage caused by the building operations to those shrubs trees etc. not so directed to be removed.

1.3.5 SITE CLEARANCE

All grass vegetable matter etc., must be removed or burned on site at the commencement of the contract over areas as directed by the Architect.

1.3.6 WHITE ANT INSECTICIDE TREATMENT

The Contractor must destroy any white ants nests found within the perimeter of the buildings and within a distance of 20m from the buildings externally and take out and destroy queen ants impregnate holes and tunnels with approved insecticide and back fill with hard material well rammed and consolidated.

1.3.7 EXCAVATION

The extra excavations are to be executed to the width shown on the Drawings and to the depths below existing ground levels as directed by the Architect in order to obtain satisfactory foundations. If the Contractor excavates to any widths or depths greater than those shown on the Drawings or as instructed by the Architect be shall at his own expense fill in such widths or depths of excavation beyond that instructed or shown with concrete to the satisfaction of the Architect.

The Contractor shall report to the Architect when secure bottoms to the excavations have been obtained. Any concrete or other work executed before the excavations have been inspected and approved shall, if so directed, be removed and new work substituted after the excavations have been approved all at the contractor’s expense.

1.3.8 ROCK

Rock is defined as any material met within the excavations which is of such size or position that it can only be removed by means of wedges compressed air plant or other special plant and the Architects opinion shall be final. Excavation in any material such as compacted murram, soft tuff, stiff clay or similar materials which in the opinion of the Architect can reasonably be removed by pick traxcavator or similar means will be deemed to be included in the prices for normal excavation.

1.3.9 BLASTING

No blasting will be permitted without the prior approval of the Architect and Local Authority.

1.3.10 BORROW PITS

Borrow pits will only be opened upon the site on receipt of permission from the Architect.

1.3.11 HARDCORE FILLING

Hardcore for filling under floors etc. shall be good hardstone ballast or quarry waste to the approval of the Architect broken to pass not greater than a 150mm ng or to be 75% of the finished thickness of the compacted layers whichever is the lesser and graded to contain sufficient smaller pieces to fill all roads so that it can be thoroughly compacted. The filling is to be laid in layers each of consolidated thickness not exceeding 225mm and well-watered and compacted by hand or mechanical tampers. The top surface of the hardcore shall be levelled or graded to falls as required and blinded with a 75mm layer of similar material finely crushed and well rolled and watered immediately before concrete is laid.

1.3.12 FILLING OBTAINED FROM THE EXCAVATION

Filling obtained from surplus excavated materials is to be free from all weeds, vegetable or other unsuitable materials and is to be filled in layers each of not more than 225mm finished thickness. Each layer to be well watered and consolidated before the subsequent layer is filled in.

1.3.13 MATERIALS FOUND IN THE EXCAVATIONS

No sand, aggregate or other materials found in the excavations is to be used in the works without the written permission of the Architect.

1.3.14 INSECTICIDE TREATMENT

The top surface of all fillings shall be treated with approved treatment applied in accordance with the manufacturers‟ specifications

1.3.15 PROTECTION OF PIPES, CABLES ETC

Before commencing works which include excavations or ground levelling by manual or mechanical excavation the Contractor shall at his expenses ascertain in writing from all other public companies and persons who may be affected the positions and depths of their respective ducts, cables mains or pipes and appurtenances. He shall thereupon search for and locate such services.

The Contractor shall at his own expense effectually prop protect, underpin, alter restore and make good as may be necessary all pipes, cables or ducts, poles or wires and their appurtenances disturbed or damaged during the progress of the works or in consequence thereof

Except that such services as required to be received or altered by virtue of the layout of the permanent work and not the manner in which the work is carried out shall be so removed or altered at the expense of the employer.

The Contractor shall be liable for the cost of repairs to any services damaged as a result of carrying out the works and shall further be liable for any damage which may be shown during the period of maintenance, to have arisen through the execution of these works.

1.3.16 RATES FOR EXCAVATIONS

The rates for excavation, including excavation in rock, must include trimming, levelling and preparing bottoms and all faces to receive concrete etc. and for any extra excavation required for planking and strutting.

Prices shall include for excavating in any material encountered unless specifically otherwise described, handling, etc. of extra bulk after excavating before consolidating any extra excavation require for formwork or planking and strutting circular work, grubbing up any old drains, roots, etc. that may be encountered, for trimming sides and levelling and ramming bottoms, forming steppings and trimming excavation or filling of embankments and batters as required.

In the price for the item, “Keep excavations free from all water”, the Contractor shall allow and make provision for keeping the whole of the work thoroughly drained and clear of water below the lowest level or any part of them so long as may be required and if considered necessary by the Architect, continuously day and night by petrol or hand pumps or other mechanical appliances, pipes, chutes, dams, manholes, sumps diversions or any other means necessary for the purpose. Water pumped from the trenches shall not be allowed to run down the road channels but shall be conveyed to the nearest surface water sewer ditch or river through roughs, chutes or pipes.

1.3.17 RATES FOR DISPOSAL

Rates for disposal of excavated material are to include for the selection of soil as it arises and for all double handling and re-excavation from spoil heaps not specifically ordered by the Architect

1 3.18 POLYTHENE SHEETING

Polythene sheeting shall be 1000 gauge obtained from an approved manufacturer joints in sheeting shall be treble folded with 150mm wide black plastic adhesive tape as manufactured by an approved manufacturer. The sheeting shall not be stretched but shall be laid loose with sufficient wrinkles to permit shrinkage up to 15%.

1 3.19 GRASSED AREAS

Areas to be grassed shall be cleared of all debris and roots and dug up to a depth of 300mm. Where outcrops of rock or murram occur, these will be covered with suitable soil to a depth of 150mm.

**1.4 CONCRETE WORK**

1 .4.1 GENERALLY

All workmanship, materials, tests and performance in connection with the reinforced concrete work are to be in conformity with the British Standard Code of Practice (BS 8110; 1985, incorporating the latest amendments thereto), for “the Structural use of Reinforced Concrete in Buildings” and in accordance with local by-laws.

QUALITY, SAMPLES, TESTING AND APPROVAL

1. 4.2 MATERIALS

Materials, commodities, components and equipment are to be new and unused unless otherwise specified. Handle, store, fix and protect all commodities with care to ensure that they are in perfect condition when incorporated into the work and handed over on completion.

1 .4.3 MANUFACTURER RECOMMENDATIONS

Handle, store and fix every commodity strictly in accordance with the printed or written recommendations of the manufacturer and/or supplier. Supply the Architect with copies of manufacturer recommendations. Inform the Architect if the manufacturer recommendations conflict with any other specified requirements and obtain his instructions before proceeding.

1 .4.4 STANDARDS

Where commodities or workmanship are specified by reference to British Standard (BS) or Codes of Practice (CP) or international (ISO) or other standards, such standards are deemed to be the latest published at the time of tendering. The Contractor will be deemed to have read and understood the standards specified, and no claim for want of knowledge will be allowed. The substitution of commodities or standards of workmanship complying with other standards may be allowed at the discretion of the Engineer but application for permission for such substitution must be made in writing in sufficient time to allow adequate investigation. Obtain certificates of Compliance with standards and submit them to the Engineer on request.

1. 4.5 LOCAL CONDITIONS

All materials, commodities, components, and equipment must be suitable for use in tropical climates.

1 .4.6 SINGLE SOURCES

Where a choice of manufacturer is allowed for any particular commodity, obtain the quantity required to complete the work from a single manufacturer, or obtain the approval of the Architect for any change in the source of supply. Produce written evidence of the source of supply when requested by the Architect.

1 .4.7 SAMPLES

Where samples of commodities or specimens of finished work are specified, submit samples or specimens to the Architect and obtain his approval before confirming orders or carrying out the work. Retain approved samples and specimens on site for comparison with the finished work. Finished work must conform in all respects with the samples or specimens approved. Remove samples and specimens when no longer required. The cost of supplying samples and specimens must be borne by the Contractor, but specimens may form part of the finished work where approved by the Architect.

1 .4.8 ARCHITECT/ENGINEER

For purposes of the concrete structure the Structural Engineer, hereafter referred to as the Engineer, shall be deemed invested with the duties and be the representative of the Architect.

1. 4.9 CODE OF PRACTICE

All workmanship, materials, tests and performances in connection with the reinforced concrete work are to be in conformity with the latest edition of the British Standard Code of Practice (BS 8110 for the Structural Use of Reinforced Concrete in Buildings) where not consistent with these Preambles.

1 .4.10 SUPERVISION

A competent person approved by the Engineer shall be employed by the Contractor whose duty shall be to supervise all stages in the preparation and placing of the concrete. All cubes shall be made and Site tests carried out under his direct supervision in consultation with the Engineer.

1. 4.11 CONTRACTORS PLANT, EQUIPMENT AND CONSTRUCTION PROCEDURES

Not less than 30 days prior to the installation of the Contractor’s Plant and equipment for processing, handling, transporting string and proportioning ingredients, and for mixing transporting and placing concrete, the Contractor shall

submit drawings for approval by the Engineer showing proposed general plant arrangements together with a general description of the equipment he proposes to use.

After completion of installation, the operation of the plant and equipment shall be subject to the approval of the Engineer.

Where these preambles, the Bills of Quantities of the Drawings require specific procedures to be followed, such requirements are not to be construed as prohibiting use by the Contractor of alternative procedures if it can be demonstrated to the satisfaction of the Engineer that equal results will be obtained by the use of such alternatives.

Approval of plant and equipment, or their operation, or of any construction procedure, shall not operate to waive or modify any provision or requirements contained in these Preambles governing the quality of the materials or of the finished work.

1.4.12 TOLERANCES

On all setting out dimensions of 5m and over a maximum non-accumulative tolerance of plus or minus 5mm will be allowed on all setting out dimensions under 5m a maximum non-accumulative tolerance of plus or minus 3mm will be allowed. On the cross-sectional dimensions of structural members, unless otherwise required by the Drawings, a maximum tolerance of plus or minus 3mm will be permitted.

The top surface of concrete floor slabs and beams shall be within 6mm of the normal level and line shown on the Drawings. Columns shall be truly plumb and non-accumulative tolerance of 3mm in each storey and not more than 15mm out of plumb in their full height will be permitted. The Contractor shall be responsible for the cost of all corrective measures required by the Engineer to rectify work that is not constructed within the tolerances set out above.

1.4.13 MATERIALS IN GENERAL

All materials which have been damaged contaminated or have deteriorated or do not comply in any way with the requirements of these preambles shall be rejected and shall be removed immediately from the site at the Contractors expense. No materials shall be stored or stacked on floors without prior approval from the Engineers.

The sources of supply for all materials used for concrete work shall be approved by the Engineer before these materials are delivered on the site. All materials shall comply with the requirements of the latest appropriate British Standard unless otherwise agreed with the Engineer, whose approval shall be obtained in writing. The suppliers of materials shall give the Engineer access to their premises when directed for the purpose of obtaining samples of the materials for testing.

1.4.14 SAMPLES S

Samples of materials shall be submitted as soon as possible after the contract is signed. No deliveries in bulk shall be made until the samples are approved by the Engineer. All condemned materials shall be removed from the site within 24 hours. Every facility shall be provided to enable the Engineer to obtain samples and carry out tests on the materials and construction. If these tests show that any of the materials of construction do not comply with the specifications Contractor will be responsible for the costs of the tests and the replacement of defective materials and/or construction.

1.4.15 CEMENT

Cement unless otherwise specified, shall be Portland Cement of a brand approved by the Engineer and shall comply with the requirements of BS 12 with the exceptions that it may contain reactive volcanic ash (of not more than 10% of the total weight) and the quantity of insoluble residue permitted in BS 12 may be exceeded. A manufacturer’s Certificate of Test in accordance with BS 12 shall be supplied for each consignment delivered to the site.

Cement may be delivered to the site either in bags or in bulk.

If delivered in bags, each bag shall be properly sealed and marked with the manufacturers name and on the site shall be stored in a weatherproof shed of adequate dimensions with a raised floor. Each consignment shall be kept separate and marked so that it may be used in the sequence in which it is received. Any bag found to contain cement which has set or partly set shall be completely discarded and not used in the works. Bags shall not be stored more than 1500mm in height.

If delivered in bulk, cement shall be stored in a weather-proof silo either provided by the cement supplier or by the contractor, and in either case the silo shall be subject to the approval of the Engineer.

1.4.16 AGGREGATES

Aggregates shall conform with the requirements of BS 582 and the sources and types of all aggregates are to be approved in all respects by the Engineer before work commences.

The grading of aggregates shall be within the limits set out in BS 582 and as later specified and the grading once approved shall be adhered to throughout the works and not varied without the approval of the Engineer. Fine aggregate shall be clean, course siliceous sand of good sharp hard quality and shall be free from lumps of stone earth, loam, dust, salt organic matter and any other deleterious substances. It shall be graded within the limits of Zone 1 or 2 of Table 2 of BS 882.

Coarse aggregate shall be good, hard, clean approved black-trap or similar stone, free from dust decomposed stone, clay earthy matter, foreign substances or friable thin elongated or lamented pieces. It shall be graded with the limits of Table 1 of BS 882 for its respective nominal size.

If in the opinion of the Engineer the aggregate meets the above requirements but is dirty or adulterated in any manner it shall be screened and/or washed with clean water the so directs at the Contractors expense.

Aggregate shall be delivered to the site in their prescribed sizes or grading and shall be stockpiled on paved areas or boarding platforms in separate units to avoid intermixing. In no account shall aggregate be stockpiled on the ground

1. 4.17 WATER

The water used for mixing concrete shall be from an approved source, clean, fresh and free from harmful matter, and comply with the requirements of BS 3148.

**1 .4.18 READY MIXED CONCRETE**

Ready-mixed concrete may only be used with the permission of the Engineer.

**1.4.19 EXPANSION JOINTING**

Expansion joint filler shall be Flexcell as manufactured by Expand Ltd., Chase

Road, London NW 106 PS, or Resilex as manufactured by Evomastics Ltd., 4502

Edgeware Road London 1, or equal and approved.

**1 4.20 JOINT SEALER**

Sealers shall be either hot or cold applied. Hot applied sealers shall comply with BS 2499 Cold mastics shall be applied by gun and where more than 12mm deep shall include filling with loose packing yarn to within 2mm from outer face. All joint sealers are to be approved by the Engineer prior to their use.

**1.4.21 CONCRETE STRENGTHS**

Concrete mixes shall have the following minimum strengths as given by Works

Cube Tests.

**Minimum Crushing strength**

7 days 28 days

N/mm2 N/mm2

|  |  |  |
| --- | --- | --- |
| Class 40 | 27 | 40 |
| Class 35 | 24 | 35 |
| Class 30 | 20 | 30 |
| Class 25 | 17 | 25 |
| Class 20 | 14 | 20 |

The average strength obtained from cube tests shall be 10% higher than the minimum strengths shown above.

Works cube tests will not be required for class 15 blinding concrete which shall comprise 136 nominal mix concrete by volume containing 10 cubic metres of fine aggregate and 0.20 cubic metres coarse aggregate per 50 gauge of coarse aggregate.

**1.4.22 MEASURED PROPORTIONS OF CONCRETE**

Cement

The quantity of cement shall be measured by weight. Where delivered in bags, each batch of concrete is to use one or more whole bags of cement.

Aggregates

For Class 40 to 25 concrete, aggregates shall be measured by weight in a weigh batching machine as described hereafter.

For class 15 concrete, aggregates may be measured by weight or by volume. Where volume approved gauge boxes of such a size as will give the contract proportions shall be used.

**1 4.23 WEIGHBATCHINH MACHINE**

Weigh batching machines shall be of an approved type and shall be properly maintained and checked for accuracy at regular intervals.

**1 4.24 CONCRETE CLASSES 40 TO 25**

The weights of fine and coarse aggregate to be used in concrete Classes 40 to 25 shall be limited in accordance with the table below. The proportions of fine to coarse aggregate and cement which the Contractor proposes to use for each of the mixes specified shall first be approved by the Engineer. The Contractor will then be required to prepare Preliminary Test Cubes and have these cubes tested as described for Work Cube Tests. The test results should be submitted to the Engineer in sufficient time for further tests to be carried out should they prove unsatisfactory. Cube strengths in the preliminary tests must show crushing strengths at least 25% higher than the strengths specified for Work Cube Tests. If the Contractor is unable to produce specified cube strengths, he will be required at his own cost to increase the cement content of the mix.

Until satisfactory results are produced the Engineer may require at any time during the Contract the proportions of fine to coarse aggregate to be altered in order to produce a mix of greater strength or improved workability and providing that the total proportions of aggregate to cement remain unchanged no claim for additional cost will be considered.

|  |  |
| --- | --- |
| **Concrete Class** | **Ratios of minimum Cement Content by weight to combined total weight of aggregate** |
| Class 40 | 1:4.5 |
| Class 36 | 1:5 |
| Class 30 | 1:6 |
| Class 25 | 1:7 |

**1.4.25 WATERPROOF CONCRETE**

Where waterproof concrete is specified Sealopruf Integral Waterproofing Compound and Sealoplaz Concrete Plasticiser as manufactured by sealocrete group sales Ltd., Atlantic Works, Hythe road London NW10 6RD, England, are to be added to the mixing water strictly in accordance with the manufacturer’s instructions and at the rate of 0.50 litres and 0.25 litres respectively to each 50kg bag of cement to which the aggregates have already been added and mixed. Not more than 25 litres of water per 50kg bag of cement are to be used unless otherwise approved by the Engineer.

**1 4.26 WATER BAR**

Water bar shall be PVC waterbar as manufactured by Expandite Limited or other approved type and shall be provided in the positions indicated on the Drawings. Joints shall be heat welded in accordance with the manufacturer’s instructions and whether the water bar is to be fixed vertically, metal clips as manufactured by the supplier of the waterbar or of other approved designs shall be provided to suspend the waterbar from the reinforcement.

Where waterproof concrete is used the contractor shall adhere strictly to the position and type of construction joints as detailed on the Drawings. Any deviation from this procedure or the provision of additional construction joints will require the prior approval of the Engineer and any additional water bar so required will be at the contractors expense.

Formwork shall be designed with sufficient timber formers and blocking pieces to supportive waterbar and the ensure that it is not displaced during concreting in the case of horizontal joints in vertical walling and similar members the formwork shall be so constructed as to permit the starter or upstand of concrete surrounding the lower half of the waterbar to be poured in the same operation as the slab or other concrete from which it springs. Formwork to walls or similar members where the waterbar is positioned at the base of the lift shall have sufficient openings not less than 300mm square at approximately 200mm above the level of the waterbar to permit checking that the waterbar is correctly positioned and not displaced during concreting. No concreting will be permitted to portions where upstand starters form an integral part until the formwork to the starter has been fixed and approved.

**1 4.27 TESTING EQUIPMENT**

The Contractor shall provide the following equipment for carrying out control tests on the site:

Straight edges 3 meters and 1 meter long for testing accuracy of the finished concrete.

A graduated glass cylinder for use in the long for testing accuracy of the finished concrete.

Sand test apparatus.

Four 150mm steel cube molds with base plates and tamping rods to BS 1881.

**1.4.28 WORK CUBE TEST**

Work cubes are to be made at intervals as required by the Engineer in accordance with BS 8110 and the contractor shall provide a continuous record of the concrete work. The cubes shall be made in approved 150mm molds in strict accordance with the Code of Practice. The cubes shall be made on each occasion. Each cube shall be marked with a distinguishing number (numbers) to run consecutively, and the date and a record shall be kept on site giving the following particulars:

Cube No.: Date made: Location in work:

7-day test: Date Strength

28-day test: Date Strength

Cubes shall be forwarded, carriage paid, to an approved Testing Authority, in time to be tested two in 7 days and the remaining one at the discretion of the Engineer. No cube shall be dispatched within 3 days of casting.

Copies of all Work Cube Test shall be forwarded to the Engineer, and one shall be retained on the site.

If the strengths required above are not attained, and maintained throughout the carrying out of the Contract, the Contractor will be required to increase the proportion of cement and/or substitute better aggregates so as to give concrete which does comply with the requirements of the Contract. The Contractor may be required to remove and replace at his own cost any concrete which fails to attain the required strength as ascertained by Work Cube Test.

**1 4.29 MIXING AND PLACING OF CONCRETE**

The concrete shall be mixed only in approved power-driven mixers of a type and capacity suitable for the work, and in any event not smaller 0.400 28 cubic metre capacity.

The mixer shall be equipped with an accurate water measuring device. All materials shall be thoroughly mixed dry before the water is added and the mixing of each batch shall continue until there is a uniform distribution of the materials and the mass is uniform in colour.

The entire contents of the mixed materials shall not exceed the rated capacity of the mixer. Whenever the mixer is started, 10% extra cement shall be added to the first batch and no extra payment will be made on this account.

As a check on concrete consistency slump tests may be carried out and shall be in accordance with BS 1881. The Contractor shall provide the necessary apparatus and carry out such tests as are required. The slump of the concrete made with the specified water content, using dry materials, shall be determined and the water to be added under wet conditions shall be reduced as to give approximately the same slump.

The concrete shall be mixed as near to the place where it is required as is practicable, and only as much as is required for a specified section of the work shall be mixed at one time, such a section being commenced and finished in one operation without delay. All concrete must be efficiently handled and used in the Works within twenty (20) minutes of mixing. It shall be discharged from the mixer directly either into receptacles or barrows and shall be distributed by approved means which do not cause separation or otherwise impair the quality of the concrete. Approved mechanical means of handling will be encouraged, but the use of chutes for placing concrete is subject to the prior approval of the Engineer. Concrete shall be placed from a height not exceeding 1500mm directly into its permanent position and shall not be worked along the shutters to that position. Unless otherwise approved, concrete shall be placed in a single operation to the full thickness of slabs, beams and similar members, and shall be placed in horizontal layers not exceeding 1500mm deep in walls and similar members. Concrete in columns may be placed to a height of 4 meters with careful placing vibration and satisfactory results. Where the height of the column exceeds 4 meters suitable openings must be left in the shutters so that this maximum lift is not exceeded.

Concrete shall be placed continuously until completion of the part of the work between construction joints as a specified hereinafter or of a part of approved extent. At the completion of a specified or approved part a construction joint shall be made where the works are stopped. A record of all such joints must be made by the Contractor and a copy supplied to the Engineer.

Any accumulation of set concrete in the reinforcement shall be removed by wire brushing before further concrete is placed.

The Contractor shall provide runways if not disturbed or subjected to vibrations and shocks during the setting period.

Mixing machines, platforms and barrows shall be Clean before commencing mixing and be cleaned on every cessation of work.

Where concrete is laid on hardcore or other absorbent materials, the base shall be suitable and sufficiently wet before the concrete is deposited.

**1.4.30 COMPACTION**

At all times during which concrete is being placed the Contractor shall provide adequately trained and experienced labour to ensure that the concrete is compacted in the forms to the satisfaction of the Engineer.

Concrete shall not be placed at a rate greater than will permit satisfactory compaction nor, to a depth greater than 400mm before it is compacted.

During and immediately after placing, the concrete shall be thoroughly compacted by means of continuous tamping, spacing, slicing and vibration. Vibration is required for all concrete classes 40, 35, 30 and 25.

Concrete shall be taken to fill every part of the forms, to work the concrete under and around the reinforcement without displacing and to avoid disturbing the recently placed concrete which has begun to set.

Any water accumulating on the surface of newly placed concrete shall be removed and no further concrete shall be placed thereon until such water is removed.

Internal vibrators shall be of a frequency of not less than 7,000 cycles per minute and shall have rotating eccentric weight of at least 0.50kg, with an eccentricity of not more than 12mm. Such vibrators shall visibly affect the concrete within a radius of 250mm from the vibrator.

Internal vibrators shall not be inserted between layers of reinforcement less than one- and one-half times the diameter of the vibrators apart. Contact between vibrators and reinforcement and vibrators and formwork shall be avoided.

Internal vibrators shall be inserted vertically into the concrete wherever possible at not more than 500mm and shall constantly be moved from place to place. N0 internal vibrator shall be permitted to remain in any one position for more than ten seconds and it shall be withdrawn very slowly from the concrete.

In consolidating each layer of concrete the vibrating head shall be allowed to penetrate and re-vibrate the concrete in the upper portion of the underlying layer. In the area where newly placed concrete in each layer joins previously placed concrete more than usual vibration shall be performed, the vibrator penetrating deeply at close intervals along these contracts. Layers of concrete shall not be placed until layers previously placed have been vibrated thoroughly as specified. Vibrators shall not be used to move concrete from one place to another in the formwork.

At least one internal vibrator shall be operated for every 1.5 cubic metres of concrete placed per hour and at least one spare vibrator shall be maintained on site in case of breakdown during concreting operations.

External formwork vibrators shall be of the high frequency and low amplitude type applied with the principal direction of vibration in the horizontal plane. They shall be attached directly to the forms at not more than 1200mm centers.

In addition to internal and external vibration the upper surface of suspended floor slabs shall be levelled by tamping or vibrating to receive finishes. Vibrating elements shall be of the low frequency and high amplitude type operating at a speed of not less than 3,000 rpm.

**1 4.31 CONSTRUCTION JOINTS**

Construction joints shall be permitted only at the positions predetermined on the Drawings or as instructed on the Site by the Engineer. In general, they shall be perpendicular to the lines of principal stress and shall be located at points of minimum sheer, viz, vertically at, or near, mid-spans of slabs, ribs and beams. Suspended concrete slabs are generally to be cast using alternate bay construction in bays not exceeding 20 metres in length. No two adjacent bays are to be cast within a minimum period of 48 hours of each other. The joints between adjacent bays are to be positions agreed with the Engineer.

Under no circumstances shall concrete be allowed to tail-off, but it shall be deposited against stopping-off boards.

Before placing new concrete against concrete already hardened, the face of the old concrete shall be thoroughly hacked, roughened and cleaned, and laitance and loose material removed there from, and immediately before placing the new concrete the surface shall be saturated with water and covered with a coat of mortar at least 25mm in thickness composed of cement and fine aggregate in the proportions used in the concrete.

**1 .4.32 CURING AND PROTECTION**

Care must be taken that no concrete is allowed to become prematurely dry, and the fresh concrete must be carefully protected within two hours of placing from rain, sun and wind by means of hessian sacking, polythene sheeting, or other approved means. This protective layer and the concrete itself must be kept continuously wet for at least seven days after the concrete has been placed. The Contractor will be required to provide complete coverage of all fresh concrete for a period of 7 days. Hessian or polythene sheeting shall be in the maximum widths obtainable and shall be secured against wind. The Contractor will not be permitted to use old cement bags, hessian or other material in small pieces.

Concrete in foundations and other underground work shall be protected from admixture with falling earth during and after placing.

Traffic or loading must not be allowed on the concrete until the concrete is sufficiently matured, and in no case shall traffic or loading be of such magnitude as to cause deflection or other movement in the formwork or damage to the concrete members. Where directed by the Engineer, props may be required to be left in position under slabs and other members for greater periods than those specified.

**1 4.33 FAULTY CONCRETE**

Any concrete which fails to comply with these Preambles, or which shows signs of setting before it is placed shall be taken out and removed from the site. Where concrete is found to be defective after it has set, the concrete shall be cut out and replaced in accordance with the Engineer’s instructions. On no account shall any faulty honeycombed, or otherwise defective concrete be repaired or patched until the Engineer has made an inspection and issued instructions for the repair. The whole of the cost whatsoever, which may be occasioned by the need to remove faulty concrete shall be borne by the Contractor.

**1 4.34 ROD REINFORCEMENT**

The steel reinforcement shall comply with the latest requirements of the following

British Standards.

Hot rolled bars for the reinforcement of concrete to BS 4449 (metric units). Cold worked steel for the reinforcement of concrete to BS 4461 (metric units).

The contractor will be required to submit a test certificate of the rolling. Reinforcement shall be stored on racks above ground level. All reinforcement shall be free from loose mill scale or rust, grease paint or other substances likely to reduce the bond between the steel and concrete.

**1 4.35 FABRIC REINFORCEMENT**

To be electrically cross-welded steel wire mesh reinforcement to BS 4483(1969)

and of the size and weight specified.

**1.4.26 FIXING ROD REINFORCEMENT**

Reinforcement shall be accurately bent to the shapes and dimensions shown on the Drawings and Schedules and in accordance with BS 4466(1969). Reinforcement must be cut and bent cold and no welded joints will be permitted unless so detailed.

Reinforcement shall be accurately placed in position as shown on the Drawings, and before and during concreting, shall be secured against displacement by using No. 18 SWG annealed binding wire or suitable clips at intersections, and shall be supported by concrete or metal supports, spacers or metal hangers to ensure the correct position and cover.

No concreting shall be commenced until the Engineer has inspected the reinforcement in position and until his approval has been obtained and the Contractor shall give two clear days‟ notice of his intention to concrete.

The Contractor is responsible for maintaining the reinforcement in its correct position, according to the drawings, before and during concreting. During concreting a competent steel bender must be in attendance to adjust and correct the position of any reinforcement which may be displaced. Vibrators are not to come into contact with the reinforcement.

**1 4.37 POSITION AND CORRECTNESS OF REINFORCEMENT**

Irrespective of whether any inspection and/or approval of the fixing of the reinforcement has been carried out as above, it shall be the Contractor‟s sole responsibility to ensure that the reinforcement complies with the details on the drawings or Schedules and is fixed exactly in the positions shown therein and, in the positions given in the prescribed cover. The Contractor will be held entirely responsible for any failure or defect in any portion of the reinforced concrete structure and including any consequent delay, claims, third party claims. etc, where it is shown that the reinforcement has been incorrectly positioned or is incorrect in size or quantity with respect to the detailed Drawings or Schedules.

**1.5 CARPENTRY AND JOINERY**

**1.5.1 GENERALLY**

All woodwork shall be carried out in accordance with the drawings and the principals of first-class joinery construction. Unless specifically stated otherwise the sizes shown on drawings are finished sizes and the Contractor must allow for wood faces.

**MATERIALS**

**1.5.2 QUALITY OF TIMBER**

The qualities of timber stated herein after are in accordance with the latest

Malawian Government Grading Rules.

All timber described as Prime Grade is to be First Grade (Grade 1).

All timber described as selected Grade (Grade is to be second Grade (Grade 11). All hardwood is to be Prime Grade (Grade 1).

All timber for permanent work in the building shall before use be approved by the Architect for quality in accordance with the foregoing specification for its respective grade. Any timber not so approved by the Architect shall be removed from the site forthwith.

**1.5.3 INSECT DAMAGE**

All timber whether graded or ungraded, and including shuttering, scaffolding and the like shall be free of live borer beetle or other insect attack when brought upon the site. The Contractor shall be responsible up to the end of the maintenance period for executing at his own cost all work necessary to eradicate insect attack of timber which becomes evident including the replacement of timbers attacked, or suspected of being attacked, notwithstanding that the timber concerned may have been inspected and passed as fit for use.

**1.5.4 SEASONING OF TIMBER**

All carpentry timbers are to be seasoned to an average moisture content of not more than 20%. All joinery timbers are to e seasoned to an average moisture content of not more than 15%. The Contractor is to make available on site a meter for testing moisture content of all timber delivered.

**1.5.5 PREPARATION AND PROTECTION OF TIMBER**

All timber necessary for the works is to be purchased immediately, the contract is signed, and when delivered is to be open stacked for such further seasoning as may be necessary. Preparation of the timber is to be commenced simultaneously with the commencement of the works.

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

**1 5.6 SPECIES OF TIMBER**

Only those timbers specified to be used for the works, unless alternatives are authorized by the Architect in writing.

**1 5.7 PRESSURE IMPREGNARTED TIMBER**

All timber described as pressure impregnated shall be impregnated under vacuum and pressure with Celcure or Tanalith wood preservative with an average absorption of not less than 6.7 kgs of dry salt per cubic meter. In case of resistant species where this retention cannot be obtained the timber shall be treated to refusal point. All treated timber shall not be exposed to wet conditions for at least

14 days after treatment has been carried out. All cuts ends, drilling or fabrications on the site producing new surfaces shall be thoroughly brushed or soaked with ACelcure B@ salts applied in accordance with the manufacturer’s instructions.

Any other method of timber impregnation will only be allowed with the

Architect’s approval.

**1.5.8 HARDWOOD**

All hardwood will comply with the requirements of BS 1186 Part 1 and BS 4047. It shall show a straight and regular grain throughout.

Hardwood shall be free from wooly texture, soft heart, sap wood, splits, shakes, all evidence of insect or fungi attack and rot and all faults caused by compression failure. There shall be no waney edges. Hardwood shall be free from knots on exposed faces. Any hardwood showing visible imperfections will be rejected. Preservatives shall not be used without the Architect’ s permission Where indicated on the drawings, internal hardwoods will be treated with clear sealants as specified elsewhere.

**1 5.9 SOFTWOOD**

Softwood timber for carcassing work shall be either Podocarpus or Cypress to the approval of the Architect and shall be to the dimensions specified on the drawings.

Timber shall be classified in accordance with the Groups listed in this Clause:

All softwood shall comply with the requirements of BS 1186 Part 1. Timber shall be free from woolly texture, soft heat, sap wood, spits, shakes, pitch showing on the surface, sloping grain exceeding one in eight checks, knots exceeding 25mm diameter, loose knot or knot holes and any evidence of insect or fungi attack. There shall be no waney edges.

Where indicated on the drawings, the softwood will be treated with clear sealer or painted with gloss paint.

All softwood is to be pressure impregnated against insect attack before delivery to site. Any ends cut after treatment shall be given two liberal coats of preservative.

**1 5.10 PLYWOOD**

All plywood shall comply with the requirements of BS 1455, be obtained from a manufacturer to be approved by the Architect and be of the thickness shown on the drawings.

Plywood shall be exterior grade except where otherwise stated. Plies shall be bonded together with adhesives complying with the requirements of BS 1203 grade WBP.

Plywood shall be free from end joints (including joints in veneers), overlaps in core veneers, dead knots, patches and plugs, open defects, depressions due to defects in cure, insect attack (except isolated pinworm holes through face veneers only), fungal attack and from discoloration differing from that normally associated with species.

Face veneers shall be hard and durable and shall be capable of being finished to a smooth surface. Face veneers shall closely match the general timber supplied.

**1 5.11 CHIPBOARD**

Chipboard shall be medium density wood particle board complying with BS 2604

Part 2, produced in factories by an approved process.

**1.5.12 BLOCKBOARD**

Block board shall be of approved local or imported manufacture to BS 3444 glued throughout and softwood or hardwood faced as hereinafter specified and equal to a sample to be deposited with the Architect for approval and which when so approved shall form the standard for the works.

**1 5.13 FIBREBOARD**

Shall be insulating board to comply with BS 1142 of the types specified and approved manufacture.

**1.5.14 TEMPERED HARDBOARD**

To be approved, manufacture according in all respects with BS 1142, suitable for painting, prepared and fixed in accordance with the maker’s instructions.

**1 5.15 WOOD BLOCK FLOORS**

To be supplied and laid in 460x460mm panels by a specialist all to the approval of the Architect. On completion and immediately prior to applying the clear finish, the surface is to be twice machine sanded using first coarse and the fine sandpaper and brushed perfectly clean.

**1 5.16 TIMBER DOORS**

Doors are to be designed, manufactured, and fixed in accordance with the relevant

British Standards summarized below:

BS 476 part 8 1972 Fire test etc.

BS 4787 part 1 1972 Door dimensions

BS 1186 part 1 1971 Quality of timber and workmanship

BS1227 part1 A Hinges

BS 3827 Builder’s hardware Glossary

**1 5.17 FLUSH DOORS**

Generally, the requirement for flush door is that they have a minimum thickness of

40mm. They shall be faced both sides and there shall be hardwood lippings to all edges. Hollow core and semi-solid types shall contain adequate provision within the core for ironmongery (e.g. lock blocks etc.).

All hollow and semi-solid doors shall be faced with WBP bonded Exterior grade plywood.

Except where indicated doors shall have hardwood veneered faces. Vision panels where required shall be 150mm wide 900mm deep.

Flush doors shall be obtained from a supplier to be approved by the Architect. Flush doors shall comply with the requirements of BS 459 Parts 1, 2 and 3. All edges shall be lipped with hardwood tongued into the edge of the door.

Fire resistant flush doors are to be constructed in accordance with BS 459 Part 3. The core of solid core flush doors shall be constructed of longitudinal laminations of precision planed timber, but jointed and glued with resin-based adhesive under hydraulic pressure, the whole forming a rigid fire-resistant raft.

Where doors are indicated as fire resistant, they shall be constructed so as to exceed the requirements stated when tested in accordance with BS 476 Part 8 (1972) section 7.

**1 5.18 HARDWOOD VENEERS**

Veneer facings shall be selected to the approval of the Architect. No glass or synthetic fibre stitching will be permitted for jointing veneer leaves together. All wood veneers shall be bonded to the core material in such a way that no lifting and blistering shall occur.

**1 5.19 LAMINATED PLASTIC VEENERS**

Laminated Plastic Veneers shall be a decorative sheet 1.6mm thick complying with BS 3794 Class 1. The pattern will be selected by the Architect. The laminate shall have decorative (pattern) finish on one face only. Patterns will be selected from the manufacturer’s standard range.

**1 5.20 MISCELLANEOUS MATERIAL**

Tapered timber pellets for filling screw holes must be cut across the grain and shall be of the color and grain being plugged. Metal fixing devices must be fully rust proofed, cramps, brackets, plugs, bolts etc. must be a type, make and pattern approved by the Architect.

Adhesives must be suitable for use in the local conditions and be compatible with the materials with which they are in contact.

**1 5.21 NAILS AND SCREWS**

Nails shall comply with BS 1201, screws shall comply with BS 1494 and bolts shall comply with BS 916.

WORKMAN SHIP

**1 5.22 TOLERACES**

The method of construction must accommodate tolerances as shown on the drawings and allow for ensuring that repetitive units can be accurately located in relation to grid lines and that tolerances do not accumulate. Reasonable tolerance shall be provided at all junctions between joinery and the building carcass, whether of masonry or frame construction, so that any irregularities or movement may be adequately compensated.

**1 5.23 JOINTING**

All joints must be made as specified or detailed and the execution of all jointing shall be to the satisfaction of the Architect. Joining surfaces of all connections exposed to the weather are to be thickly primed except where glueing is specified. Surfaces are to be in good contact over the whole area of the joint before fastening are applied. No nails, screws or bolts are to be placed in any end split. If splitting is likely or is encountered in the course of the work, holes for nails are to be pre- bored at diameters not exceeding 4/5 of the diameter of the nails. Clenched nails must be bent at right angles to the grain. Lead holes are to be bored for all screws.

Joints in joinery must be as specified or detailed and so designed and secured as to resist or compensate for any stresses to which they may be subjected. All nails springs etc., are to be punched and puttied. Loose joints are to be made where provision must be made for shrinkage, glued joints where shrinkage need not be considered and where sealed joints are required. All glued joints shall be cross- tongued or otherwise reinforced. Glues for load bearing joints or where conditions may be damp must be of the resin type. For non-load bearing joints, or where dry conditions can be guaranteed, resign or organic glues may be used.

**1 5.24 FRAMEWORK**

The word “frame” shall mean and include all the best-known methods of jointing woodwork together by mortice, tenon, dovetail or other methods, and for forming all necessary stops miters or mason’s miters in members which are molded, rebated etc.

**1 5.25 PLUGGING**

Plugging and fixing to walls in all trades shall be executed by “raw plugging” or similar approved propriety methods all in accordance with the manufacturer’s printed instructions. Hacking of holes and filling with timber plugs will not be permitted under any circumstances.

**1.5.26 CARPENTRY WORK**

All carpentry shall be executed with workmanship of the best quality. Scantlings and boards shall be accurately sawn and shall be uniform in width and thickness throughout and shall be as long as possible and practicable in order to eliminate joints. All work shall be with a sawn surface except where specified to be wrot. All works shall be accurately set out and in strict accordance with the drawings and shall be framed together and securely fixed in the best possible manner with properly made joints. Provide all nails screws etc., as necessary and as directed and approved.

Actual dimensions of scantlings for carpentry shall not vary from the specified dimensions by more than +3mm or 1mm. Sizes and thickness of wrot carpentry timbers are nominal that is to say a variation of 3mm from the specified sizes will be allowed from each wrot surface unless the thickness or size is described as “finished” in which case no variation from the stated thickness or size will be permitted.

**1.5.2 JOINERY WORK**

All joinery work shall be wrot unless otherwise described. Sizes and thickness of joinery are nominal that is to say a variation of 3mm from the specified sizes will be allowed from each wrot surface unless the thickness or size is described as “finished” in which case no variation form the stated thickness or size will be permitted.

No joinery to be put in hand until the details have been supplied or approved by the Architect and in all cases the details are to be worked to.

All joinery shall be executed with workmanship of the best quality in strict accordance with the detailed drawings, moldings shall be accurately and truly run on the solid and all work planed, sand-papered and finished to the approval of the Architect. All arises to be slightly rounded. All framed work shall be cut out and framed together as soon after the commencement of the building as is practicable but should not be wedged up until the building is ready for fixing the same and any portions that warp, get in winding, develop shakes or other defects shall be replaced with new. In door frames etc. the heart face of the timber shall be fixed away from the wall. As soon as required for fixing in the building the framing shall be glued together with glue as described and properly wedged or pinned etc. as directed.

All beads fillets and small members shall be fixed with round or oval braids or nails well punched in and stopped. All larger members shall be fixed with screws; the screws let in and pelletted over with wood pellets to match the grain. Cups and screws for fixing beads and fillets shall be spaced 160mm apart and 25mm from angles.

All joinery immediately upon delivery to the site is to be stored and protected from the weather. All joinery is to be primed before fixing but no work is to be primed until it has been approved by the Architect. All fixed joinery which is liable to become bruised or damaged in any way, shall be properly cased and protected by the Contractor until completion of the work.

**1 5 28 SOFTWOODS**

Fixing shall be by means of non-rustling screws with countersunk heads of proprietary plugs or grounds. Nailing will not be permitted.

Sections shall be neatly and accurately cut so as to avoid splitting of the wood.

**1 5 29 HARDWOODS**

Hardwoods are as described:

In jointed panels each piece shall be of the same species. Joinery for oiling shall have all surface of the same species and same character or grain.

Fixing shall be by means of brass screws with countersunk heads to proprietary plugs or grounds. Where work is face screwed, heads of screws shall finish not less than 6mm below the surface and be covered with round teak pellets of appropriate thickness. Pellets shall be chosen and fixed so as to match color and pattern of grain so far as is practical. Nailing will not be permitted. Sections shall be neatly and accurately cut with fine toothed saws.

**1 5.30 PLYWOOD**

Plywood of the required thicknesses shall be used. The Contractor will not be allowed to make up thicknesses by glueing together sheets of thinner plywood. Where cutting is required, it shall be neatly and accurately performed with fine toothed saws so as to avoid splitting the face veneers and intermediate plies.

**1 5.31 CHIPBOARD**

Where cutting is necessary it shall be neatly and accurately performed with fine toothed saws so as to avoid splitting the face veneers. Where raw edges arise from cutting these shall be faced with a matching hardwood fillet cut pinned and glued to match factory produced edges.

**1 5.32 BLOCKBOARD**

Where cutting is necessary it shall be neatly and accurately performed with the fine-toothed saws so as to avoid splitting the face veneers. Where raw edges arise from cutting these shall be faced with a matching hardwood cut pinned and glued to match factory produced edges.

**1 5.33 LAMINATED PLASTIC VEENER**

Laminated plastic veneers are to be fixed with an approved adhesive; care being taken to eliminate all air from beneath the laminate on fixing. The laminate is to be free from chipped or cracked portions and work so disfigured is to be removed and replaced. When the adhesive is set the laminate is to be neatly beveled off with a plane. Where plastic laminate is fixed doors or shelves etc., without a laminate to the outer edge, a raised lipping is to be provided, and the laminate finished flush against the lipping.

**1 5.34 FIXING DOORS AND FRAMES**

Doors shall be properly fitted to give a uniform clearance of not more than 3mm all round and hinges shall be let into doors.

Door frames shall be properly framed at angles. Doorstops shall be housed into grooves in frames. Architraves shall be provided to conceal finishes. Frames shall be fixed to grounds or plugs. Fixing shall be by means of non-rusting screws with countersunk heads. For hardwood frames screw heads shall be finished not less than 6mm below surface of the wood and shall be covered with matching round hardwood pellets of appropriate thickness. Pellets shall be chosen and fixed so as to match color and pattern of grain as far as is practical. Nailing will not be permitted.

Except where indicated doors shall be kept clean for clear polyurethane varnish. Door frames shall be treated to match doors.

Glazing shall be wired glass 6mm thick with edges wrapped in wash leather and secured with hardwood glazing beads size 10x15mm miter at angles secured with brass screws and cups.

**1 5.25 CONSTRUCTION OF DOORS**

Flush doors specified as solid construction shall have a 100% solid core of vertical laminated cedar or equal and approved.

Flush doors specified as semi-solid construction shall be constructed with timber styles and rails, infilled with horizontal intermediate rails spaced equally apart and tenoned into the stiles.

Unless otherwise specified, doors scheduled to receive a clear or veneered finish shall be lipped on all edges.

Where panels overdoors are specified, such panels shall be constructed in the same way and with the same materials as the doors above which they are situated, and the panels shall match the doors in every respect.

For doors specified as plywood faced, the plywood shall not be less than 3mm thick, complying with the requirements of BS 1456, WBP type. Face veneers shall be Grade 1 for painted doors.

All doors shall be provided with lock blocks of a minimum size 300x75mm.

Glass beading strips shall be approved wash leather self-adhesive tape turned up over both sides of the glass and glazing surfaces and turned to the straight line.

All screws shall be countersunk and screwed and pelleted in un-painted work. Timber pellets shall be glued tapped into the hole, making sure the grains line up, and carefully trimmed back flush with joinery to give a clear, smooth overall surface.

**1 5.36 FITTINGS AND FIXTURES**

The fittings, etc., are to be accurately constructed in accordance with the detailed drawings. The doors, drawers, etc., are all to fit and open and close smoothly and all work next to walls, floors and ceilings is to be soundly fixed and scribed to fit snugly against same.

**1 5.37 MOULDINGS**

Moulded work shall be accurately worked to the full-size details supplied by the Architect. Mouldings shall be worked on the solid unless otherwise stated.

**1 5.38 CIRCULAR WORK**

When circular work is specified, it shall be built up with an appropriate number of pieces cut to the required shapes. The pieces shall be put together in two (or three) thickness so that they break joint, and shall be secured with hardwood keys and edges or with hardwood pins (whichever is more appropriate).

**1 5.39 SCRIBING**

Skirtings, architraves, plates and other joinery works shall be accurately scribed to fit the contour or any irregular surface against which they will be required to form a close but connection.

**1 5.40 FINISHING**

All joinery which is to be oiled and painted shall be finished smooth and cleaned by rubbing down by hand with fine glass paper.

**1 5.41 COMPLETION OF WORKS**

Protection of all joinery and ironmongery must be maintained until completion of the contract as a whole.

All joinery and glass are to be thoroughly cleaned before the building is handed over.

**1 5.42 DEFECTIVE WORKS**

All work judged to be defective must be removed and replaced as directed by the Architect.

**IRONMONGERY**

**1 5.43 GENERALLY**

Ironmongery shall be fixed with suitable screws to match.

All locks and ironmongery shall be fixed before the woodwork is painted, handles shall be removed before the painting commences, carefully stored and refixed after completion of painting.

All locks springs and other items of ironmongery with moveable parts shall be properly tested cleaned and adjusted where necessary to ensure proper working order at the completion of the works and left in perfect working order by the Contractor.

The key of all locks shall have labels attached with door references marked on before handing them to the Architect.

All locks shall be provided with a master key system and prices shall include for this as required by the client and as instructed by the Architect. The client’s requirements are to be obtained by the Contractor before ordering.

**1.6 METALWORK**

**MATERIALS**

**1.6.1 GENERALLY**

All material shall be the best of their respective kinds free from defects, and all work is to be carried out in the most workmanlike manner and strictly as directed by the Architect. The materials in all stages of transportation, handling and stacking shall be kept clean and prevented from injury by breaking, bending or distortion and weather action.

**1.6.2 MILD STEEL**

Mild steel shall comply with BS 15

**1.6 3 HALLOW SECTION TUBING**

Square and rectangular hollow section tubing shall be hot rolled mild steel in accordance with Grade 43C of BS 4360.

**1.6.4 BOLTS, NUTS AND WASHERS**

These shall be fabricated from materials which comply with BS 15 and each manufactured item shall comply with the appropriate BS.

**1 . 6 . 5 GALVANIZED SHEET STEEL**

To be No. 24 S.W.G of approved manufacture to BS 2989 of best quality mild steel sheets cold rolled close annealed patent flattened and hot dip galvanized.

**1.6.6 ALUMINIUM**

Aluminum shall be extruded sections with an anodized finished, either natural or colored, to give a 25-micron minimum depth to European norm EWAA.

**1.6.7 STAINLESS STEEL**

Stainless steel tube shall be authentic steel BS 3014 comparable to BS 1449 type 316S 16.

**1.6.8 METAL DOOR FRAMES**

Metal door frames are to be steel to comply with BS 1245 or profile to suit the wall thickness.

a) Door frames are to be provided with the following:

b) Two priming coats of paint

c) Fixing lugs for building into walls

d) Three galvanized steel hinges per door

e) Adjustable lock strike plate

f) Two shock absorber buffers

**1.6.9 STEEL WINDOWS**

Steel windows shall be manufactured from sections conforming with BS 990 of heavy-duty sections of the metric W20 range of approved manufacture and design approved by the Architect.

After manufacture and before delivery to site steel windows are to be hot galvanized by dipping in a bath of molten zinc or painted with one coat primer.

**1.6.10 ALUMINIUM WINDOWS**

Aluminum windows are to be designed, manufactured and fixed in accordance with the relevant British Standards summarized below:

BS DD4: Grading of windows

BS 1470: Wrought aluminum and aluminum alloys

BS 1474: Wrought aluminum and aluminum alloys

BS 4315: (Part 1) window and structural gasket – glazing systems

BS 4842: Finishes to aluminum

BS 4873: Aluminum alloy windows

CP 3CH.V: Loading

CP 153: Code for windows and roof lights

Alternative standards may be adhered to, but the Contractor must demonstrate that they are of an equal or better standard than the standards referred to in this specification.

Members for aluminum windows shall be extruded aluminum and shall be fabricated from designated treated alloy HE9TF.HE9 TE or HE9 to BS 1474. Ancillary members such as sills and coupling mullions formed from sheet materials shall be fabricated from designated alloys SIC NS3 or NS4 in an appropriate temper. Alternative alloys meeting the required physical properties of this specification shall be acceptable.

The main web of aluminum solid destion outer frame shall be not less than 1.2 mm thick at minimum tolerance.

For information on bi-metallic contacts see CP 153 appendix A.

The overall sizes of an assembled window frame shall be maintained within a permissible deviation of 1.5mm. Maximum difference in length of frame diagonals shall be 4mm. Horizontally the 1800mm grid shall be used to centre the mullions and vertically allowance must be made for a larger setting tolerance at the window head.

Fasteners to be designed so they cannot be released from the outside by the insertion of a thin blade or similar tool.

No opening light shall be openable or removeable from the outside when it is fastened in the closed position except by use of special tools or break of part of the window.

The exposure factor shall be considered moderate. Consideration should be given to both the height of the building and locations where exposure to solar radiation may result in high thermal stress.

Prevention of penetration of fine air-borne dust is essential, and of the utmost importance.

Finish to surface of aluminum alloy prior to anodizing shall be a Mechanical Satin‟ finish.

Where windows are described as “Black Anodized” then the final finish shall be black anodic oxidation coating to grade AA25 (or above) of BS 1615.

Weather stripping and joint sealing materials shall be compatible with their adjacent materials and shall remain stable and not adversely affect the proper functioning of the window.

Replacement of weather stripping shall be possible from within the building and without requiring removal of the main frame.

**WORKMANSHIP**

**1.6.11 WELDING**

All welding is to be in accordance with the requirements of BS 1856 and 938 and the electrodes shall comply with BS 639.

Fusion faces shall be free from irregularities which could interfere with the welding material. These faces shall also be free from any deleterious material such as rust, grease and paints.

Edges of welding shall be prepared by planning or machine flame cutting. During welding all parts will be maintained in their correct position.

Welds shall be carried out with each run closely following the one prior with sufficient time between to allow for removal slag.

Each run of weld is to be inspected, and the sub-contractor shall ensure that unsatisfactory welds are cut out or remade to the required standard.

The minimum size of fillet weld shall be 6mm.

All completed welds shall have a regular and smooth surface. The weld material shall be solid with complete fusion throughout the weld and to the face cut metals. Any defects shall be cut out or made good to approval.

External faces of butt welds to be ground smooth.

**1.6.12 PAINTING**

All steel is to be wire brushed and any loose scale, dirt or grease shall be removed before any painting is commenced. One coat of red oxide primer Type A to BS 2523 shall be applied at the shop. Any damage to the priming paint shall be made good to the Architect’s satisfaction.

**1.6.13 FIXING OF STEEL WINDOWS**

Fixing of metal windows shall include for assembling and fixing, including screwing to sub-frames or cutting mortices for lugs in concrete or walling and running with cement mortar (1:4) bedding frames in similar mortar, pointing in mastic, bedding sills, transoms and mullions in mastic, making good finishings around both sides and fixing, oiling and adjusting all fittings and frames.

Adjacent sashes in horizontal sliding windows shall be separated by a compatible spacer and the sashes shall be supported on bearing devices that facilitate movement.

Joints in frames shall be made either by welding or by mechanical means. Where necessary joints shall be sealed with flexible material. Joints to be flush joints within one of the tolerances given in BS 1474.

Hardware including its fixings shall be compatible with aluminum and shall be replaceable without removing the outer frame from its surround.

All screws, nuts, bolts, rivets, washers and other fastenings shall be of stainless steel or aluminum with the exception of those that are protected when the window is closed. Alternatively, these may be made of steel which has been finished by one of the following methods:

Zinc plated and passivated according to BS 1706 Classification Nr 729. Hot dip galvanized according to the requirements of BS 729.

Sherardized according to the requirements of BS 729 Part 2 or, Sprayed with metal coating according to BS 2569 Part 1.

Fixing devices not made of aluminum may be made of steel finished by either method

(a), (b) or (c) above.

The fixings shall be capable of withstanding the design wind load and any operating forces on the window.

Windows manufactured to standards set out in this specification shall each bear the name of trademark of the manufacturer and the number of the appropriate standard. Fixing, assembling, bedding frames and painting shall be executed as described for “Fixing of Steel Windows‟.

**1.7 FINISHINGS**

**1.7.1 OTHER SPECIFICATIONS**

All other specifications of this contract where applicable are deemed to apply equally to the finishings specifications.

**1.7.2 SAMPLES**

The Contractor shall prepare at his own cost samples areas of the paving, plastering and rendering as directed until the quality, texture and finish required is obtained and approved by the Architect after which all work executed shall conform with the respective approved samples.

**1.7.3 FINISHED THICKNESS**

The thickness of floors shall have a constant structural thickness and have level top surfaces. The finished floor surface will equally have a constant level, and any adjustment needed to achieve this effect with the varying floor finish materials is to be made in the screeds beneath the same.

Slabs bearing on the ground may be cast to varying levels, and be of constant thickness with varying formation levels, or have varying thicknesses at the option of the Contractor. This stipulation in no way relieves the Contractor of the requirements of the specification for structural work.

**1.7.4 MATERIALS GENERALLY**

All materials shall be of high quality, obtained from manufacturer’s to be approved by the Architect. Cement, sand and water shall be as described under concrete work and blockwork.

**1.7.5 BONDING**

Bonding compounds, etc., for use in applying plaster and similar finishes direct to surfaces without the use of backings or screeds are only to be used if approved by the Architect and are to be used strictly in accordance with the manufacture’s printed instructions.

**1.7.6 CHASES, OPENINGS AND HOLES**

All chases, holes and the like which were not formed in the concrete shall be cut, and all service pipes shall be fixed and all holes and chases filled with mortar before paving and plaster work is commenced in no circumstances will the Contractor be permitted to cut chases, holes and the like in finished paving or plaster work.

**1.7.7 IN-SITU FINISHING**

**1.7.7.1 GENERALLY**

The term plastering refers to the operation internally and rendering to the same operation externally but for ease of reference the term plastering has generally been used in this specification to describe both operations.

**1.7.7.2 MIXES**

The methods of measuring and mixing plaster shall be as laid down under Concrete work and the proportions and minimum thickness of finished plaster shall be in accordance with the following:

|  |  |  |
| --- | --- | --- |
| **Item of Work** | **Mix** | **Minimum Thickness and Finish** |
| Internal plaster | 1 part cement  4 parts sand  2 parts otherwise specified | 16mm finish to walls and Ceilings:  Lime Wood float finish unless otherwise specified. |
| External Render | 1 part cement | 12 mm finish in two coats |
| Tyrolene finish | Ditto | 6 mm finished thickness in two coats on 10mm plastered backing |

To obtain greater plasticity a small quality of lime may be added to the mixes for external plastering at the Architect’s discretion but in any case, it is not to exceed 2-part lime to 1 part cement.

With regard to the lime mortars gauged with cement, the addition just before use, of the cement to small quantities of the lime/sand mix shall preferably take place in a mechanical mixer and mixing shall continue for such time as will ensure uniform distribution of materials and uniform colour and consistency.

It is important to note that the quantity of water used shall be carefully controlled. Plaster may be mixed either in a mechanical mixing machine or by hand.

Hand mixed plaster shall first be mixed in a dry state, being turned over at least three times. The required amount of water should then be added, and the mix again turned over three times or until such time as the mass is uniform color and homogeneous.

The plaster shall be completely used within thirty minutes of mixing and hardened plaster shall not be re-mixed but removed from the site.

**1.7.7.3 PREPARATION OF SURFACES FOR PLASTER ETC.**

Irregularities in the surfaces to be plastered or rendered shall be filled with mortar, without lime, twenty-four hours before plastering is commenced. Joints is blockwork, etc., are to be well raked out before plastering to form a good key. Smooth concrete surfaces to be plastered shall be treated with an approved proprietary bonding agent or hacked to provide an adequate key for the plaster.

All surfaces to be plastered or rendered shall be clean and free from dust, loose mortar and all traces of sals.

All surfaces shall be thoroughly sprayed with water and all free water allowed to disappear before plaster is applied.

As far as practical, plastering shall not commence until all mechanical and electrical services, conduits, pipes and fixtures have been installed.

Before plastering commences all junctions between differing materials shall be reinforced. This shall apply where walls join columns and beams, particularly where flush and similar situations where cracks are likely to develop and as directed by the Architect. The reinforcement shall consist of a strip of galvanized wire mesh “Expamet” or equal approved 15cm wide which shall be plugged, nailed or stapled as required at intervals not exceeding 45mm at both edges. The surfaces to which such mesh shall be applied shall be paired with one coat with a bituminous paint prior to fixing the mesh.

**1.7.7.4 APPLICATIONS OF PLASTER AND RENDER**

After preparation of the surfaces a key coat of cement slurry shall be applied to the wetted surface to be plastered. When this coat is dry the plaster coat shall be applied, by means of a trowel, between screeds laid, ruled and plumbed as necessary. This coat, which shall be to the required thickness shall be allowed to set hard and then cured as described. Surfaces are to be finished with a wood or steel float to a smooth flat surface free from all marks.

Tyrolene finish shall be applied with an approved machine to give a finish of even texture and thickness. The sprayed finish shall be applied in two separate coats allowing time for drying between coats.

Application in one continuous operation to build up a trick layer will not be permitted. The total finished thickness of the two sprayed coats shall be not less than 6mm. The spray finished finish shall not be applied until all repairs and making good to the undercoat are completed. Any plaster which adheres to pipes, doors, windows and the like shall be carefully removed before it has set. Curing shall take place after the application of the second coat. Where colored Tyrolean is required this shall be obtained by the addition to the mix of any approved color pigment.

All plastering and rendering shall be executed in a neat workmanlike manner. All faces except circular work shall be true and flat and angels shall be straight and level or plumb. Plastering shall be neatly made good around pipes or fittings. Angles shall be rounded to 6mm radius.

All tools, implements, vessels and surfaces shall be at all times kept scrupulously clean and strict precautions shall be taken to prevent the plaster or other materials from being contaminated by pieces of partially set material which would tend to retard or accelerate the setting time.

**1.7.7.5 CURING OF PLASTER**

Each coat of plaster is to be maintained in a moist condition for at least three days after it has developed enough strength not to be damaged by water.

**1.7.7.6 CEMENT AND SAND SCREEDS**

Screeds shall be mixed and formed as described.

**1.7.7.7 GRANOLITHIC PAVING**

The granolithic paving shall be laid by a specialist floor layer and constructed as follows:

Curing compounds if specified or approved by the Architect shall be used in strict accordance with the manufacturer’s instructions.

Surface hardening solutions of sodium silicate if purchased as liquid shall be of the grade sold for this purpose. Fourteen days after curing the surface shall be sprayed with three coats of sodium silicate solution and spread evenly with a mop or soft brush. Unabsorbed silicate left on the surface after the last application is to be washed off.

Solution is to be 1:4 by volume for first coat, 1:3 for second 1:2 for third applied at 24-hour intervals.

The base concrete structural floor shall be finished with a tamped surface. Shortly before the granolithic topping is to be laid the surface of the base concrete is to be thoroughly prepared to provide a good bond. The base concrete shall be hacked by hand or mechanically so that its laitance is completely removed to expose clean coarse aggregate. All traces of dust formed as a result of hacking etc., shall be removed. The base concrete shall be thoroughly wetted prior to laying. Any excess water shall be removed prior to the grouting.

The prepared surface of the base concrete shall be covered with a grout consisting of one part cement and one part sand mixed to the consistency of thick cream and it shall be scrubbed into the surface with a stiff broom.

The granolithic topping shall be mixed in the following proportions by weight:

1 part cement, 1 part fine aggregate and 2 parts coarse aggregate.

The water content of the granolithic topping shall be kept as low as possible consistent with obtaining full compaction of the topping with the plant available in order to avoid segregation excessive laitance and in no circumstances must the water/cement ratio exceed 0.42 by weight.

The granolithic topping shall be mixed for a period of not less than 15 minutes after all the materials have been placed in the mixer drum. No concrete shall be removed from the drum until it is of uniform texture and color. Unless otherwise permitted the materials shall be fed into the drum so that some water will enter the drum before the cement and aggregates. Each batch shall be discharged completely before the next batch is introduced. No extra water or other material shall be added to the mix after it has left the mixer.

If electrical conduit, trunking or any other items are required to be buried within the granolithic topping and the thickness is reduced at any point the Contractor is to ensure that steps are taken to eliminate the possibility of cracking in the granolithic topping by means of galvanized wire mesh reinforcement in the flooring or other approved method. The extent of buried conduits, etc., should be ascertained prior to tendering and allowance for complying with this requirement will be deemed to be included in the rates for granolithic flooring.

The granolithic topping shall be laid in areas not exceeding 14m2. The length of any bay should not exceed 10 times the width of that bay. Joints shall be made in the granolithic topping over all joints in the base concrete and over all supporting beams for suspended floors.

Unless otherwise indicated on the drawings all contraction and construction joints in the granolithic topping shall be simple butt joints without a filler.

The forms shall be fixed rigidly on a firm foundation and supported throughout their length so that they will not be disturbed by the spreading and compacting of the concrete. The forms shall be true to line with ±3 mm and to level within ±2 mm. The forms shall be set well in advance of laying the topping and shall be checked for level immediately before concreting starts.

The granolithic topping shall be placed as soon as possible after being mixed in two courses each 31mm thick. In no circumstances should the depth of granolithic spread in one operation be greater than that which can be fully compacted by the means available. No more than 1 hour should elapse between placing the courses. The mix proportions and water content of the granolithic shall be identical in each course.

The lower course must be compacted before the upper course and each course of topping shall be fully compacted with neither segregation nor excessive laitance. Particular care shall be taken to ensure full compaction of the concrete should be placed to an adequate surcharge to ensure full compaction.

After the topping concrete has been placed, levelled, and fully compacted it shall be trowelled at least three times at intervals during the ensuing 6-10 hours so as to produce a uniform and hard surface with high resistance to abrasion. Under no circumstances should cement be sprinkled on to the surface surplus water.

As soon as the surface has been finished it shall be protected against rapid drying out by erecting barriers against wind or draughts and against strong sunlight. As soon as the concrete has hardened sufficiently to prevent damage to its surface the floor shall be cured continuously for a minimum of 7 days by any one of the following means:

By means of wet canvas or straw mats or 50mm thickness of damp sand laid on the surface and kept continuously damp and in position for the full curing period.

By means of building paper, plastic or other waterproof sheeting which shall be kept in close contact with the surface of the concrete. The covering shall overlap the sides and ends of the slab and shall be lapped 75m at all joints. The covering shall be securely held in position for the full curing period.

By spraying the surface with an approved proprietary curing medium not less than one gallon of which shall be applied to every 20m2 of surface.

At the end of curing period the Contractor shall take all precautions required by the Architect to ensure that the floor will dry out slowly. Under any circumstances will artificial heating be permitted in the building for a period of at least six weeks after the topping has been laid and thereafter the temperature shall not be increased rapidly.

Side forms shall not be removed from freshly placed granolithic until they are at least 12 hours old and then only with the Architect’s approval. Care shall be taken to avoid damaging the granolithic. If any damage occurs the Contractor will be responsible for making good to the Architect’s satisfaction.

The floor shall not be subjected to traffic or to working loads until the specified curing has been completed.

**1. 7.7.8 IN-SITU TERRAZZO WORK**

The terrazzo paving and screeds are to be laid and polished completely by an approved specialist firm.

Where the screed is to be bonded to the concrete structural sub-floor, the latter shall be finished with a tamped surface and left clean and free from dust and grease. Before laying the screed, the surface shall be covered with a grout of one part sand and one part cement brushed in with a stiff broom. The screed is to be laid before the grout has set.

All screeds under in-situ and precast terrazzo paving are to be laid by the approved specialist firm. The screeds shall consist of one-part ordinary Portland cement to three parts sharp washed sand. This mix may be varied by agreement onthe responsibility of the approved specialist firm.

The screed is to be reinforced with 22-gauge galvanized steel wire netting with mesh not exceeding 1” laid direct on the sub-floor of bays exceeding 1 square metre.

The screed backing in-situ skirtings is to be such as to adhere firmly to the various materials of the walls, and in accordance with the specification below:

**Finish Bedding Screed Total**

|  |  |  |
| --- | --- | --- |
| In-situ paving | 25 | -40 |
| In-situ margins | 25 | -40 |
| In-situ skirtings | 8 | -12 |

If electrical conduit, trunking or other items are required to be buried within the depth of the screed and flooring and the total thickness is reduced at any point the flooring specialist is to ensure that steps are taken to eliminate the possibility of cracking in the screed and subsequent damage to floor finish by means of galvanized wire mesh reinforcement in the screed and flooring or other approved method.

The in-situ terrazzo paving is to consist of two parts of white marble chippings to one part of white Portland cement to BS 1014.

The marble chippings to be fine (graded 3mm to 6mm in equal proportions)

rounded granular clean and free from dust and impurities.

In-site terrazzo paving should be laid on the screed as soon as practicable and not more than three days after the laying of the screed.

After laying the surfaces are to be kept moist until ready for polishing.

The in-situ terrazzo paving should be laid in panels separated by diving strips in the positions shown on the drawings. Diving strips are to be white plastic the full depth of the paving and screed and bedded into the screed with the top edges truly levelled with the finished polished floor level. The thickness of the diving strips is to be 5 mm.

Polishing of in-situ terrazzo paving is to be carried out by a mechanical polisher with graded abrasives and any necessary water. Making good of any defects during polishing is to be done with a cement grout matching in color that used in the terrazzo paving.

The finishing of in-situ terrazzo paving is to be smooth and imperforate and is to be approved by the Architect.

The terrazzo paving is to be washed clean on completion and covered with a thick bed of sawdust or other approved protective layer. This should be maintained and renewed as necessary and cleared away on completion.

Lay in-situ skirting to match paving or of approved colour and finish covered a junction with paving or floor finish to 20mm radius. Execute all required angles and stopped or fair returned ends.

Vertical dividing strips to match those used in paving are required at not more than 900mm intervals. A dividing strip is required between paving and skirting at the commencement of the coving.

The facing of dividing strip nearest wall to be 200mm from face of skirting.

A horizontal dividing strip is required at top of skirting finished flush with wall finish over.

Where in-situ terrazzo skirtings are required under door frames, etc., a pencil round junction is to be made with threshold paving in lieu of coving as shown on drawing.

In-situ margins shall have dividing strips to match those used in paving. They shall be positioned at junctions with paving and skirting and transversely at not more than three feet intervals to continue vertical strip in skirting.

All internal angles and coves are to be rubbed by hand with carborundum block to

be polished finish matching the finish of the paving to the Architect’s approval.

**1.7.7.9 SURFACE HARNERS**

Floor hardeners shall comprise an approved type guaranteed by the makers to produce a hard dense concrete with high abrasive resistance, impervious to the penetration of heavy oils, acid or alkali solutions and to be used strictly in accordance with the maker’s instructions.

The first dressing of sodium silicate for granolithic flooring shall be one part of sodium silicate to six parts of water by volume.

Subsequent dressing shall be composed of one part of sodium silicate to four parts of water by volume, for all surfaces. The two liquids shall be well mixed together, sprayed over the flooring and spread evenly with a mop or soft brush, any excess being wiped off and the flooring allowed to dry for at least 24 hours after each dressing. After final drying, floors shall be washed with clean water.

**1.7.7.10 RATE OF IN-SITU WORK**

The rates for in-situ work shall include for raking out joints of blockwork or bonding coat or spraying cement slurry on new concrete surfaces to form key, for work in narrow widths, small and isolated areas, rounded arises, fair and chamfered edges, for making good up to boundaries of other work for making good and working around pipes, brackets etc., and for all other incidental labors. Rates shall also include for masking before the application of spray finishes work executed overhead, temporary rules, supports, screeds and templates.

**1.7.8 TILES SLAB AND BLOCK FINISHINGS**

**1.7.8.1 VINYL ASBESTOSTILES**

Vinyl asbestos floor tiles shall comply with BS 3260 of an approved manufacturer to patterns as directed by the Architect. Adhesives are to be as recommended by the manufacturer in writing and approved by the Architect. The tiles are to be laid and bedded directly in adhesive on to a cement and sand bed to make up the total paving thickness.

The cement and sand screed are to be finished with a steel trowel to a perfectly smooth surface before the application of the mastic and tiling.

On completion the vinyl asbestos tiles are to be sealed and polished with wax all in accordance with the manufacturer’s instructions.

**1.7.8.2 CLAY TILE PAVING**

Clay tile paving is to be in 150x150mm tiles obtained from an approved manufacturer and are to be laid on prepared screeds. The tiles are to be bedded in cement and sand (1:4) with straight joints in each direction upon completion grout in cement and wash and clean down. Tiles are to be cut with an electric tile cutting saw.

**1.7.83 GLAZED WALL TILES**

Glazed wall tiles shall be in accordance with BS 1281 and shall be 108x108x6mm tiles from the standard color range with cushion edges. Wall tiling shall be carried out in accordance with CP 212.

**1.7.8.4 PRE-XAST CONCRETE PAVING SLABS**

To be all in accordance with BS 368. The slabs are to be of the sizes given herein and bedded, jointed and pointed in cement lime mortar (1:2:9)

**1.7.8.5 RATES**

The rates of tile, slab and block finishings shall include for rounded edge tiles and angles, cutting and fitting up to boundaries and around pipes, braces, etc., and water; for work in narrow widths, small and isolated areas and for all other incidental labors.

**1.7.9 SUSPENDED CEILING**

**1.7.9.1 GENERALLY**

The Contractor shall provide shopping drawings to show the final layout and sizes of members of all suspension systems and to co-ordinate the design and work of suspended ceilings with other trades to provide for the reception and installation of outlets, fixtures etc., pertaining to mechanical or electrical work, all for the Architect’s approval before any work is commenced.

Ceilings shall be erected by workmen skilled in this work in a rigid and secure manner so that the final surface is free from any waves, buckles or sags.

**1.7.9 .2 ACOUSTIC CEILINGS**

Acoustic tile ceilings shall be of approved manufacture. The ceilings shall include a proprietary suspension system as recommended by the manufacturer. The suspension system shall be suspended from wire hangers fixed to the concrete soffite by an approved method. All to be fixed strictly in accordance with the manufacturer’s instructions.

**1.7.9.3 RATES OF SUSPENDE CEILING**

Rates shall include shop drawings as specified; all hangers and supports as required including fixing the same to concrete or ductwork; for angles at edges, for corner angles at upstands, for cutting and fitting around grilles and registers and light fixtures and for leaving in perfect condition to the entire satisfaction of the Architect.

Rates shall also be deemed to include the use of plaster stops and angle beads around the edges and at all corners.

Rates shall include for all edge details, angle runners and light fitting frames as required.

1.8 GLAZING MATERIALS

**1.8.1 GENERAL**

Glass used in glazing and for mirrors shall be best quality clear glass free from visible defects so as to afford uninterrupted vision or reflection as appropriate and without obvious distortion.

**1 8.2 STANDARDS**

Glass for glazing and mirrors shall be of approved manufacture and is to comply with BS 952 in all respects free from flaws, bubbles, specks and other imperfections.

**1 8.3 CLEAR SHEET GLASS ETC.**

The clear sheet glass shall be ordinary glazing (OG) quality.

**1 8.4 PLATE GLASS**

Polished plate and Georgian wired polished plate glass to be selected glazing (SG) quality.

**1 8.5 OBSCURED GLASS**

To be of type described and as approved by the Architect.

**1 8.6 GLAZING GASKETS**

Glazing to metal frames shall be secured with clip-in gasket of butyl rubber. The gaskets shall be of size and section to suit the frame and glazing so as to provide a weather and airtight seal. The mechanical properties of the gasket shall be such as to resist the climatic conditions experienced on the site.

**1.8.7 WASH-LEATHER**

Wash-leathers shall be best quality chamois oil curved natural colored. Where wash leather is called for, an approved substitute may be employed.

**1.8.8 PUTTY**

The putty for glazing to wood sashes is to be linseed oil putty all as BS 544. The putty for glazing to metal windows is to be gold size metal window putty specially designed for tropical use, or patent mastic putty if approved by the Architect.

All putty shall be delivered on site to the original manufacturers sealed cans or drums and used directly therefrom, with the addition only of pure linseed oil if necessary. No mineral or other oils may be used in the putty except genuine linseed oil.

**1.8.9 MIRRORS**

Mirrors shall be polished float glass silvering quality, protected at back with electro-copper backing coated with Shellac varnish and paint. The mirrors are to be fixed with chromium plated dome headed mirror screws with plastic or rubber distance pieces and washers unless otherwise stated and rates shall include for this.

1**.9 WORKMANSHIP**

**1.9.1 GENERAL**

Glazing of all types and in all locations shall be carefully executed by artisans skilled in this type of work and in conformance with the recommendations of CP 152. Glazing shall be carefully fitted so that it is subject to pressure and stresses imposed by being an overtight fit within the framing.

**1.9.2 MEASUREMENTS**

Each element (door, window etc.) to receive glass shall be accurately measured to ensure a perfect fit subsequently.

**1.9.3 SINGLE GLAZING**

Single glazing shall be executed with glass of the various types described herein. Ordinary (non-safety) glass may be pre-cut or cut on site.

**1.9.4 WIRED GLASS**

Wired glass shall be cut so that the wires embedded are truly vertical and horizontal (i.e. at right angles to the cut edges).

**1.9.5 STORAGE AND HANDLING**

Glass shall be delivered to the site in stout containers and clearly market. The containers shall incorporate sling attachment points for lifting bridles. Glass shall be stored under cover so that the panes are truly vertical.

**1.9.6 PROTECTION**

After fixing glass shall be boldly marked with paper or whitewash so that it is clearly visible. In positions where damage due to construction traffic or activity is likely to occur stout screens composed of hardboard or fiberboard on battens shall be arranged to protect the glass.

**1.9.7 DAMAGE**

Should any glass delivered to site be found to be damaged it shall not be incorporated into the works without the express permission of the Architect. Should glazing installed be damaged for any reason it shall be removed and replaced free of charge to the satisfaction of the Architect. Should any adjacent work be damaged, this shall equally be reinstated free of charge to the satisfaction of the Architect.

**1.9.8 DEFECTIVE WORK**

All glass shall be checked before installation to ensure that defective glass is not installed. Notwithstanding this, if in the opinion of the Architect any installed glazing is defective it shall be removed and replaced free of charge to the satisfaction of the Architect.

**1.9.9 GLAZING TO WOOD**

Glazing shall be secured to wood framing with hardwood beads. Edges shall be wrapped in wash leather so that the wash leather finishes just below the surface of the bead. No adhesives shall be used.

**1 9.10 GLAZING TO METAL**

Glazing shall be secured to metal framing with clip in butyl rubber gaskets.

**1 9.11 GLAZING THICKNESS**

Glass thickness shall conform to the recommendations of CP 152 and the manufacturer’s recommendations for sizes of panes relative to the position in the building and the effects of wind pressure (both negative and positive).

**1 9.12 CLEANING**

All windows glazed panels and mirrors shall be cleaned both inside and out, immediately prior to the handing over of the building to the satisfaction of the Architect.

**1.10 PAINTING AND DECORATING**

**MATERIALS**

**1 10.1 MANUFACTURERS**

Except where stated all materials shall be obtained from the approved manufacturer. The Contractor shall state the name and address of the manufacturer whose materials be proposed to use. Once approval has been given the Contractor shall not obtain materials from other sources without the prior written agreement of the Architect.

**1.10.2 GENERAL**

Each succeeding coat of priming, undercoating and finishing (pigment) of clear coating shall be sufficiently differently different in colour as to be readily distinguishable.

All primers and paints in one system upon a particular surface shall be obtained from the same manufacturer.

The mixing of paints etc., of different brands before or during application will not be permitted.

**1.10.3 EMULSION PAINTS**

Emulsion paints shall be matt or satin finish vinyl emulsion paint. The first (mist) coat shall be thinned in accordance with the manufacturer’s instructions.

**1 10.4 GLOSS PAINT**

Gloss paint shall be hard gloss finish oil paint.

**1 10.5 LEAD BASED PAINTS**

The use of lead-based paints will not be permitted.

* + 1. **CLEAR FINISHES**

Clear finishes internally shall be clear polyurethane varnish (one pack).

**1 10.7 PRIMERS AND UNDERCOATS**

Unless otherwise specified, primers and undercoats shall be of the type recommended by the manufacturer of the finishing coats specified for a particular surface. Primer for external bare metal work surfaces shall comply with BS 2523.

**1 10.8 KNOTTING**

Shellac knotting shall comply with BS 1336.

**1 10.9 WHITE SPIRIT**

The white shall comply with BS 245

**1 10.10 TIMBERSTAIN**

Timber stain shall be oil based pigmented stain. The application of this material shall be strictly in accordance with the manufacturer’s instructions. Tint and degree of application shall be to the approval of the Architect.

**1 10.11 STOPPING**

The stopping shall be as follows: Plasterwork shall be plaster based filler.

Concrete and brickwork shall be similar material to the background and finished in a similar texture.

Internal woodwork, plywood and blockboard shall be putty complying with BS 544

External woodwork shall be white lead paste complying with BS 2029.

Internal clear wood finishes the stopping shall be recommended by the clear lacquer manufacturer.

**1 10.12 FILLERS**

The fillers for internal joinery shall be the type recommended by the paint manufacturer for use with his type of paint or lacquer.

Stoppers and fillers shall be tinted to match the undercoat and shall be compatible with both undercoats and primes.

All materials shall be used strictly in accordance with the manufacturer’s instructions.

**1 10.13 TEXTURE COATING**

Textured coating is to be of proprietary manufacture approved by the Architect of an approved colour.

Technical information concerning the coating is to be submitted to the Architect before ordering, but the minimum qualities of the coating are to be as follows:

a) Suitable for application internally and externally to plastered, rendered, concrete block, stone brick, asbestos and timber surfaces.

b) Minimum durability of 10 years even in exposed conditions

c) Maintenance free

d) Built-in mold resistant fungicide

**1.11 WORKMANSHIP**

**1.11.1 GENERAL**

Workmanship generally shall be carried out in accordance with BS CP 231, unless otherwise specified.

Before painting commences, floors shall be swept and washed over, surfaces to be painted shall be cleaned before applying paint as specified, and all precautions taken to keep down dust whilst work is in progress.

No paint shall be applied to surfaces structurally or superficially damp and all surfaces must be ascertained to be free from condensation, efflorescence, etc., before the application of each coat.

No painting shall be carried out externally during humid, rainy, damp, foggy or freezing conditions or conditions where surfaces have attained excessively high temperatures or during dust storms.

No new primed or undercoated woodwork and metalwork shall be left in an exposed or unsuitable situation for an undue period before completing the process. No dilution of paint materials shall be allowed except strictly as detailed by the manufacturer’s own instructions, either on the containers, or their literature, and with the special permission of the Architect. For external work, dilution of paints will not be allowed whatsoever. For internal work where permitted by the Architect, undercoats may be thinned by the addition of not more than 5% thinners. Gloss finish shall not be thinned at all.

Metal fittings such as ironmongery etc., not required to be painted shall first be fitted and then removed before the preparatory processes are commenced. When all painting is completed, the fittings shall be cleaned as necessary and re-fixed in position.

**1.11.2 BRUSH WORK**

Unless otherwise specified, all primers and paints shall be brush applied. Written permission must be obtained from the Architect if an alternative method of application is to be used.

**1 .11.3 STOPPING AND FILLING**

Unless otherwise specified by the manufacturer all primes and undercoats shall be stopped flush and rubbed down to a smooth surface with an abrasive paper and all dust removed before each succeeding coat is applied. Care shall be taken to prevent burnishing of the surface.

**1.11.4 STIRRING**

Unless otherwise specified by the paint manufacture all paint materials shall be thoroughly mixed and/or stirred before and during use and suitably strained as and when necessary.

**1.11.5 INSPECTION**

No priming coats shall be applied until the surfaces have been inspected and preparatory work has been approved by the Architect. No undercoats or finishing coats shall be applied until the previous coat has been similarly inspected and approved.

**1.11.6 PAINT APPLICATION**

Each coat of paint shall be so applied as to produce a film of uniform thickness. All paint shall be applied in accordance with the manufacturer’s instructions. Special attention shall be given to ensure that all surfaces including edges, corners, crevices, welds and rivets receive a film thickness equivalent to that of adjacent painted surfaces.

**1.11.7 DRYING**

All coats shall be thoroughly dried before succeeding coats are applied. Allow a minimum of 24 hours between application on any one surface, unless otherwise specified by the manufacturer.

**1.11.8 UNPRIMED WOODWORK**

Unprimed woodwork scheduled to be painted shall be rubbed down with abrasive paper and dusted off. Care shall be taken to prevent „burnishing „ of the surface. All knots and resinous areas shall be coated with two coats of knotting. Pitch on large, open unseasoned knots and all other beads or streaks of pitch shall be scraped off, or if still soft, shall be removed with white spirit before applying the knotting. Apply one coat of priming to all surface, two coats to all end grain, to be subsequently painted. Backs of all wood frames in contact with concrete, brickwork, blockwork and metalwork or similar materials shall be primed before fixing. After priming all joints, holes, cracks shall be stopped and filled, rubbed down and dusted off.

**1.11.9 PRIMED WOODWORK**

Woodwork delivered primed shall be lightly rubbed down with abrasive paper and dusted off. Touch up bare areas with similar priming including open grained ends. After touch priming all joints, holes, cracks and open grained ends shall be stopped and filled, rubbed down and dusted off.

**1.11.10 PLYWOOD AND BLOCKBOARD**

Edges of exterior plywood and blockboard shall be sealed with two coats of aluminum primer and the backs treated with a lead primer.

**1.11.11 CLEAR FINISHED WOODWORK**

All woodwork scheduled to receive a clear finish shall be well sanded with the grain removing all dirt etc., to give as smooth a surface as possible. Resinous timer shall be swabbed down with white spirit and dried thoroughly. Split or end grain shall be filled with suitable filler recommended by the clear lacquer manufacturer, in accordance with their instructions, and of the appropriate shade.

**1.11.12 BAREMETAL WORK**

Bare metalwork shall be thoroughly cleaned off all dirt, grease, rust and scale by means of chipping, scrapping and wire brushing: particular attention should be given to the cleaning of welded, brazed and soldered joints. Wash down with white spirit and wipe dry with clean rags. Apply a coat of metal primer immediately the cleaned surfaces have been approved by the Architect.

**1.11.13 GALVANIZED METALWORK**

Galvanized metalwork scheduled for painting shall be thoroughly cleaned of dirt, grease, dusted and washed down with white spirit and wiped dry with clean rags. Any minor areas of rust shall be removed by wire brushing and spot primed with a zinc rich primer. Apply at least one coat of calcium plumbate primer to all surfaces subsequently to be painted.

**1.11.14 PRIMED METALWOR**

If the priming coat of pre-primed metalwork has suffered damage in transit, or during erection on site, the affected areas shall be cleaned off by wire brushing, abrading and dusting off, the bared patches touched up with a primer of a similar type to that already applied.

**1.11.15 COPPER**

Copper scheduled for painting shall be lightly abraded with emery cloth, washed with white spirit and wiped dry with clean rags. Apply a coat of each primer immediately the cleaned surfaces have been approved.

**1.11.16 BRICKWORK, CONCRETE, ETC.**

All brickwork, blockwork, concrete, rendered and plaster surfaces scheduled to be painted shall be brushed down, all holes and cracks filled, all projections such as plaster, or mortar splashes etc., removed to leave a suitable dust free surface. All traces of mold oil shall be removed from concrete surfaces by scrubbing with water. Detergent and rinsing with clean water. All these surfaces shall be thoroughly dry before any primer or paints are applied. Apply a coat of alkali resisting primer where surfaces are to be finished with oil paints or alkyd resin type emulsion.

Asbestos cement surfaces scheduled for painting shall be brushed down to remove powdery deposits, and a coat of alkali resisting primer applied where such surfaces are to be finished with oil paints or alkyd resin type emulsion.

**1.11.17 COLOURS**

The colours will be selected by the Architect from the paint manufacturer’s standard colour range.

1**.11.18 TOXIC WASH**

Concrete, blockwork, plaster and timber surfaces which are to be painted shall be washed down prior to painting with a toxic wash applied by brush or spray. A second wash shall be applied two days after the first wash. The surfaces shall then be allowed to dry out completely before application of paint.

**1 11.19 PROTECTION**

Proper care must be taken to protect surfaces while still wet by using screens and „wet paint‟ signs where necessary.

**1.11.20 DAMAGE**

Care must be taken when preparing surfaces or painting etc. not to stain or damage other work. Dust sheets and covers to the satisfaction of the Architect shall be used to protect adjacent work. Any such stains or damage shall be removed and made good at the Contractor’s expense.

**1.11.21 CLEANLINESS**

All brushes, tools, pails, kettles and equipment shall be clean and free from foreign matters. They shall be thoroughly cleaned after use and before being used for different colours, types or classes of material. Painting shall be carried out in the vicinity of other operations that may cause dust. Waste liquids, oil-soaked rag, etc. shall be removed from the building each day. Waste liquids shall not be thrown down in any sanitary fittings or drains.

**1.11.22 PERFORMANCE**

If while the work is in progress, the paint appears to be faulty, such as consistency of colour, drying time, or quality of finish, the work shall be stopped at once and the manufacturer consulted.

The manufacturers of the materials shall be given every facility for inspecting the work during progress in order to ascertain that the materials are being used in accordance with their directions, and to take samples of their products from the site if they so desire for tests.

The finishing coats of the various paints or surface finishings shall be free from sags, brush marks, runs, wrinkling, dust, bare or 'starved' patches, variations in colour and texture, and other blemishes.

When the work has been completed, the finishes surfaces shall not be inferior in quality, colour and finish to the samples approved by the Architect, and imperfections in manufacture shall not be apparent through these finished surfaces. In the event that the Architect is not satisfied that the quality of finish does not comply with the required standards and/or the sample panel the Contractor will be required to repaint at his own expense, such work to the satisfaction of the Architect. If in the opinion of the Architect, it is necessary to remove completely the unsatisfactory paintwork this shall also be done under the direction of the Architect at the expense of the Contractor.

**1 11.23 PACKING, DELIVERY AND STOPPAGE**

All paints and surface coatings shall be delivered in sound sealed containers, labelled clearly by the manufacturers, the label or decorated container must state the following:

a) The type of product

b) The brand name and colour

c) The use for which it is intended

d) The manufacturer's batch number

e) The BS number if applicable

f) All labels shall be printed - containers bearing type written labels will not be acceptable.

Materials shall be stored under cover in accordance with the manufacturer's instruction and with local fire and safety regulations. The store itself must be maintained at a temperature of not less than 500F (100C) and must not be subjected to extreme changes of temperature.

The batch deliveries are to be dated and used strictly in order of delivery.

**1.11.24 VINYL EMULSION PAINT**

Surfaces to be painted shall receive one mist coat followed by two full coats of vinyl emulsion paint. Application may be by means of rollers or brushes.

**1.11.25 GLOSS FINISH PAINT**

Surfaces to be painted shall be primed then painted with two undercoats followed by one coat, gloss finish paint.

**1.11.26 CLEAR POLYURETHANE VARNISH**

Surfaces to be clear varnished shall be treated with two coats polyurethane varnish.

**1.11.27 TEXTURED COATING**

The manufacturer's instructions concerning application of the coating are to be strictly followed under the direction of the Architect.

All surfaces to receive textured coatings are to be clean and dry with surfaces scraped and brushed before application of the coating.

The application of the coating is to be with a textured roller or fibre brush as directed by the Architect with a minimum spreading capacity of 1 kg/m2. Under no circumstances is the coating to be thinned.

**1.12 ELECTRICAL INSTALLATIONS**

**1.12.1 GENERAL**

This section specifies the requirements for plant, equipment and materials forming part of the electrical works of the Contract and shall apply except where otherwise specified. Where the word “Engineer” is used in these descriptions of Materials and Workmanship, it shall in all appropriate cases be used and construed as the “Electrical Engineer”.

All the electrical installation work is to be executed by suitably qualified and experienced operatives, and skilled tradesmen employed by the Contractor or by Sub-Contractor and are all to be specifically approved by the Engineer. All workmanship shall be of good standard and in accordance with the acceptable practices and the relevant Codes of Practice.

**1.12.2 REGULATIONS**

The Building Services and Contract works shall generally be designed in accordance with the following documents:

1. Design Brief from the Client’s authorized representative.
2. The current version of the sixteenth edition of the IEE Wiring Regulations for Electrical Installations‟ published by the Institution of Electrical Engineers, London (with local amendments, where applicable) and issued by the Chartered Institute of Building Services Engineers
3. Local (Malawi) Legislation standards, design guidance; Supply and Local Authority requirements.
4. Relevant British Standard Specifications and Codes of Practice, published by the British Standards Institution (hereafter referred to as BS and C.P. respectively).
5. The Specification.
6. Any working drawings produced by the Contractor and approved by the Engineer), The Engineer’s instructions, drawings and details.

Where these documents and/or this specification contradict one another, the Contractor/Sub-Contractor is responsible for identifying and reporting any discrepancies to the Consulting Engineer.

Where manufacturers and/or suppliers are identified, alternatives may be proposed and used subject to written approval by the Contract Administrator.

The Contractor shall undertake all modifications demanded by the authorities in order to comply with the regulations, and produce all certificates, if any, from the authorities without extra charge.

**1.12.3 QUALITY OF VMATERIALS AND MANUFACTURING STANDARDS**

Notwithstanding that Suppliers may have been named or approved by the Engineer, it shall be the Contractor’s responsibility to ensure that all materials and components are up to Specification in respect of manufacture, finish and performance.

Named manufacturers are those on which the design has been based and whose standards of products are approved and intended only as a guide to the contractor.

All materials shall be suitable for their intended use and shall comply with relevant Standards and be installed in accordance with the Codes of Practice, manufacturer’s recommendations and the Specification.

Materials and/or apparatus supplied by others for installation and/or connection by the Contractor shall be carefully examined on receipt. Should any defects be noted, the Contractor shall notify the Engineer immediately.

Unless otherwise specified, all materials including equipment, fittings, cables etc., shall be in new condition. Defective equipment or damaged in the course of installation or test shall be replaced or repaired to the approval of the Engineer. Should any replacement, be necessary, the Contractor shall bear the cost of substitution and of all associated builder’s work and making good finishes.

All materials to be used shall be fixed or applied in accordance with the manufacturer’s instructions.

**1.12.4 INSTALLATION REQUIREMENTS**

It is necessary that all the Contractor’s proposals and working drawings for and in connection with the electrical works shall be submitted early in the Contract period to facilitate co-ordination with others.

The Engineer reserves the right to call for samples of some or all materials and products to be used.

The contractor shall obtain such samples as required and submit them within 14 days and any costs incurred will be presumed to have been allowed for in the tender.

The Contract works shall be of construction, manufacture and finish as to render them suitable for operating throughout their expected life and maintain design conditions. The Contractor shall be deemed to guarantee satisfactory performance of all quoted for items and fixing and operational accessories.

**1.12.5 STANDARDS**

The Works shall be constructed and tested in conformity with the standards indicated in these specifications. Wherever reference is made in the contract to specific standards and codes to be met by the materials, plant, and other supplies 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 are national or relate to a particular country or region, other authoritative standards which ensure a substantially equal or higher performance than the standards and codes specified shall be accepted subject to the Engineer's prior review and written approval. The alternative standards and codes proposed shall be translated by the Contractor into the English language prior to submission for 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 7 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 substantially equal performance, the Contractor shall comply with the standards specified in the document.

For convenience and for reference purposes, certain equipment, articles, materials, or processes are designated in the specifications by brand name, trade name or catalogue name and number. Such designation shall be deemed to be followed by the words "or approved alternative" whether such words are shown or not. The Contractor may offer other equipment, articles, materials, or processes which have similar characteristics, and which provide performance at substantially equivalent or better than those specified, which will be accepted, subject to the Engineer's prior review and written approval. The burden of providing evidence as to comparative quality and suitability of alternatives shall be upon the Contractor and such evidence must be submitted to the Engineer at least 5 days prior to the date when the Contractor desires approval. No such alternative shall be used without prior written approval by the Engineer."

**1.12.6 RECORD DRAWINGS**

The Contractor shall mark accurately on one set of drawings the conduit or trunking laid during the progress of the work. This information must be made available on site for inspection by the Engineer whenever the Engineer asks for it.

At the completion of the contract, the Contractor shall supply the Engineer with two soft copies on 3.5-inch floppy diskettes, one set of transparent originals and two complete sets of prints showing the complete installation. The drawings shall include the location of all apparatus, conduit and cable routes and a schematic of mains distribution.

Where portions of the works are to be concealed, draft copies of “As installed” drawings shall be supplied to the Engineer before the work is concealed in order to facilitate checking and approval.

The Contractor shall maintain on site a set of drawings for the purposes of progressive marking up of alterations and variations. These drawings, which shall form the basis for the Record drawings, shall be available for inspection by the Engineer from time to time.

The Engineer will not issue a Certificate of Practical Completion if the Contractor fails to undertake the above procedure for the preparation of the Record drawings.

Upon the issue of the Certificate of Completion or Making Good Defects the Contractor shall issue a final set of Record drawings taking into account any changes which occurred in the Defects Liability Period.

**1.12.7 CONTRACT DRAWINGS**

The drawings forming part of this specification are to be read in conjunction with this Specification to enable the Contractor to prepare a tender.

These drawings are not intended to be used as working drawings unless they are released for that purpose.

**1.12.8 WORKING DRAWINGS**

The Contractor shall prepare working drawings as may be necessary. They shall be submitted to the Engineer for approval before the execution of the works.

Working drawings are to be prepared by the Contractor and shall be detailed as below but not restricted only to these: -

a) General arrangement drawings showing plant, LV switchboards, distribution boards, consumer units, fittings, switches, socket outlets, etc.

b) Layout drawings of concealed and surface conduits, ducts, trunking, etc.

c) Shop drawings for all details of the works to be implemented by the contractor. Including but not limited to details of fittings, roof, windows, doors, fabrications, partitions, curtain walls, claddings and any other item as requested by the supervision engineer.

d) Any other drawings that are not called for in the Specification.

Two copies of all working drawings shall be submitted to the Engineer for approval. Thereafter, the Contractor shall submit copies of approved working drawings for distribution to all parties concerned.

The Contractor shall not be relieved of any of his obligations under the Contract from correcting any errors on site or elsewhere subsequently found in the approved working drawings and no extra financial claims shall be entertained.

**1.12.9 COORDINATION OF ENGINEERING SERVICES**

All aspects of the Engineering Services installation require detailed coordination to avoid any possible clashes or conflict with other trades and disciplines.

The Contractor shall undertake such co-ordination in relation to his Co-ordination and Installation drawings and builder’s work information, and no extra claim will be allowed due to conflict of works or installations.

The Contractor shall initiate all co-ordination meetings that are necessary and all surveys that are necessary.

**1.12.10 LABELS**

All switchgear, switch fuses, distribution boards, etc., shall be clearly labelled with Black and White background engraved labels to indicate the name, purpose and position of the gear. All circuits on distribution boards shall be clearly identified in respect of the number and location of the miniature circuit breakers. The chart shall be securely fixed inside the cover of the distribution boards.

**1.12.11 INSTRUCTION OF EMPLOYER’S STAFF**

The Contractor shall be responsible for arranging a Scheme for Instruction and

Training of the Employer’s Personnel in relation to the Engineering Services.

Draft proposals for the Scheme content shall be submitted to the Engineer for his approval in writing not less than six months before the anticipated date of Practical Completion. Thereafter the proposals will be finalized, and a timetable shall be provided for the Scheme.

The Contractor is to include for the provision of attendance by himself and by specialist personnel to assist in the training to suit the requirement of the Engineer.

**1.12.12 OPERATING AND MAINTENANCE INSTRUCTION MANUAL**

Operating and maintenance manuals shall be provided by the Contractor as detailed in the Specification and Bills of Quantities and as stated below.

A draft copy of the operating and maintenance instruction manuals contained in a temporary loose-leaf binder shall be issued prior to the testing and commissioning period for approval of content, layout and form. Once approved, a draft copy shall be handed over prior to the issue of the Certificate of Practical Completion. This copy shall contain all testing and commissioning data results, actual control setting points and the like in draft form.

Within 14 days of “The Date of Practical Completion”, 2 copies of the final document shall be handed over which shall include all testing and commissioning results and final plant duties and control settings, etc. in an approved form.

**1.12.13 APPROVAL/CHECKING PROCEDURES**

All Contractor’s Drawings and manufacturers details shall be approved by the Engineer prior to any orders being placed by the Contractor. The final details including all technical aspects and calculations where applicable shall be submitted in a clear, definable and easily read format with the specified technical details, notes and performance data clearly shown in English language.

All correspondence related to the approvals procedure shall be directed at the

Engineer through the office of the Architect.

Unless stated otherwise elsewhere the Contractor shall allow 14 working days from the date of receipt by the Architect of the request for Approval of all data and manufacturers details submitted.

**1.12.14 EQUIPMENT GUARANTEES**

Plant and equipment guarantee shall commence at the date of Practical Completion and run for a minimum period of 6 months after this date. Any costs associated with this requirement shall be met by the Contractor.

**1.12.15 PLANT AND EQUIPMENT PERFORMANCE TESTING**

Relevant plant and equipment shall be tested at the manufacturer’s works or in a recognized and approved testing facility to demonstrate performance compliance with the stated and specified duties. Performance testing shall demonstrate but not limited to the following:

* Full, Partial and Minimum load
* Response to load change
* Efficiency
* Noise levels

The tests shall be conducted to simulate design conditions and all ancillary plant and equipment needed to support the tests together with all instrumentation shall be provided by the Contractor and included in the tender.

Upon successful completion of the performance tests the plant and equipment shall be thoroughly cleaned and returned to its new condition and correctly packaged for delivery to site.

Full test certificate records of the tests shall be issued in duplicate to the Engineer. These tests are in addition to works tests stated elsewhere in the Specification.

The Contractor is to include all costs for the Engineer’s attendance at the tests. The Contractor shall notify the Engineer one-month in advance of such tests and shall provide with his program a schedule of works tests visits. The activities to be completed at the visit shall be programmed for approval.

A signed works test document will be submitted to the Engineer on completion of tests before delivery of equipment to site.

**1.12.16 SCOPE OF WORK**

The works to be executed under Electrical Installation shall include the supply on site, storage, installation, keeping clean, protecting, connection, testing and making improvements where necessary, energizing, commissioning to the satisfaction of the Engineer and handing over to the Client in serviceable condition the complete installation as herein specified and measured in the contract Bills of Quantities or as may be directed by the Engineer during the course of the works, and shall include all the necessary materials and equipment which although not expressly specified, are necessary for completing the installation. The rates given in the Bills of Quantities for the Electrical Installation shall include all related builders works and materials that are necessary to complete the electrical installation.

The Electrical Installation works, WHERE APPLICABLE, shall comprise the following:

a) Installation of a dedicated 100kVA, Transformer Substation complete with accessories and a 200A 4-Way TPN Low Voltage Ground Mounted Feeder Pillar.

b) Installation of a 50kVA, 415/240V weatherproof, Soundproof standby Generator Set.

c) Installation of Mains / Standby power reticulation cables and connections as per drawings.

d) Installation of individual single phase consumer units and accessories per block.

e) Lighting and small power f) Voice / Data Installations

g) Lightning Protection Scheme

h) Mains System and Separate Generator Earthing.

i ) Builders‟ works and making good to the satisfaction of the Engineer.

**1.12.17 POWER SUPPLY**

*1.12 . 17.1* S UB – MAINS DISTRIBUTION

From the main low voltage distribution board, all power distribution shall be as specified in the Bills of Quantities, to the sub-main distribution boards or consumer units.

*1. 1 2 . 17. 2* L IASON WITH ESCOM

The Contractor shall be responsible for liaison with ESCOM to obtain necessary approval and payment of any contribution that may be required by ESCOM for obtaining power supply, including installation of transformers to the site if required.

*1.12.17.3* F AULT LEVELS

The following prospective symmetrical fault levels are to be assumed for initial design considerations.

11 KV UEDCL overhead supply line 200 MVA rms

415 Volt busbars (second terminals of LV supply transformers) 30 MVA rms

It shall be the responsibility of the Contractor to ascertain the true fault levels and obtain necessary approval from Electricity Supply Corporation of Malawi (ESCOM).

*1.12.17.4* TRANSFORMERS

*1.12.17.5 CONTROL TRANSFORMERS*

Control transformers shall be liberally rated and conform to BS 3535. The windings shall be fully tropicalized, and one pole of the secondary winding shall be connected to earth via a test link.

*1.12.17.6 CURRENT TRANSFORMER*

Current transformers when used for operation of meters, relays or instruments shall comply with BS 3938. They shall be rated as 1A output and shall comply with ESCOM specification for metering current transformers.

Polarity of primary and secondary windings shall be clearly indicated in accordance with BS 158. One pole of the secondary windings shall be connected to earth via a test link.

Separate current transformers shall be used for metering and for protection purposes.

*1.12.17.7 VOLTAGE TRANSFORMERS*

Voltage transformers shall comply with BS 3941 Class 1 and be either mineral oil filled or encapsulated and shall be complete with HRC fuses on both the primary and secondary side. They shall comply with ESCOM Specification for metering voltage transformers.

*1.12.17.8 POWER TRANSFORMERS*

Power transformers shall comply with BS 171 and shall be connected delta/star in accordance with vector group Dyn 11. They shall be double wound on a core of cold rolled, grain-oriented sheet steel.

They shall be ground mounted pattern, suitable for out-door use, oil immersed, natural air cooled. (Type ONAN). The power transformers shall be suitable for use in tropical climatic conditions. The following fittings are required for all transformers: -

Diagram and rating plate

Lifting lugs

Earth terminal

Conservator with drain plug

Oil level indicator

Drain valve (To be used also for oil sampling) Oil temperature indicator with alarm and trip Contacts and maximum pointer

Skid type under base

Oil filler hole with plug Dehydrating (silica gel) breather Jacking lugs

The following fittings are required for 1000kVA transformers: -

Winding temperature indicator with alarm and trip contacts and maximum pointer. Double float Buchholz relay.

The tank shall be manufactured from electrically welded mild steel and heat dissipation shall be by radiators designed to keep the temperature rise within limits as specified below.

To give maximum protection, rust inhibiting, oil- and heat-resistant paint shall be used on steel surfaces comprising primer, 2 coats of good quality undercoat and 2 coats of bright aluminum. Bright aluminum is the standard paint finish according to the Electricity Supply Corporation of Malawi standards.

The HV and LV windings shall be arranged concentrically on the core and shall be manufactured from high conductivity copper. Insulation materials will be to Class A of BS 2757 and designed to withstand impulse voltage specified in BS 171.

The temperature rise after full load continuous operation at a maximum ambient of

45 degrees centigrade shall be: -

Top oil temperature by thermometer: 550C Windings temperature by resistance: 600C

The star point (neutral) of the secondary winding shall be earthed at the transformer.

Other details:

Tappings: Off circuit range +5% to -5% in steps of 2.5 %.

HV termination. Cable box for reception of PVC or XLPE 4-core cable or single-core cables.

Impedance: 4.75% (500kVA & 1000kVA)

The necessary precautions shall be taken to avoid eddy currents circulating in the sheaths of the L.V. cables.

All equipment shall be fully tropicalized and termite proof and units shall be complete with the first filling of mineral oil.

*1.12.17.9 TRANSFORMER PROTECTION*

A double-float Buchholz relay and a winding temperature indicator with alarm and trip settings shall be included with the transformer fittings. Indication of both alarm and trip shall be given by a four-element plug relay which shall be mounted on the same panel as the over current and earth fault relay

*1.12.17.10 PARTICULAR SPECIFICATION*

The transformers shall be designed, manufactured and tested in accordance with the relevant specifications and meet Electricity Supply Corporation of Malawi (ESCOM) standards.

A ground-mounted transformer for indoor use shall be required for this project and shall be equipped with a suitable base frame. The transformer terminals shall be suitable for connecting copper cables(s) on the HV side and equipped with suitable clamps for connection. The transformer LV terminals shall be suitable for busbar connection to the Main Low Voltage Distribution Board.

The transformer shall be designed to meet the following electrical characteristics:

|  |  |  |
| --- | --- | --- |
| (a) | Rated Capacity: | 100 kVA |
| (b) | Rated High Voltage | 11kV or 33 kV |
| (c) | Off-load tappings: | +/- 2 x 2.5% |
| (d) | Rated low voltage at no-load 3 phase : | 433 V |
| (e) | Rated low voltage at no-load 1 phase : | 250V |
| (f) | System Frequency | 50Hz |
| (g) | Rated lightning impulse withstand voltage (1.2/50 microsec) HV Windings | 75 kv |
| (h) | Vector Group | Dyn 11 |
| (i) | Rated/minute power frequency withstand voltage, HV windings: | 28 kV |

*1.12.17.11 SERVICING OF SWITCH GEAR AND TRANSFORMERS*

The servicing of all high and low voltage Switchgear and Transformers must conform to the relevant Specification and the Code of Practice of the Electricity Supply Corporation of Malawi (ESCOM).

**1.12.18 LOW VOLTAGE SWITCHBOARD, DISTRIBUTION BOARD AND CONSUMER UNITS**

*1.12.18.1 LOW VOLATGE SWITCH GEAR STANDARDS (WHERE APPLICABLE)*

The switchboard shall have a minimum fault capacity of 50kA for one second.

The switchboards for the control of equipment rated 415 Volts shall comply in all respects with BS 5486 (IEC 439), BS 5227, BS 7354, BS 88, BS 5424, BS 7340.

*1.12.18.2 GENERAL REQUIREMENTS FOR LOW VOLTAGE SWITCHBOARD (WHERE APPLICABLE*)

The main low voltage switchboard shall be of form 4 type 2, two section modular cubicle pattern, extensible from both ends, of folded sheet steel construction, and floor standing with operation and switch access from the front and cabling access from the rear. The switchboards shall have fully compartmentalized interior sections with withdrawable switch gear and control gear assemblies, with the design based on IEC 439-1 and related international standards. The main switchboard shall be designed for conductor entry from bottom, unless otherwise required. Outgoing devices shall be either mounded case circuit breakers or HRC fuses.

All switchgear, distribution boards, motor control centres, and other panels shall comprise factory-built assemblies of the multi-cubicle type. Each air circuit breaker, fuse switch, busbar, instrumentation and protective relaying section indicated on the drawing shall be housed in a separate compartment with an individual cover, fully divided from adjacent compartments by the sheet metal housing; circuit interconnection, etc. penetrations shall be contained within ducting or shrouded around. The entire switchboard shall be of fully shrouded type. The busbars shall be coloured according to phase. All equipment shall have fully shrouded fixed contacts and connection terminals, such that contact with adjacent live metal is impossible when working on individual units. All sections of the board shall be suitable for safe, effective working, for maintenance, cable removal and installation, etc., with the switchboard live and without shutting down adjacent sections.

Panels shall be free standing, of uniform height, flush mounted and totally enclosed to not less than IP 31. When size of starters and other components does not justify this type of construction, wall mounted patterns may be used.

The base of the panels shall be effectively sealed against the ingress of vermin and termites, and all equipment shall be rated for continuous operation in a tropical climate. Any ventilation louvres shall be backed by brass fine mesh gauze to exclude termites.

Framework for the panels shall be of welded construction, and panels shall be necessary to provide a rigid structure. All bolts, nuts, screws, hinges, handles, etc, shall be corrosion resistant.

Interiors shall be finished white, and the exterior shall be finished to a light grey shade except the plinth, which shall be black.

Cabling access shall be from the rear by means of gasketed bolt-on plates, which shall be fitted with handles to facilitate removal/replacement.

Access to the cubicles or cubicle compartments for all normal routine maintenance shall be from front with hinged and lockable doors fitted with neoprene gaskets (all gaskets shall be termite resistant) and chromium plated lockable tee type handles. All doors shall be electrically bonded to the main frame, using adequate flexible conductors, protected against mechanical damage. All locks on a given panel unit shall be operated by the same key.

Each multi-compartment control panel shall comprise an assembly of individually constructed cubicles. These shall be assembled to include a metallic sheet between adjacent cubicles

In each multi-compartment panel at least one empty compartment shall be provided for future use. In single unit panels, enough space shall be available for the addition of at least 10% more components for future use.

Panels shall be readily capable of extension at either end, within the bus-bar rating.

Where panel size is excessive, easily handled sections shall be supplied for site assembly. Sections shall be fitted with eyebolts, which after positioning of the panel, shall be removed and replaced with plated bolts and washers.

Bases shall be of rigid construction capable of withstanding stresses during replacement, such as those imposed by moving the sections on rollers.

*1.12.18.3 BUS BARS*

All bus-bars shall be of electro tinned HDHC copper and shall be of uniform section throughout the length of the panel.

They shall be run in a separate screened compartment, divided with barriers into as many compartments as there are cubicles in the panel. Access to individual compartments shall be via bolt-on cover plates, each bearing the legend in white on a red background: -

"DANGER - LIVE BUS-BARS", also the Red Arrow symbol denoting danger from electric shock.

The neutral busbar shall be equal to the cross-sectional area of the phase bars. Phase bars shall be colour coded Red, Yellow and Blue: the neutral shall be black.

*1.12.18.4 OVER AND UNDER VOLTAGE PHASE FAILURE AND PHASE SEQUENCE PROTECTION*

The main incoming 415 volt switchboards and control panels shall be equipped with a relay which detects unacceptably high or low voltage.

It will monitor all phases and will cause all incoming circuit breakers(s) to trip when the voltage exceeds a maximum or minimum (which shall be selected from a range of settings). Visual indication shall be given of the cause of tripping, and an electrical hours counter will record the time during which the supply exceeds the set limits.

Resetting of the relay shall be automatic but re-closure of the tripped circuit breaker shall be manual.

It shall be possible to delay the operation of the relay in order to ride through transient voltage variations.

Phase failure shall cause the circuit breaker to trip immediately and incorrect phase sequence will prevent the circuit breaker from being closed.

The Lovato Electronic Voltmeter Relay type RVT manufactured by the Officine Electtromeccanica Lovato of Italy meets the requirements for this application. Alternatives may be offered for the approval of the Engineer.

*1.12.18.5* SURGE VOLTAGE PROTECTION

In order to give protection against transient over-voltages or voltage surges such as result from lightning strikes, surge arresters shall be installed on the 415-volt bus- bar of the main LV panel.

They shall be connected permanently between each phase and earth and shall be as near as possible to the incoming circuit breakers.

Each unit shall be sealed and encapsulated with connecting tails and be suitable for continuous operation at 415 volts. It shall also comply with the class 2.5KA requirements according to IEC 99.

All solid-state control or electronic devices, which may be located within the panel, shall be individually protected by surge arrestors.

*1.12.18.6 TERMINALS*

Terminal board insulation shall be polyamide or equivalent. Melamine types are not acceptable.

All connectors shall be of brass or bronze, with screw of similar material. Contact between dissimilar metals is not acceptable. No steel screws plated or otherwise shall be used. Insulating barriers shall be fitted between supplies at different voltages.

All terminal screws shall be captive.

Terminals shall be mounted at least 250mm above their associated gland plates. Only one conductor shall be connected to each terminal. Multiple connections shall be effected using links.

Main power terminals shall be stud and nut types, with plain and locking washers. Conductors terminating on these shall be fitted with insulated crimped lugs. Rail mounted terminals for cables in excess of 32mm sq. cross-sectional area are not acceptable.

*1.12.18.7 GLAND PLATES*

Adequately sized blank gland plates shall be provided below each outgoing terminal section to accommodate the requisite glands.

Gland plates shall be positioned 200mm minimum above the base of the cubicle and shall be solidly bonded to earth.

Suitably sized compression type cable glands shall be provided for all cables. Glands used for armored cables shall include provision for sealing the armor wires to protect them from corrosion and to prevent ingress of moisture into the cable.

Brass lugs shall be provided for the connection of the cable armoring to earth.

*1.121.18.8 DOOR AND DESK MOUNTED COMPONENTS (WHERE APPLICABLE)*

All indicating instruments shall be moving iron type with quadrant scale of minimum length 75mm and conform to IEC 51. Their accuracy shall be to Class 2.5 or better.

Main switchboards and control panels shall be equipped with voltmeter and ammeter selection switches.

All instruments and protective relays shall be flush mounted and effectively sealed against ingress of moisture, dust and insects. Where connected in motor circuits, ammeters shall have 'overload' scales capable of withstanding starting inrush current.

Hours run counters shall be flush mounted cyclometers type, scale 99,999.9 hours.

Control and selector switches shall have their positions clearly labelled, and additionally shall each have a separate label to indicate the switch function. Labels shall correspond with the associated schematic diagrams.

Interlocks of a substantial mechanical type shall be provided on each cubicle between door and the circuit breaker or fuse switch such that the door cannot be opened unless the circuit breaker or fuse switch is in the OFF position. On/Off switches and circuit breakers shall be pad lockable in the "OFF" position.

Push buttons and indication lamps shall be selected from a matching range and they shall be colour coded in compliance with IEC 73 as follows: -

**Indicating Lamps Colour**

On White

Off Green

Fault Red

Alarms Yellow

Heaters Blue

**Push Buttons Colour**

Start Green Stop Red Alarm accept Black Emergency stop Red

Each indicating lamp shall incorporate a push-test feature. Alternatively, a test push button shall be provided which activates all lamps simultaneously via a contactor. Lamp fittings shall be capable of re-lamping from the front of the panel and shall be positively locked against rotation.

Fault indicating lamps shall remain on until the associated trip relay is reset or the fault is corrected. Should there be an interruption to the electricity supply, all fault indicating lamps will again be illuminated on reconnection of the supply, until the fault is cleared or the trip relay is reset.

All exposed terminals on the rear of door mounted components shall be shrouded to prevent accidental contact when the panel doors are open.

*1.12.18.9* ACCESS IN SERVICE

Access in-service shall provide accessibility for inspection, maintenance, and similar operations, with the following being performed when the assembly is in service: -

a. Visual inspection (all parts)

b. Adjusting relays etc.

c. Replacing fuse links

d. Replacing indicator lamps

e. Fault location

f. Testing

**1.12.19 PARTICULAR REQUIREMENTS FOR SWITCH BOARDS**

The switch gear, control equipment and all other relevant electrical circuits shall be contained in single, multi-section, floor mounted panels. They shall comply with the General Requirements for switchboards, as per the General Specifications. This section should be read in conjunction with the drawings.

1.12.20 DISTRIBUTION BOARD

General lighting and power distribution board shall comply with BS 3817, BS 5861 and BS 5486 and shall be of the metal clad pattern, flush mounted except where otherwise specified on the drawings or Bills of Quantities.

*1.12.20.1 CONSTRUCTION*

Enclosures shall be substantially constructed from 16SWG minimum thickness sheet steel having hinged front cover and shall be vermin and insect proof. Each unit shall house MCBs and shall be supplied complete with busbars, an earthing terminal, neutral bar, circuit chart and any blanking plate for any spare ways. The incoming isolator switch shall be integral with the distribution board in consumer's units only, or as may specifically be requested for. The distribution boards shall be locked by key.

*1.12.20.2 MOUNTING*

All distribution boards and consumer units shall, unless detailed to the contrary, be mounted with the lower edge 1800 mm from the finished floor level.

Notwithstanding the above, generally switchboards and distribution boards shall be installed so that any item to which easy access is required such as fuse, circuit breaker, instrument, etc. is not more than 2150 mm above finish floor level.

Isolators, switch fuses (other than those mounted on bus-bar chambers or providing local control), cooker control units, water heater controls, etc., shall on the other hand, unless otherwise stated on the drawings, be mounted at 1350mm from the finished floor level to the underside of the fittings.

*1.12.20.4 MINIATURE CIRCUIT BREAKERS*

All distribution boards shall be supplied with MCBs manufactured to BS 3871 and of a rating as specified on the drawings. The circuit breakers shall incorporate both terminal overload and magnetic short circuit tripping, with a trip-free mechanism.

Three phase circuits shall be controlled by integrally manufactured three-pole breakers with one common operating lever. An inter-tripping mechanism shall ensure isolation of all three poles in the event of an overload or short circuit on any one phase.

**1.12.21 CABLES**

All cables shall be BASEC approved. PVC insulated cables shall be 500V/1000V

grade to BS. 6004. Flexible cables shall be 300V/500V grade to BS. 6500.

No cables forming sub-circuits connected to different sub-distribution boards are to be drawn into the same conduit or draw-in box.

No reduction of the strands forming the conductors will be allowed at switch or other terminals, but all strands shall be efficiently secured by screws, nuts and washers or other approved means.

Cables may be joined together at the terminals of ceiling roses and other accessories. Under no circumstances will joints be permitted in the run of the cable.

All cables shall be stranded copper conductors.

The minimum size of cables on lighting and power final sub-circuits shall be

1.5mm sq. for lighting and 2.5mm sq. for power.

*1.12.21.1 PVC INSULATED ARMOURED CABLES*

These shall be 500/1000V grade to BS 6346 and BS 6004 having stranded copper conductors, armoured and PVC sheathed overall. The cores of four core cables shall be distinctively coloured red, yellow, blue and black.

*1.12.21.2* XLPE INSULATED PVC SHEATHERED ARMOURED CABLES

XLPE insulated PVC bedded galvanized steel wire armored and PVC. overall sheathed twin and multicore cables shall have stranded copper conductors and shall be 600/1000V grade manufactured in accordance with BS. 5467. This type of case shall generally be treated in a manner similar to that for PVC. insulated and sheathed cables.

The Contractor shall provide suitable glands and accessories for all armored cable terminations and the cost of these items shall be included within the rates inserted in the Bills of Quantities.

*1.12.21.3 INSTALLATION*

*1.12.21.4 LAYING OF CABLES*

The work of excavating and back-filling of all trenches for cables is included in this contract and the responsibility for positioning, width and depth of trenches, laying and bedding of all cables and protective covers is included with the Electrical Works covered by this Specification. Unless otherwise stated, all underground cables shall be laid in PVC conduits with draw pits as shall be indicated on the drawings or as may be required by the Site conditions. The PVC pipes shall be laid to a minimum of 750mm below ground. The PVC ducts shall be sand bedded to a depth of 50mm below and above the pipe. The rates inserted for PVC pipes shall include the costs of sand bedding. In case it is required to lay cables directly in ground, the following shall apply: -:-

Where more than one cable is laid in a trench, cables shall be spaced as follows:

Between MV cables 100mm Between MV and telephone cables 400mm Between MV and LV cables 400mm Between LV and telephone cables 400mm Between LV cables 100mm

In straight run trenches, cable crossings shall not be permitted except where a cable branches from the main run.

At every draw-in point, joint or junction box, the cable should be snaked. Before cables are laid, the bottom of the trench shall be evenly graded and cleared of all loose stones and shall then be covered with an 80mm layer of sand or sifted soil and lightly compacted. A further 80mm layer shall be placed on top of the cables.

The approved cable protection shall then be laid and the trench refilled with excavated materials in 200mm layers, each layer being well compacted by hand or mechanical punners before the next layer is filled.

The width of the trench shall be such that a clearance of 80mm shall be provided between the outermost cable and the side of the trench.

Where cables are disposed of in more than one layer, the vertical spacing shall be 400mm between centres of cables or cable groups, the depth of the trench being made suitable accordingly. Stones or other hard objects shall not be included in any of the backfilling materials.

In the laying of cables in the PVC ducts, the internal radius of bends shall be six times the overall cable diameter.

The rates inserted for cables shall be deemed to include for the above requirements

*1.12.21.5 PROTECTIVE COVERS*

The protective covers, manufactured in accordance with BS 2484 shall be provided over cables laid in the ground, each complete with an interlocking device to prevent lateral displacement. The rates inserted for cables shall be deemed to include for the protective covers.

*1.12.21.6 CABLE POSITION MAKERS*

These should be placed adjacent to all points where cables change direction and all intervals of not more than 30 metres and at other positions designated by the Engineer.

1.12.21.7 SEALING OF CABLE ENTRIES

Where cables enter buildings, pipes, or ducts, the mouths of the pipes or ducts shall be effectively sealed by means of close fitting solignum impregnated wooden plugs and a mixture of compound and transformer oil, or other approved manners.

*1.12.21.8 PROTECTION AGAINST MECHANICAL DAMAGE*

All cables located in such positions where they are vulnerable to damage by mechanical or other means shall be protected by suitable lengths of steel pipe bushed to prevent damage to the cable.

*1.12.21.9 RATING PLATES*

Each cable when completely erected shall have permanently attached to it, at each end in such intermediate positions as may be considered necessary by the Engineer, metal plates upon which is engraved, or stamped, the identification number of cable together with the voltage, size and make-up, and the service which it supplies.

The contractor shall record this information so that it may appear on drawings of the completed installation.

*1.12.21.10 CABLE SEALING AND TERMINATION*

The contractor shall be wholly responsible for the sealing and jointing of all cables supplied and erected under the contract.

The cable boxes, looping-boxes and glands for LV cables on all items of equipment shall be provided under the contract.

Sealing and jointing shall be in accordance with the best current practice and of first-class workmanship. Where cable armoring is used as earth continuity conductor, the glands shall have the necessary contact surface or provide a low resistance path under fault conditions.

The tender shall include for all cable jointing where appropriate and all labour, joining material and compound, together with the use of all jointers' tools and making off the cable tails to the apparatus terminals.

*1.12.21.11 CABLE DETAILS*

The contractor shall submit a schedule of all cables, detailing the following for each cable proposed: -

a) Reference Number

b) Type

c) Cross Sectional Area

d) Number of Cores

e) Origin

f) Destination

g) Cost per metre installed

h) Cost for each termination (g and making off)

i) Route Length

j) Operating Voltage

k) Estimated Current

l) Percentage Volt Drop

Rates (g) and (h) shall be used to assess costs in the event of any agreed route length variation.

The Contract Price shall include all cables required for a fully operational installation and for laying all the cables in accordance with the requirements in Section 5.3 of this Specification.

**1.12.22 STANDBY GENERATOR SET**

It is desirable to have a stand-by generator permanently installed to provide all or part of the electricity requirements of the project in case of mains failure.

Incoming circuit breakers shall be included in the 415-V Main Low Voltage Switching Panel and shall be mechanically interlocked with the circuit breakers for the Electricity Supply Corporation of Malawi (ESCOM)mains supply, so that both supplies cannot be connected simultaneously.

*1.12.22.1 PARTICULAR SPECIFICATION FOR THE GENERATOR SET*

In case at any one time, there is a need for a separate generator for the unit, supply as given below.

Scope

Supply and transport to site as indicated in the Bills of Quantities, install and commission the generator sets as per Specification here-below. All ratings are for

40 deg C ambient temperature, 1312 metres altitude above sea level and 66% average relative humidity in accordance with BS 5514. The tenderer shall also state the applicable warranty period for parts and labour.

**Engine**

Radiator cooled heavy duty diesel continuously rated to BS 5514 with sufficient power capacity to supply 10% over base load in one hour in every twelve hours.

**Cooling Radiator**

Tropical capacity with engine driven fan complete with protection guards. Radiator shall cool the engine at a rated output in ambient temperature up to 52 deg. C.

**Engine Filtration**

Air Heavy duty dry type filters with replaceable elements.

Fuel Filter with replaceable element

Lubrication Oil filter with replaceable element

Engine Protection

Emergency automatic shutdown facilities for:-

(a) Low oil pressure

(b) High water temperature

(c) High oil temperature

(d) Low radiator water level

Heavy duty residential type exhaust silencer system for installation on site. Noise level better than 40dB (A) at 20m from the generator set. 12/24V starting system complete with high-capacity lead acid starting batteries rack mounted on machine base frame, heavy duty interconnecting cables with terminals and direct battery charging system.

**Coupling Arrangement**

Main drive flexible coupling with flange coupling of engine and alternator. Base Generator set and radiator to be mounted on fabricated base frame with diesel tank, anti-vibration mounting pads positioned between the set and the base frame.

**Diesel tank**

To be of sufficient capacity for at least 8 hours continuous operation at rated output. Fittings to include fuel fill point, fuel gauge, breather, drain plug and flexible fuel lines.

**Alternator**

Brush less, revolving field, self-regulating, self-exiting, screen protected, foot mounted, with grease lubricated end shield bearings continuously rated as specified in the Bills of Quantities, with overload (standby) capacity of at least 10% for one hour in twelve to IEC 34-1, BS 5000, BS 4999/40.

**Voltage Regulation**

By Automatic Voltage Control via main exciter with a regulation of +/- 1.5% for 0.8 power factor up to unity power factor loads, and 5% speed variations. **Automatic Mains Failure Control**

Mains voltage sensing relay with mechanical-electrical interlock changeover MCCBs of appropriate rating. Constant voltage battery charger with charge rate ammeter.

Adjustable timers for engine start/engine stop/ load transfer and 3 attempt start to allow for normal fluctuations in supply.

Duty select switch: Off/manual/auto/test indicating lamps for mains on load/generator on load/mains available. Voltmeter with single or multi-position selection switch as applicable.

3 ammeters

50Hz frequency meter (suitably sealed) Individual fault indication lights

Battery condition indicator Hours run recorder **Installation**

The price shall include for installation and commissioning complete and ready including installation and maintenance tools and manuals.

**Documentation**

Operation and Maintenance manuals for engine, alternator, circuit wiring diagrams and factory test sheets will have to be supplied.

Manufacturer's specification for engine and alternator to accompany tender. Spare Parts

Standard spare parts kit for 2500 hours operation of the set should be included in the tender price.

**1.12.23 TESTING AND INSPECTION**

*1.12.23.1 TESTING OF EARTHING SYSTEM*

The resistance of the earth continuity system, when measured between the main earthing point and any other point in the installation, including all conduit and other metal work which may provide a path to earth, shall not exceed 0.5ohms where steel conduit forms part or whole of the system, or 1.0 ohms if the earth continuity system is composed entirely of copper, copper alloy or aluminum. The Contractor is expected to allow for any necessary additional materials required to achieve the above resistance values.

*1.12.23.2 INSTALLATION TESTING*

After completion and before commissioning, the entire installation shall be subjected to the following tests and any faults found shall be rectified by the Contractor at no extra cost.

*1.12.23.3 POLARITY*

All fuses and control devices shall be connected in live conductors only.

*1.12.23.4 EART CONTINUITY RESISTANCE*

Resistance of earth continuity measured from a control pillar to the farthest end of a circuit shall not exceed 0.5 ohms.

1.12.23.5 INSULATION RESISTANCE

When tested with a 500V DC supply, the insulation resistance between conductors of live lines, lines and neutral, line and earth, neutral and earth shall not be less than 1 mega-ohm.

*1.12.23.6 ADDITIONAL INSPECTION AND TESTING*S

i) Phase rotation

ii) Earth loop impedance

iii) Operation of current and earth fault relays by injection test.

iv) Operation of all other protective relays and devices.

v) Levels of illumination.

vi) Correct sequencing of all control equipment.

vii) Visual inspection

viii) Separate Generator Earthing

The Engineer shall be given full opportunity to witness all tests and shall approve all test results. The Engineer shall have the right to ask for specific tests to be repeated.

**1.12.24 COMMISSSIONING AND SYSTEM DEMONSTRATION**

The whole installation shall be tested to the statutory requirements of the Electricity Supply Corporation of Malawi (ESCOM) and commissioned in the presence of and to the satisfaction of a Registered Supervising Electrical Engineer.

Further to the above, and as per Statutory requirements, the Contractor shall liaise with the officials of the Ministry of Lands, Housing and urban development, Fire Brigade and other Local and State bodies to obtain the relevant Inspection and Test/Completion Certificates. The Contractor shall include the cost of obtaining these documents in the rates for the priced items in the Bills of Quantities, and no extra cost claims shall be accepted on this account.

Four copies of test reports shall be provided within seven days of carrying out the test; and the reports shall include full details of how each test was carried out and a copy of all readings taken. These shall be inclusive of the Operating and Maintenance Manuals as stated elsewhere in the Specification.

Subsequent to the completion of all testing and commissioning to the approval of the Engineer, prior to the date of issue of the Practical Completion Certificate, the Contractor, when required by the Engineer, shall operate the plant and demonstrate that the overall systems function automatically correctly in accordance with the requirements of this Specification. A period of at least one week’s full running and operation including cost of fuel and other input shall be considered reasonable for this demonstration and shall be included in the Contractor’s price inserted in the Tender documents. During this period the Contractor shall be responsible for the operation and maintenance, if applicable, of the plant and may if appropriate, use this time to instruct the Employer’s staff in the operation and maintenance of the systems. The Contractor will provide an operational report of the demonstration.

**1.13 PLUMBING AND DRAINAGE INSTALLATION**

**1.13.1 GENARAL**

*1.13.1.1 AUTHORITATIVE STANDARDS AND CODES OF PRACTICE*

The authoritative standards referred to in this Specification are the British Standards and Codes of Practice.

Should the contractor wish to substitute any other authoritative Standards or Codes of Practice for any referred to in the Specification, he must submit details of any such Standard or Code of Practice with two copies of the document for approval of the Engineer. Approval will only be given to use an alternative Standard or Code of Practice if the Engineer considers the proposed Standard or Code of Practice will produce work of a standard equal or better than that of the specified Standard or Code of Practice.

The whole of the plumbing works is to be executed by a registered plumber and drain layer in strict accordance with the Regulations of the Local Authorities and to the satisfaction of the Engineer.

*1.13.1.2 WORKING DRAWINGS*

For all work within buildings the Contractor shall produce drawings showing details of his proposals. The drawings shall be submitted to the Engineer for his approval and no work shall commence until the drawings have been approved.

*1.13.1.3* AS CONSTRUCTED DRAWINGS

On completion of the works, the Contractor shall prepare drawings showing the work as constructed. The drawings shall be submitted to the Engineer for his approval. When the drawings have been approved, one negative and two prints shall be provided by the Contractor to the Client for his retention.

**1.13.2 MATERIALS**

*1.13.2.1 GALVANIZED MILD STEEL PIPEWORK*

All galvanized mild steel pipework up to 65 mm nominal bore shall be manufactured in accordance with BS 1387 medium grade with tapered pipe threads in accordance with BS 21. All fittings shall be of malleable iron and manufactured in accordance with BS 143.

All galvanized mild steel pipework from 80 mm nominal up to 150 mm nominal bore shall be manufactured in accordance with BS 1387 medium grade with screwed and bolted flanges for the jointing of pipes to valves and other items of plant. The flanges shall comply with the requirements of BS 10.

*1.13.2.2 COPPER TUBING*

All copper tubing used shall be manufactured in accordance with BS 2871 from C106 “Phosphorous De-oxidized Non-arsenical Copper in accordance with BS 1172”.

Joints in pipe work and connections to equipment shall be made with soldered capillary fittings and connection in accordance with BS 864.

*1.13.2.3 CAST IRON WORK ABOVE GROUND*

For internal pipework used above ground, cast iron pipework and fittings shall comply with BS 416 medium grade with spigot and socket joints. Inspection covers on branches, tees, elbows, etc., shall comply with the requirements of BS 1211.

*1.13.2.4 ASBESTOS CEMENT SOIL WASTE AND VENTILATION PIPES*

Asbestos cement pipes for soil waste and ventilation pipe shall comply with the requirements of BS 582. Spigot and socket joints shall be jointed with a cement/sand mortar or fibrous cementitious jointing compound.

Asbestos cement sewerage pipes and fittings shall comply with the requirements of BS 3656 with asbestos cement sleeve joints with rubber rings complying with the requirements of BS 2494 Class C.

*1.13.2.5 PVC PRESSURE PIPEWORK*

All PVC pipe for cold water services shall comply with the requirements of BS 3505 and all fittings shall comply with BS 4346.

PVC pipes and fittings shall be solvent welded using the pipe manufacturers approved cement.

*1.13.2.6 PVC SOIL PIPEWORK*

PVC soil pipework and fittings shall comply with the requirements of BS 4514.

*1.13.2.7 STOP COCKS TAPS AND STOP VALVES*

Stopcocks for underground use shall be plug cock pattern or screw down pattern complying with the requirements of BS 2580.

Taps and stop valves shall be screw down pattern and small comply with the requirements of BS 1010 fitted with washers complying with BS 3457. Hose taps and hose connections shall have outlet noses screwed in accordance with the requirements of BS 1010.

*1.13.2.8 CHECK VALVES*

Check valves of 65 mm diameter and under shall comply with the requirements of BS 5154, with copper alloy body and cover, gunmetal doors with leather facing discs and end screwed female.

All gate valves up to 65 mm nominal bore shall be of bronze construction and shall be in accordance with B.S.1952.

*1.13.2.9 BALL VALVES*

All ball valves for use in connection with hot and cold-water services shall be of Portsmouth type in accordance with the requirements of BS 1212 and constructed of bronze or other non-corrosive material.

*1.13.2.10 CISTERN*S

Polythene or polypropylene cisterns shall comply with the requirements of BS 4213. Galvanized cisterns shall comply with the requirements of BS 1968 Class C‟ or BS 2456.

*1.13.2.11 PRESSED STEEL STORAGE TANKS*

Pressed steel storage tanks shall comply with the requirements of BS 1564 and shall be complete with cover, access manhole, ventilators, overflow, and drain. The whole of the tank steelwork and plates shall be galvanized before the tank steelwork and plates shall be galvanized before dispatch. After completion of erection the tank shall be painted with an approved etching primer and two coats of bitumen-based aluminum paint externally and two coats of non-toxic black bitumen paint internally.

*1.13.2.11* WASTE FITMENT TRAPS

Where standards or deep seal traps are specified, they shall be of non-ferrous material in accordance with BS 1184 or PVC

*1.13.2.12 WATER SERVICE INSTALLATIONS*

All work shall be carried out in accordance with C.P. 342 and C. P. 310 and with the approval of the Engineer.

The pipes shall be supported in their final position and adjusted before any joints are made. Pipes in buildings shall be positioned as close as practicable to walls, ceilings and columns. Sufficient drain points and automatic air vents shall be provided to ensure the system functions correctly. Valves and other user equipment shall be installed with adequate access for operation and maintenance.

Where valves and other operational equipment are unavoidably installed beyond normal reach or in such a position as to be difficult to reach, extension spindles with brackets shall be provided. Screwed piping shall be installed with sufficient number of unions to facilitate easy removal of valves and fittings and to enable alterations of pipe works to be carried out without the need to cut the pipe.

Allowance shall be made for the expansion and contraction of pipework; precautions being taken to ensure that any forces produced by pipe movements are not transmitted to valves or equipment of plant. All screwed joints to pipes and fittings shall be made with P.T.F.E tape.

*1.13.2.13 SANITARY SERVICE INSTALLATIONS*

Soil, waste and vent pipe systems shall be installed in accordance with BS 5572 and to the approval of the Engineer. All sanitary appliances shall be installed in accordance with BS 6465. All waste fittings shall discharge into a gully trap before passing to a sewer by way of a manhole.

Rodding and inspection facilities shall be provided within the drainage system in a position where they are easily accessible. Where rodding facility is not in a position such that access is not easily available, a branch shall be extended so as to provide suitable rodding eye. Rodding eye shall be provided at the bottom of stacks.

Vent stacks shall be terminated above roof level and shall have a plastic or galvanized steel guard at the top.

*1.13.2.14* PIPE SUPPORT FOR SUSPENDED PIPEWORK

Pipe runs shall be secured by pipe clips, connected to pipe hangers, walls brackets, or trapeze type supports. U-bolts shall not be used as a substitute for pipe clips without the approval of the Architect. The maximum permissible vertical spacing of support in metres shall not exceed one and a half time the distance given for horizontal runs.

For cast iron and asbestos cement spigot and socket jointed pipes, and the pipes shall be generally supported at every socket joint by means of either holderbats secured rigidly to the structure, or purpose made straps for attachment to rigid steel support brackets. Where holderbats are used, they shall comply with the requirements of BS 416.

The maximum permissible horizontal spacing of support in metres for steel copper pipe and tube is given in the following table:

Size Copper Tube Steel Tube

Normal Bore to BS 2871 to BS 1387

15 mm 1.25 m 2.0 m

20 mm 2.0 m 2.5 m

25 mm 2.0 m 2.5 m

32 mm 2.5 m 3.0 m

40 mm 2.5 m 3.0 m

50 mm 2.5 m 3.0 m

65 mm 3.0 m 3.5 m

80 mm 3.0 m 3.5 m

100 mm 3.0 m 4.0 m

125 mm 3.5 m 4.5 m

150 mm 4.5 m 5.5 m

*1.13.2.15 JOINTING PIPES*

Joints shall be made strictly in accordance with the manufacturer’s instructions. The Contractor shall make use of the technical advisory services offered by manufacturers for instructing pipe jointers in the methods of assembling joints.

Before making any joints, all jointing surfaces shall be thoroughly cleaned and dried and maintained in such condition until the joints have been completely made or assembled.

Notwithstanding any flexibility provided in the pipe joints, pipes must be securely positioned to prevent avoidable movement during and after the making of the joint.

The space between the end of the spigot and the shoulder of the socket of flexibly jointed pipes when jointed shall be as recommended by the manufacturer or ordered by the Engineer.

After flexibly jointed pipes, other than PVC pipes have been jointed the gaps between the barrel of the pipes and the internal face of the socket shall be sealed with puddle clay, uncaulked rope yarn or other approved material. The rope yarn or other material must have been treated so as not to support bacterial growth.

Where loose collars are used to join pipes cut for closures, special tools shall be employed to keep the inside of the pipe flush and the collar concentric with the pipe while the joint is being made.

*1.13.2.16 CAST IRON JOINT FITTINGS*

Cast iron detachable joint collar and flanges shall be tested by striking lightly with a spanner immediately before they are placed and if they fail to ring true shall be set aside and not incorporated in the work until proven sound.

The flanges shall be correctly positioned and the component parts including any insertion ring cleaned and dried.

Insertion rings shall be fitted smoothly to the flange without folding or wrinkles. The face and bolt holes shall be brought fairly together, and the joints shall be made gradually and evenly tightening bolts in diametrically opposed positions. Only standard-length spanners shall be used to tighten the bolts. The protective coating, if any, of the flange shall be made good when the joint is completed.

Bolt threads shall be wrapped with PTFE tape where directed before use. No washers shall be used on flanged pipework to be laid below ground. Bolts shall be as specified and shall be of the correct length, leaving a maximum of two threads exposed.

*1.13.2.17 SOLVENT WELDED JOINTS*

Only the solvent cement recommended by the manufacturer for his pipe joint system shall be used and his instructions on the making of the joint shall be closed followed.

Excess solvent cement shall not be applied to the inside of the pipe socket and all surplus solvents shall be removed from the joint and the pipe. Any solvent falling on the trench formations shall be removed by excavating the contaminated soil.

Solvent welded pipes jointed outside the trench shall not be lowered into the place until the elapse of time recommended by the manufacturer. The time allowed for curing shall be increased with lower temperature.

*1.13.2.18 CONNECTION OF TUBING TO COLD STORAGE TANKS, HOT WATER CYLINDERS AND SANITARY FITTINGS*

Each connection of tubing to cold water storage tanks shall be made by drilling a hole in the tank side and using a long screw, union and two backnuts all well screwed up in non-toxic approved jointing compound (red lead shall not be used). Joints of tubing to flanged and bossed connections of hot water cylinders shall be made with boiler screw, union and backnut screwed up in jointing compound.

Connections to sanitary fittings shall be made with 450 mm length copper tubing bent to shape as required with copper to iron couplings at each end, and joint to union of fittings and tubing. Alternatively, plastic flexible tubing covered in a stainless-steel braid may be used.

*1.13.2.19 FIXING SANITARY WARE AND FITTINGS*

All sanitary-ware and fittings shall be left in a clean and good condition to the satisfaction of the Engineer.

All fittings shall be fixed in accordance with the manufacturer’s instructions.

Lavatory basin brackets shall be cut and pinned to walls in cement mortar including making good rendering, tiling or plastering, etc.

*1.13.2.20 PIPES BUILT INTO STRUCTURES*

The outside surface of all pipes and special castings to be built into structures shall be thoroughly cleaned immediately before installation. Where ordered protective coating to metal pipes shall be removed from the sections to be built in while the external surfaces or fireclay and concrete pipes shall be roughened to form a key for concrete or mortal.

Sheathing steel pipes shall be cut away from the sections to be built-in and after erection the protection shall be completed by applying approved bituminous material around the barrels of pipes at the junctions with structures.

Pipe passing through water retaining walls and floors shall, where possible, be built into the structure in-situ. Shuttering shall be formed closely to the outside of the pipes, and concrete shall be placed and compacted thoroughly round pipe and puddle flange, if any.

Where fixing in the course of construction is not possible, temporary openings in structures, formed to the dimensions shown by the Engineer, shall be left where indicated or directed to accommodate the subsequent erection of pipes and special castings.

In water retaining structures, they shall taper to a smaller dimension towards the external faces of structures and shall include where indicated a waterstop. In basements, dry chambers at pumping stations etc., temporary openings shall taper to a smaller dimension towards the internal faces of structures and shall also include, where indicated a waterstop.

Prior to in-filling, all surfaces against which fresh concrete is to be placed shall be prepared as specified, while the external surfaces of pipework shall be prepared as described in this clause.

*1.13.2.21 SETTING VALVES*

Care must be taken to prevent damage to all valves, fire hydrants and the like, and their ancillary equipment. Valves etc. and ancillary apparatus shall be stored in clean conditions and in a manner that excludes all water. Where directed, head stocks, motors, gearing or indicators shall be removed, adequately labelled for identification, stored carefully in weather-proof premises and be reconnected after erection of the valve. Frost cocks shall be kept clean and free from obstruction. Electrical equipment shall be protected from damp and the damp-proofing seals shall remain intact until the electrician is ready to connect up the equipment.

The gunmetal faces and seats of all valves must be kept clean. No valve shall be closed without first wiping the faces with a clean cloth. The cavity beneath the valve door shall be thoroughly cleaned by hand.

In the event of an accident, fouling matter shall be either dissolved or carefully removed by methods that do not involve scraping or gunmetal faces.

All valves shall be set so that the operating spindles are truly vertical unless otherwise detailed or directed.

Every stuffing box shall be examined when the main is charged with water and leaking boxes shall be adjusted or repacked with square plaited lubricated hemp packing of approved manufacture. The stuffing box shall not be so tightly packed as to materially affect the friction of the packing on the spindle.

No air valve shall be stored before erection in the open sunlight, or upside down to expose the balls and air cavities. Air valves shall be checked before the main is charged to ensure that the balls and faces are not scored or split and that there is no dirt or other deleterious materials in the cavities of the body. All air nozzles shall be probed to see that they are clean.

The direction of opening of the valve shall be indicated on the headstock and on the underside of hydrant covers.

*1.13.2.22* TESTING OF PIPELINES

The Contractor shall provide all water, fittings, pipe stoppers, test pumps, pressure gauges and the necessary labour and tools for the hydraulic testing or pressure pipelines and air testing of drains and sewers.

Pipelines shall be tested hydraulically in sections during the course of construction. Testing shall be applied to prove the structural soundness of the various units in the line, including pipes, valves and anchorages, and to prove the water tightness of the line.

The pipeline or pipework shall be filled with water in such a manner as to prevent any shock or water hammer and allow for the complete evacuation of air and kept under observation for leakage at static head for twenty-four-hours. Thereafter, for leakages the pressure shall be raised slowly to the required test pressure for the pipeline and maintained at that pressure for a period long enough for the Engineer to examine the whole section under test, or not less than 4 hours whichever is the longer period Thereafter, for a period of 2 hours the leakage of water, as measured by the amount drawn into the pump to maintain the pressure must not exceed a rate of 0.1 litre per mm nominal internal diameter per kilometre length of main per 30 metres head for each 24 hours.

All pipes or joints which are proved to be in any way defective shall be cut out, remade and retested as often as may be necessary until a satisfactory test is obtained and any work which fails or is proved by test to be unsatisfactory in any way shall be cut out and re-done by the Contractor at his own expense. In addition to the tests in separate sections, on completion the main shall be tested in whole or in parts to the same pressure and by the same procedure as that outlined for individual sections.

*1.13.2.23 STERILIZATION OF WATER MAINS*

The pipelines after testing shall be thoroughly flushed out and cleaned.

After the Engineer has approved the cleaning, the Contractor shall completely fill the pipelines with water to which he shall have added chloride of lime or other approved chemical to give a concentration of free chlorine of 50 mg. per litre.

Chlorine gas must not be injected directly into the main from a cylinder otherwise than through an approved chlorinator and care must be taken to ensure that there is no flow back into the preceding sections of the main

The method used for sterilization shall be approved by the Engineer and the solution allowed to remain in the pipelines for not less than 6 hours, or more than

24 hours. Chlorine residual tests shall then be taken at the end of the main furthest from the dosing point. The sterilization process shall be repeated until the free chlorine residual is not less than 5 mg per litre. The chlorine residual tests shall be carried out on Site in order to obtain an accurate reading of the free chlorine present.

2.0 ROADS

2 .1.1 GENERAL

(i). These specifications shall be read and construed in conjunction with the various other documents forming the Bid. The requirements of the specifications shall be complementary and additional to the requirements of the other documents.

(ii). The Contractor is responsible for setting out the whole work according to the drawings, specifications and instructions of the Technical Contractor.

(iii). Measurement and valuation of work performed under each bill shall be carried out in accordance with the method of measurement for each item set out in these specifications.

2.1.2 EARTHWORKS

(i). The following definitions of Earthworks materials shall apply to this and other clauses of the specifications in which reference is made to the defined materials;

a) Topsoil means the top layer of soil that can support vegetation.

b) Unsuitable Material means all soils and other materials which are not suitable for use in the works and includes inter alia:

* + - Material from swamps, marshes or bogs;
    - Peat, logs, stumps and perishable material;
    - Material susceptible to spontaneous combustion;
    - Soils having a liquid limit in excess of 50 and/or a PI in excess of 30.
    - Materials rejected by the technical contractor.

c) Suitable material shall comprise all that which is acceptable in accordance with the proposal for use in the works.

(ii). Embankments and other areas of fill shall be formed of material defined as “suitable material” above.

(iii). Hauling of material from cuttings or borrow pits to embankments or other areas of fill shall proceed only when sufficient compaction plant is operating at the places of deposition.

(iv). All materials used in embankments and as filling elsewhere shall be compacted as soon as practicable after deposition. Unless specifically authorized, no filling material of any nature may be placed in layers exceeding 150mm in thickness.

(v). Prior to the commencement of embankments, the original ground beneath the work shall be compacted to provide a firm base from which compaction of the embankment material may proceed.

(vi). In carrying embankments up to or over culvert or pipe drains and up to or over bridges, bring the embankments up equally on both sides.

*2.1.2.1 CLEARING AND GRUBBING*

Prior to the commencement of any other earthworks, completely clear the sites of both cutting and embankment works, including the side slopes of existing embankments which are to be widened, of all topsoil and vegetable matter.

*2.1.2.2 CLEARING OF SWAMP MATERIAL*

Prior to commencements of earthworks in swampy areas, or where drains are to be opened in swamp material, all floating and submerged swamp material shall be removed over the areas specified or directed by the technical contractor’s representative leaving clear unobstructed water and firm base.

*2.1.2.3 EARTH WORKS IN EMBARKMENTS USING BORROW MATERIAL*

(i). Embankments formed with materials from borrow pits shall be constructed wholly in accordance with the foregoing clauses relating to embankment construction using material which conforms to the specified requirements.

(ii). The Contractor shall be responsible for the location of borrow pits. No borrow pit shall be opened up until the location and material have been approved by the Engineer.

*2.1.2.4 EARTHWORKS IN EMBARKMENTS USING CUT MATERIAL*

(i). Embankment formed with the material from the cuttings shall be constructed wholly in accordance with the foregoing clauses relating to the embankment construction using material which conforms to the specified requirements.

*2.1.2.5 EARTHWORKS IN CUTTING*

(i). Cut material shall be defined as all material necessarily excavated in the course of the works other than excavation for side drains, mitre drains or catch water drains where such drains do not in any way from a part of a greater excavated area and shall include material from cuttings in the natural ground and materials cut from existing embankments. Where cut material does not comply with requirements for suitable material it shall be run to spoil in the tips as directed by the contract and in accordance with clause 2.06 of this specification.

(ii). No cutting shall be opened until the material has been assessed by the engineer and instructions given regarding its acceptability for use as embankment material.

2.1.2.6 SPOIL OF SURPLUS OR UNSUITABLE MATERIAL

(i). Suitable material surplus to the total requirements of the works, and all unsuitable material shall, unless the engineer permits otherwise, be run to spoil in spoil heaps at the locations provided by the contractor at his own expense or as indicated on the drawings.

(ii). All spoil heaps locations are to be approved by the engineer prior to placement of any material. They are to be constructed such that there is no danger of any future erosion or slippage of the spoil material. Where the spoil comprises of both unsuitable and suitable material, the suitable material shall be placed beneath the unsuitable. At the completion of the work spoil heaps shall be shaped to blend with the natural contours of the land and completely grassed over.

**2.1.3 ROADWORKS**

(i). Construction of traffic shall be controlled at all times so that damage is not caused to the sub grade or to pavement layers.

(ii). The wheels or tracks of plants moving over the sub grade and pavement courses shall be kept free of deleterious materials.

(iii) Prior to the commencement work on the laying of gravel, the contractor shall submit to the Engineer, samples of the materials which he intends to use for the designated quarries, or quarries identified by the contractor or by others, for approval. No gravel material shall be placed on the road until the engineer has approved the samples, and all the material placed their after shall conform to the approved samples. The Engineer shall have the power to veto any use of any gravel source if he considers that there is an acceptable alternative which requires less haulage or to pay for haulage as though the nearest acceptable source has been used.

1. Gravel pavement material shall conform to the following requirements:

Plastic index (PI) 8-20

Liquid limit (LL) less than 55

4-day soaked CBR at in situ density above 20% Gravel shall be free of all organic material

Gravel grading shall comply with one of the following envelopes:

|  |  |  |
| --- | --- | --- |
| **BS mm sieve** | **Grading A** | **Grading B** |
| 37.5 | 100 | 100 |
| 19.0 | 70-100 | 100 |
| 13.2 | 60-85 | 75-100 |
| 4.75 | 40-60 | 55-80 |
| 2.00 | 25-45 | 35-55 |
| 0.425 | 15-40 | 18-45 |
| 0.075 | 7-30 | 7-30 |

*2.1.3.1 GRADING LIMITS*

(i). The surface regularity of finished gravel layers shall be tested with a 3m straight- edge placed parallel to the centre line of the road and with a properly shaped camber board or profile place at right angles to the centre line of the road. The laid pavement surface shall have no depression greater than 5mm under the straight- edge and the camber board. Where surface levels have been defined, surface accuracy may be checked by instrument leveling in the addition to the straight edge and camber road checks specified above. When checked by instrument no part of the finished road surface shall be more than 20mm above no more than 10mm below its specified level.

*2.1.3.2 REGRADE EXISTING ROAD SURFACE*

(i). Where directed by the Engineer or specified in the contract documents the existing road surface shall be lightly graded to restore the running to a smooth condition free of bumps, potholes, gullies, ruts, ridges, and areas likely to retain standing water. On gravel road surfaces surplus gravel which has been distributed to the centre and edges of the road shall be recovered during the grading and the respread as part of the uniform finished surface.

(ii). The width to be graded shall be directed by the Engineer and may cover only the carriage way, the carriage way and shoulders or the complete cross section from side drain invert to side drain invert. Where grading is carried out over with less

than cross section care shall be taken t ensure that the graded and un graded areas blend neatly together and that are no ridges of surplus material are left at the edge of the grade material .where the worked about is over grown, all grass and bushes shall be cut back as necessary to allow for grading work to proceed unhindered and to ensure that the road surface material is not contaminated with roots , stems, and other vegetable matter.

(iii). The operation will normally require only a grader with minimum support labor needs and needs to be undertaken when the road surface is naturally moist condition. If the surface materials are too dry to hold their regraded shape after operation the additional water must be added to the road surface before or during re-grading. Each part of the surface to be graded must receive at least passes of the grader blade. Isolated areas of more severe damage may require up to six passes and scarifying.

(iv). Where regarding work extends into the side drains the contractor shall be responsible for ensuring that all mitre drains and turnouts are carefully preserved and leaned as necessary to ensure clean flow discharge of rainwater.

*2.1.3.3 REGRADE AND RESHAPE EXISTING ROAD*

(i). Where directed by the Engineer or specified in the contract documents the existing road surface shall be watered, regraded, compacted and generally completely reshaped to restore the running surface to a smooth condition free of bumps, potholes, gullies, ruts, ridges and areas likely to retain to retain standing water and to provide well formed, even, free flowing side drains with properly shaped and / or graded mitre drains and turnouts. Where necessary to make good damage to the existing road surface the contractor shall import the required quantities of additional material of type similar to that in the surrounding road.

(ii). The width to be graded shall be the complete cross section from ditch invert to ditch invert. Care shall be taken to ensure that suitable material is graded back into the road cross section and that the unsuitable material is graded back to the outside drain. Unsuitable material graded to the outside of the ditch shall be neatly graded level and not left as a window. Where the area to be worked on is overgrown,all grass and bushes shall be cut back as necessary to allow the grading work to proceed unhindered and to ensure that road surface material is not contaminated with roots, stem and other vegetable matter. The contractor shall be responsible for ensuring that all mitre drains and turnouts are carefully preserved and cleaned as necessary to ensure clean free flowing discharge of side drain.

(iii). The operation will normally require a grader, water bowser and heavy vibrating roller with supporting labour. Water must be added to the rod surface before or during regrading operation to ensure that the material is at or near its optimum moisture content for compaction. The surface to be shall thoroughly compacted to satisfaction of the Engineer and each part of the surface shall receive at least 4 passes of heavy vibrating roller.

(iv). Each part of the carriage way and shoulder surfaces must be thoroughly scarified to a depth of at least 100mm or as directed by the Engineer prior to the final shaping and compaction. Where the road to be regarded is a gravel road, the contractor shall ensure that the existing gravel surface material is not contaminated with the underlying formation material. In the event that such mixing does occur the contractor shall be responsible for replacing the contaminated gravel surface with a new, acceptable, clean gravel at his own expense.

(v). The surface regularity of the finished work shall be tested with 3m straight-edge placed parallel to the center-line of the road and with properly shaped camber board or profile placed at right angles to the center line of the road. The compacted surface shall have no depression greater than 5mm under the straight-edge and camber board.

*2.1.3.4 NEW GRAVEL PAVEMENT LAYER*

(i). The work of laying new gravel pavement shall include the complete rehabilitation of the road cross section from the back of the ditch to the back of the ditch.

Shoulders and side drains shall be regraded, reshaped and compacted as necessary during the process of formation preparation and retrimmed on completion of new gravel pavement to provide new clean rehabilitated cross section with well-formed or even, free flowing side drains with properly shaped and/ or graded mitre drains and turn outs

(ii). Immediately before commencing laying of new gravel pavement layers the surface of underlying formation shall be checked and all ruts, soft spots, deformations or other defects corrected to the satisfaction of the Engineer and the whole of formation thoroughly compacted. No gravel layer material shall be laid until Engineers approval to proceed has been given in writing. Immediately before laying the gravel the formation level shall be lightly watered.

(iii). The gravel wearing course material shall be deposited in such quantity and spread in spread in the uniform layer across the full width required, so that the final compacted thickness is nowhere less than shown upon the drawings or instructed by the Engineer.

(iv). The compacted thickness of any layer laid, processed and compacted at one time, shall not exceed 200mm and where a greater compacted thickness is required, the material shall be laid and processed in two or more layers. The minimum layer thickness shall be 100mm.

(v). Wearing course material shall be broken down to the grading specified here in. Any oversize material that cannot be broken to the required size shall be removed to spoil to the contractor’s expense.

(vi). The gravel wearing course shall thoroughly be compacted to the satisfaction of the Engineer. Nominal requirements of compaction are a dry density of at least 95% MDD (AASHTO T180). The moisture at the time of compaction should ideally be between 80% and 105% of the OMC. Satisfactory compaction with normal, non-plastic, gravels will require a moisture content of between 4% and 8% and at least

4, and preferably 6, passes of heavy vibrating roller (dead weight over 6tonnmes). The contractor may be required to dry or wet the material in order to comply with the moisture content required. The engineer may direct the contractor to vary these compaction requirements if necessary to achieve acceptable results. In the invent of disagreement between the contractor and the as to the acceptability of any compaction process the contractor shall carry out tests to demonstrate compliance with the nominal compaction requirements given above.

(vii) The wearing surface of the material shall, on completion of compaction, be well closed, free from movement under the compaction plant and free from compaction planes, ridges, cracks or loose material. All loose, segregated or otherwise defective areas shall be removed and made good with the new material to the full thickness of the layer.

*2.1.3.5 REGRAVELLING OF EXSISTING GRAVEL PAVEMENT LAYERS*

(i) The work regravelling existing Gravel Pavements shall include the complete rehabilitation of the road cross section from back of ditch. Shoulders and side drains shall be regarded, reshaped and compacted if necessary, during the process of preparation and retimed on completion of the re-graveling to provide a neat clean rehabilitated cross section with well formed, even, free flowing side drains with properly shaped and/or graded mitre drains and turnouts.

(ii). Sections where regravelling is to be carried out shall be identified by the Engineer who shall also specify the thickness of new gravels to be added. The minimum thickness of existing gravel after spreading the surplus gravel accumulated at the centre and edges of the road for which re gravelling will normally be specified is 50 mm. Where the existing gravel thickness is less than 50 mm, gravelling shall be done in accordance with Clause 302 above for new gravel with the existing surface level being prepared and treated as formation level.

(iii) Prior to gravelling, the existing gravel surface shall be scarified to such a depth that the total thickness of the new gravel and the scarified gravel is not less than 100mm (when compacted). The Contractor shall take care to ensure that the sub grade material is not disturbed and mixed in with gravel material.

(iv) The new gravel material shall be spread formally over the full width of the roadway to the specified depth and mixed with the existing material using a grader. The gravel shall be broken down to the grading specified herein. Any oversized material which can’t be broken down to the required size shall be removed to spoil at the Contractor’s expense.

(v). The gravel wearing course shall be thoroughly compacted to the satisfaction of the Engineer. Nominal compaction requirements are a density of at least 95% MDD (AASHTO T180). The moisture content at the time of compaction shall ideally be between 80% and 105% of the OMC. Satisfactory compaction with normal, non-plastic, gravels will require moisture content between 4% and 8% and at least 4, and preferably 6, pass of a heavy vibrating roller (dead weight over the 6 tones). The Contractor may be required to dry or wet the material in order to comply with the moisture content required. The Engineer may direct the Contractor to vary these compaction requirements if necessary to achieve acceptable results. In the event of disagreement between the Engineer and the Contractor as to the acceptability of any compaction process, the contractor shall carry out tests to demonstrate compliance with the nominal compaction requirement given above.

(vi). The compaction thickness of any layer processed and compacted at one time shall not exceed 200mm and where a greater compacted thickness is required, the material shall be laid and processed in two or more layers. The minimum layer thickness shall be 100 mm.

(vii). The wearing surface of the materials shall, on compaction, be well closed, free from movement under the compaction plant and free from compaction planes, crakes or loose, material. All loose segregated or otherwise defective areas shall be removed and made good with new material to the full thickness of the layer.

*2.1.3.6 HAULAGE IN EXCESS OF 10 KM*

Where the suitable gravel material is approved by the Engineer, haulage in excess of 10 km, the excess haulage incurred will be reimbursed under Day works. Payment under this item shall be for haulage only and will be payable per cubic meter kilometre measured as the nominal volume of such excess haul material in place in the compacted layer multiplied by the average haul distance over and above the 10 km already paid under item 3.01 b b.d./o 3.02 b.

**2.1.4 DRAINAGE AND STRUCTURES**

*2.1.4.1 DEMOLITION/ DISMANTLING OF EXISTING STRUCTURES*

(i). Existing structures shall be dismantled or demolished as indicated on the plans or as directed by the Engineer. Unless otherwise instructed structures shall be demolished/dismantled entirely including all footings and foundations and any resulting excavation made good to the level of the surrounding original ground.

(ii). Material having a reuse value by the employer shall be preserved on site for reuse or transportation by the Contractor to the Employer’s yard and off-loaded there in accordance with the instructions of the Engineer. Material not required by the Employer shall be removed from the site and disposed of in a manner approve of the Engineer.

1. No material amounting from dismantling and demolition works are to be removed from site without the approval of the Engineer.

(iv). Demolition or dismantling of complete works will only be paid for under the sub items relating to the relevant structure type. Payments shall be made under the sub item of demolition of masonry or mass concrete only where the work is being undertaken in isolation and can’t be considered as part of the demolition of a structure categorized in one of the other sub items.

*2.1.4.2 EXCAVATION FOR STRUCTURES*

(i). The Contractor will be required to accurately hand finish the bottoms of excavations to the required footing and foundation elevations by methods that will not loosen or disturb the foundation material, and the excavation shall be maintained until the concrete or bedding material is placed therein.

(ii). The Contractor shall, at his own expenses, make good with suitable material o concrete as directed by the Engineer.

(iii) Any excavation greater than the net volume required for the Works as described in the Contract.

(iv). Any additional excavation at or below the bottom of foundations to remove material which the Contractor allows to become unsuitable.

1. The Contractor shall, at his own expense, keep, trenches and excavations free from water, until in the opinion of the Engineer, the works will not suffer any deleterious effect from water. The Contractor shall take all precautions necessary for the safety of his labour and any adjoining structure & buildings by shoring or otherwise, during the time the trenches are open.
2. When the soil at the established footing elevations is naturally of a character that will not permit the proper placing of the concrete or provide adequate support to the proposed structure, a proper foundation shall, be prepared as directed by the Engineer by excavating the unsuitable soil and replacing with compacted granule material payable as Granular Backfill to structures, in accordance with the directions of the Engineer.
3. The sides of pits, trenches and other excavation shall, where required, be abundantly timbered and supported at all times to the satisfaction of the Engineer. Alternatively, except where the contract expressly requires otherwise, they may be suitably battered. All such excavation shall be of sufficient size to enable the works to be execu8ted and concrete and bedding to be laid accurately and any formwork withdrawn before refilling and compaction is carried out. Trenches and pits shall be kept free of water.
4. Where trenches are to be excavated for the construction of pipe culverts, they shall be of sufficient width to enable the pipes to be properly laid, joined and hunched and the specified bedding and select backfill placed. Should the Contractor desire to use mechanical plant for excavating trenches or for laying pipes he shall submit his proposal for approval by the Engineer, but such approval will not relieve the Contractor from responsibility for damage to existing pipes, mains, cables, etc.
5. All excavated materials from structural excavations, not required for refilling, shall be disposed off in accordance with the requirements governing the disposal of surplus excavated material arising from the general earthworks.

*2.1.4.3 BACKFILLING OF STRUCTURES*

(i). Unless otherwise shown on the drawings or directed by the Engineer, all backfilling of foundation pits and trenches shall be done using suitable materials approved by the Engineer deposited and compacted by approved plant to the embankment density requirement. Timber sheeting deposited and other excavation supports shall be carefully removed as the filling proceeds, but the removal of such support will not relieve the Contractor of his responsibilities for the stability of the works.

(ii). Trenches and excavations shall be refilled with suitable materials as detailed above but not before the work has been measured and approved by the Engineer. Fir pipes which are not surrounded by concrete, the filling material shall be non-plastic and free from large lumps and stones shall be deposited and rammed in layers not exceeding 150 mm in depth when compacted. Where necessary, the moisture content shall be adjusted to facilitate compaction. Timbering shall be withdrawn ahead of the layer to be compacted; care being taken to avoid any collapse of the excavation.

*2.1.4.4 EARTHWORKS FOR DRAINS*

(i). Excavation for side drains, mitre drains, catch water drains and works of similar nature shall be executed in accordance with the lines, levels and cross sections shown in the drawings or directed by the Engineer and shall cover the work of excavating new drains and that of reinstating existing silted and/or undersized drains.

(ii). The volume of excavation for which the payment is to be made will be measured strictly net as the volume defined by the length of each drain section multiplied by the specified or the measured across sectional of excavated material, whichever is the lesser.

*2 .1.4.5 RIP RAP PROTECTION*

(i). Stone for rip-rap protection shall consist of well-shaped hard dense durable rock, which shall ring when struck with a steel hammer. At least 50% of the pieces shall have a dimension greater than 300mm in at least dimension and not greater than 600mm in the largest and not more than 5% of the pieces shall have dimension of less than 100mm in the least dimension. The stones shall be laid as specified in accordance with the drawings or as instructed by the engineer. Rip-rap shall normally be laid with close joints starting from the bottom of the slope and working upward, the larger of the stones being laid at the bottom. The surface shall be hand packed, carefully bedded and tightly wedged with suitable spalls to form a firm even surface in which all stones are firmly wedged which have no free movement and interstices filled with hard packed stones spalls and chips

(ii). Rip-rap shall be laid to the thicknesses given in the drawings or directed by the Engineer or otherwise specified and shall be placed on a carefully prepared bed of thoroughly compacted, firm material.

(iii). Where riprap is to be grouted the work shall carried out in accordance with the requirements specified for the riprap in the Sub clauses 1 and 2 above, except that the spaces between the stones shall be filled with cement mortar having not less than one part of Portland cement 3 parts of volume fine sand. Before the mortar is applied the stones surfaces shall be thoroughly cleaned of adhering industrial and vegetation and then moistened. The mortar shall be placed in a continuous operation for any day’s run at any one location. The mortar shall be worked into the riprap so as to ensure that all spaces or voids between the stones are completely filled with mortar and to the depth of the stone riprap. After the grout has been placed, the stones carried shall be thoroughly brushed so that their top surfaces are exposed. The grouted rip- rap shall be cured for the period not less than 4 days after grouting with the wet sacking or other approved wet cover and shall not be subjected to loading until adequate strength has been developed. Where required or instructed by the Engineer, weep holes shall be formed in the riprap.

*2.1.4.6* EROSION CHECKS

Where shown in the drawings or instructed by the Engineer, the contractor shall construct erosion / scour checks in the side drains, either in grouted stone masonry, concrete, dry stone, wood and turf or other specified material. The shape, design, layout and spacing of erosion checks in side drains, shall be as shown in the drawings or as specified/directed by the engineer.

*2 .1.4.7 CONSTRUCT CULVERT INLETS AND OUTLETS, INCLUDING HEADWALLS, WING WALLS AND APRONS*

(i). Where instructed/or indicated on the drawings the contractor shall construct the head walls, wing walls and Aprons at culvert inlets and out lets. Such work may be required at both new and existing structures.

(ii). Excavation and back filling around existing structures for the inlets and outlet construction shall be executed in accordance with requirements of clauses 4,4.02, and 4.03 of this specification.

(iii) The provision of concrete bedding and haunching to the inlets and outlets shall be executed in accordance with the requirements of clause 4.09.

(iv). The provision of stone masonry to the inlets and outlets shall be executed in accordance with the requirements of clause 4.13.

(v). The provision of any reinforcement required in lets and outlets shall be executed in accordance with the requirements of clause 4.12.

*2.1.4.8* C O N C R E T E W O R K S

(i). The provisions related to this clause relating to concrete works shall apply equally to precast and in situ concrete

(ii). The contractor shall be responsible for the design, provision and removal of form work which shall be adequate in support of all the loads to which they shall be subject during erection, preparation, including steel placing, concreting, curing, and removal, and shall be sufficiently rigid and resistant t either temporary or permanent deformation that the finished, formed concrete structure shall be accurate to the designed shape, lines, and levels. The materials and standard of workmanship in the construction of the forms shall be such as to ensure that the surfaces of the finished concrete are smooth, homogenous and from blemishes, discoloration fins, grout leakage, honey combing and such like defects.

(iii). False work shall be so designed as to provide adequate clearance wherever waterways, paths and roads are crossed.

(iv). Concrete shall not be cast directly against the earth faces accept with the approval of the Engineer, which will not normally be given. Where the contractor wishes to place concrete within suitably shaped and trimmed excavation without the use of formwork, he must provide adequate protection by the use of suitably secured plastic sheeting against the earth faces or by some other approve method. In all cases the placing of concrete without the form work will be subject to the approval of the Engineer in case-by-case basis.

(v). Cement to use in the concrete shall be ordinary Portland cement complying with BS12. Low heat, rapid hardening and other special cements shall only be used in the works with prior approval of the Engineer. Cements complying with the alternative but similar specifications to BS 12 can be used with written approval of the Engineer. Where the contractor wishes to use the alternative specifications a copy of the specifications shall be submitted to the Engineer.

(vi). Aggregates and sand for concrete works shall comply with the following requirements

1. General-Concrete aggregate for fine aggregates shall consist of sharp sand or crusher dust, or a mixture of these, and for coarse aggregate hard durable crushed, angular or napped stone. All aggregates shall be free from clay, shale, pyrites, feldspar and all other impurities. The coarse part of the aggregate shall be roughly cubical in shape and free from access to flat and or/ elongated particles. The aggregate shall conform with the requirements of BS 882.
2. The flakiness index of the stone shall not exceed 35 as determined by BS 812 part 1.
3. Sampling and testing of aggregates shall be carried out of frequent intervals as specified in BS 812 and as required. Also, the following tests in accordance with BS 812 and is required. Also, the following tests in accordance with BS 812 shall be carried out on the site

Coarse aggregates:

Density and water absorption clause 5.3 (part 2) Fine aggregates:

Sieve analysis clause 7 (part 1)

Field setting tests clause 7.2.5(part 1)

10% fines.

1. The coarse aggregate where of nominal maximum size 10 or 14 or 20 or 40mm shall be graded in accordance with the requirements of graded aggregate as given in table 1 of BS 882. For structural concrete the ten percent fines value of the coarse aggregate in accordance with BS 812 shall not be less than 50 kilonewtons.
2. Fine aggregates shall comply with the requirements of BS 882 Table 2 Zones 1, 2 and 3 only.
3. The stone aggregate shall be grade with in the particle size distribution limits as below;

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Nominal size graded aggregate  Sieve size in mm | | | 40mm  % passing by weight | 20mm  % passing by weight | | |
| 75 | | | 100 | - | | |
| 37.5 | | | 95-100 | 100 | | |
| 20 | | | 35-70 | 95-100 | | |
| 10 | 10-40 | | | 30-60 |
| 5 | 0-5 | | | 0-10 |
| .75 | 0-0.5 | | | 0-0.5 |

1. The gradations of all aggregates approved for use in the works must be carefully maintained during all subsequent operations and until incorporated into concrete mixtures.
2. Water for use in concrete works, whether for mixing, curing or for washing aggregates shall be free from salts, oil and organic matter and shall not contain more than0.2% suspended or dissolved solids of any kind when used for mixing concrete and not more than 0.4% when used for curing. Water for mixing concrete shall be potable water.

(ix) No admixtures of any kind shall be added to concrete without the written approval from the Engineer.

(x). Cement shall be stored in the purpose weatherproof sheds with adequate ventilation openings and room for the circulation of air. Cement purchasing, storage, usage shall be administered and recorded in such a way that cement is not held into stores for extensive periods and that the age of the particular bag or stack can be readily checked. All cement for use in the works shall be dry and free flowing. Hardened air set or otherwise deteriorated cement shall not be used in the works and shall be removed from the site of the works immediately on the instructions of the Engineer. Rebagged spilt cement which is otherwise apparently in good condition may be reused in the works for blinding concrete only provided the Engineer is satisfied that it’s not contaminated and gives his approval for its use.

(xi). Concrete shall be classified according to its strength in N/mm² and the maximum size of aggregates. The standard concrete types and descriptive nomenclatures shall be:

Blinding/20 Blinding/40

15/20 15/40

20/20 20/40

|  |  |
| --- | --- |
| 25/20 | 25/40 |
| 30/20 | 30/40 |
| 35/20 | 35/40 |

Where the figure before the stroke indicates the strength N/mm² and that after the stroke the maximum aggregate size.

The maximum cement content for various mixes and maximum aggregate sizes is given in table 2 below. The maximum cement content for any mix shall be 510Kgs/m³

TABLE 2-MINIMUM CEMENT CONTENT IN KG PERCUBIC METRE

Concrete Usage Reinforced Prestressed Plain

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Aggregate sizes | 40 | 20 | 40 | 20 | 40 | 20 |
| Minimum  Cement content | 260 | 290 | 300 | 300 | 220 | 250 |

(xii) In general, the texture of mixes shall be of the lowest practicable water/ cement ratio and workability consistent with the purpose for which they are intended. Table 3 gives a range of suggested mix proportions for various classes of concrete.

**TABLE 3-SUGGESTED MIXES FOR ORDINARY CONCRETE QUANTITIES PER CUBIC METRE OF CONCRETE. (APROX)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Concrete Strength (kg/sqcm)** | **Nominal Aggregate Size mm** | **40mm** | | **20mm** | |
| **Workability** | **Medium** | **High** | **Medium** | **High** |
| **Limits of Slump (mm)** | **50-100** | **100-150** | **25-75** | **75-125** |
| 15  (Blinding) | Cement (kg)  Total agg.(kg)  Fine agg (%) | 180  1950  30-45 | 200  1850  30-45 | 210  1900  35-50 | 230  1800  35-50 |
| 20 | Cement (kg)  Total agg.(kg)  Fine agg (%) | 250  1850  30-45 | 270  1800  30-45 | 280  1800  35-50 | 310  1750  35-50 |
| 25 | Cement (kg)  Total agg.(kg)  Fine agg (%) | 300  1850  30-35 | 320  1750  30-40 | 320  1800  30-40 | 350  1750  35-50 |
| 30 | Cement (kg)  Total agg.(kg)  Fine agg (%) | 370  1750  30-35 | 390  1700  30-40 | 400  1700  30-40 | 430  1650  35-45 |
| 30 | Cement (kg)  Total agg.(kg)  Fine agg (%) | 400  1700  30-35 | 420  1650  30-40 | 430  1650  30-40 | 460  1600  35-45 |

(xiii). No mix shall be used in the works until approved in writing by the Engineer. When a mix has been approved, no variations shall be made in proportions, the original sources of cement or in the type, size and grading of the latter, without consent in writing Engineer, who may require further tests or trial mixes to be made.

(xiv). The Engineer will make such tests as he sees fit to check the strength of concrete used in the works. All the concrete used must reach the must reach the specified strength in the event that concrete tested fails to reach the required strength then the contractor shall take such remedial action as the Engineer may direct including demolition and reconstruction of the work at no cost of the Employer. Should the Engineer decide that failed work is none the less acceptable for the purpose, which is required to fulfill, he may allow the contractor option of leaving the failed work in place and in such a case the Engineer will calculate the reduced amount which is to be paid to the contractor for the failed work.

(xv). Wherever possible the concrete shall be batted by weight using the mechanical plant with weighing and dispensing mechanisms checked to confirm an accuracy of +/-1% of the required batch weight. If the contractor is to use the volumetric batting, he establishes the bulk densities of the various materials in use and the various range of variations. The required volumes to provide the specific mix by weight shall be regularly checked and adjusted during the progress of works and the contractor shall supply the accurate platform scale, capacity 200-250kgsto be kept on the site all the time for this purpose. The weight of the fine and coarse aggregate shall be adjusted to allow for the weight of free water contained in them. The water to be added to the mix shall be reduced by the quantity of free water contained in the aggregates which shall be determined by the contractor by the method approved by the Engineer immediately before the mixing begins, and further as the Engineer requires.

(xvi). Concrete slump will be checked at the start of and during any concreting operation.

Slumps will be required to agree with the slumps given in Table 3 and concreting will be stopped if slump values are markedly different from these values.

(xvii). Concrete mixers shall be of types and sizes approved by the Engineer. For normal concrete works the mixers shall be of sufficient capacity to the thoroughly mix individuals batches of 0.3m³ without spillage. Drums shall be watertight, clean and free from any adherent set cement or concrete, paddles and mixer blades shall be in d condition without signs of serous wear and with no missing sections. Mixers which have been out of use for more than 30 minutes shall be thoroughly cleaned without before any fresh concrete is mixed. Concrete shall be mixed for not less than 90 seconds or more than 5 minutes from the time all constituents have introduced into the mixer.

(xviii). All form work and reinforcement contained in it shall be clean and free from standing water, sand, clay, rubbish or any contaminants immediately before the placing of concrete. Concrete shall not be placed in any part of the structure until the form work has been inspected and the Engineer’s approval for the start of concreting has been given.

(xix). If concreting is not started within 24 hours of approval being given, approval shall again be obtained from the Engineer. Concreting shall proceed continuously over the area between construction joints.

(xx). Concrete when deposited shall the temperature not less than 5o 41OF) and not than 32O (90o). It shall be compacted in its final position within 30 minutes of discharge from the mixer.

C

C

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(xxi). Except where otherwise agreed by the Engineer, concrete shall be deposited in small layers to compacted depth not exceeding 450mm where internal vibrators are used or 300mm if form work vibrators are being used.

(xxii). Unless otherwise agreed by the Engineer, concrete shall not be dropped into a place from a height exceeding 1800mm. When trunking or chutes are used, they shall be kept clean and used in a way to avoid segregation.

(xxiii). No concrete shall be placed in flowing water. Under water concrete shall be placed in position by tremies, or by pipeline from the mixer. Full details of the method proposed shall be submitted to the Engineer in advance and his approval obtained before placing begins. During and after concreting underwater pumping or de-watering operations are in the immediate vicinity shall be suspended until the Engineer permits them to be continued.

(xxiv). All concrete shall be to produce a dense homogeneous mass. Unless otherwise agreed by the Engineer, it shall be compacted using the immersion vibrators. Sufficient vibrators in serviceable condition shall be on site so that spare equipment is always available in case of break down. Internal immersion vibrators shall be capable of producing not less than 10,000 cycles per minute, external vibrators not less than 3,000 cycles per minute. Vibration shall not be applied by way of the reinforcement. Where vibrators of the immersion type are used, contact with the reinforcement shall be avoided so far as in practicable. Concrete shall not be subjected to vibration between 4 and 24 hours after placing.

(xxv). Where concrete is to be placed as bedding to culverts, it shall be carefully placed into the pipe trench and thoroughly worked and compacted beneath the pipe to form a continuous and to solid mass to bedding material in continuous contact with the pipe surface and completely free form voids or gaps; in no instance shall the concrete be thrown directly on the pipes. The upper surface of bedding to pipes shall be neatly struck off to the levels and shape shown on the drawings and finished to the dense impervious surface with smooth wooden float.

(xxvi). The position and detail of any construction joints not described in the contract shall be subject to the approval of the Engineer, and shall be arranged as to minimize the possibility of the occurrence of shrinkage cracks. At vertical joints 1:1 slurry of cement and concreting sand shall, wherever possible, be well worked into the existing joint surface immediately before the fresh concrete is placed. Wherever possible laitance and all loose materials shall be removed while the concrete is steel green and no further roughening shall be the required. Where this is not possible, laitance shall be removed by mechanical means provided the concrete has been in position for more than 24 hours. The roughened surface shall then be washed with clean water.

(xxvii). Where the sections of the work are carried out in lifts, the reinforcement projecting above the lift being cast shall be adequately supported so as to prevent the movement of the bars during the casting and setting of the concrete.

(xxviii). Immediately after compaction and for 7 days thereafter concrete shall be protected against harmful effects of weather, including rain, rapid temperature changes and from drying out. The methods of protection used shall be subject to the approval of the Engineer. The method of curing employed shall prevent loss of moisture from concrete. Details of the method to be used shall be subject to the approval of the Engineer. At minimum such methods shall comprise completely wrapping fresh concrete in sacking which shall be kept permanently wet. Where precast items are manufactured on site curing shall be affected by means of total immersion in water filled curing ponds. Precast items shall be protected from drying out until concrete strength is adequate to permit movement. They shall then be transferred to curing bonds and totally immersed in water for a period of not less than 14 days.

(xxix). Concrete shall at no time be subjected to loading, including its own weight, which will induce compressive stress in it exceeding 0.33 of its compressive strength at the time of loading or of the specified 28 days strength. The assessment of the strength of concrete and the stresses produced by the loads shall be subject to the agreement of the Engineer.

(xxx). The minimum periods which shall elapse between the placing and compacting of the concrete and the removal of the formwork for various types of faces and parts of the structure are given in table 4 below. The times given are minimum times only and the provision of these times in no way relieves the contractor of his obligation to delay the removal of form work until the concrete has attained sufficient strength and the contractor shall be held responsible for making good of his own cost all injury and damage a rising from the premature removal of false work. The provision of suitable curing methods shall immediately follow the removal of formwork and the concrete shall be protected from high temperatures by means of suitable insulation or other cooling measures.

Table 4: Removal of Formwork; Minimum time in days

FORMWORK TO: Time in days

1. Sides of beams, walls and unloaded columns 1.0

2. Soffit of slabs and beams:

Spans up to 3m 4

Spans over 3m up to 6m 11

Spans over 6m up to12m 14

Spans over 12m 21

*2.1.4.9 MANUFACTURE OF REINFORCED CONCRETE PIPE CULVERTS*

(i). Reinforced concrete pipes for use in culverts shall either be made on site, or made in an approved yard and transported to the site, in strict conformity with the details given in the drawings and the specifications of concrete and reinforcement work given elsewhere in this document or shall be factory made pipes approved by the Engineer and manufactured in conformity with the above details and specifications or standards in excess of these.

(ii). The manufacture of reinforced concrete pipes includes the manufacture of approved joints. Unless clearly specified otherwise stated, Reinforced concrete pipes supplied under this item will be either full spigot and socket joints or plain end pipes butt jointed with collars. In either case the work of providing the spigot and socket or collared joints, including the manufacture of separate collars, is included in this item.

(iii). Pipes manufactured under this item may be for use in the works or may be stock piling at the employer’s yard. In either case the work of transporting from the site of manufacture to the ultimate destination is included in this item.

*2.1.4.10 PLACING OF REINFORCED CONCRETE PIPE CULVERTS*

(i). Concrete pipes shall be placed in position in the culvert or other specified location true to the line and level, commencing at the out fall or lower end, each pipe being separately boned between sight rails. During and after placing each pipe shall be securely and accurately seated on a compacted granular fill in case the pipes not hunched with concrete and on 2 purposes made precast concrete blocks with dimensions approved by the Engineer where concrete haunching is to be placed. These blocks shall be adequate to maintain the pipes firmly in position throughout the jointing and haunching operations and will be cast into haunching concrete; where appropriately they shall incorporate necessary details to permit the unobstructed placing of the haunching reinforcement. On completion, all culverts, pipelines, drains etc., shall be flushed from end to end with water and left clean and free from obstructions.

(ii). In jointing butt jointed pipes, the joints shall be made using collars around the outside of the joint. Collars shall have the same wall thickness and reinforcement as the main pipes, and they shall have the internal diameter of 10mm greater than the external diameter of the pipe. The collar shall be placed around the free end of the last pipe laid and the next pipe drawn up hard against the last pipe laid and the next pipe drawn up against the last pipe, supported in position and centralized within the collar. The space between the collar and the pipes shall then be completely filled with cement mortar (1 cement and 2 sand) and the mortar fillets shall be formed and beveled off extending for a length not less than 50mm from the faces of the collar. The newly made cement fillets shall be protected by means of a cover of damp Hessian which shall be kept moist for at least 24 hours after forming.

(iii). Other types of joints may only be used with the permission of the Engineer. Spigot and socket joint pipes may be used as the alternative in all cases; ogee or tongue and groove jointed pipes will only be approved for use where the culvert will be provided with a full concrete haunch which includes the use of steel reinforcement.

(iv). Where shown on the drawings, directed by the Engineer, concrete pipes shall be hunched or surrounded by concrete mixed and placed in accordance with clause 4.09 above; the pipes shall be laid and jointed as specified above, and, during the placing of the concrete, they shall be adequately supported.

*2.1.4.11 STONE MASONRY TO MINOR STRUCTURES*

(i). Stones to use in masonry shall be hard field or quarry stone not susceptible to disintegration or weathering on exposure to the atmosphere or water and give out a clear metallic sound when struck with a steel hammer. It shall be free from material and shall not contain excessive amounts of elongated stone. Stones shall be roughly squared before use.

(ii). Mortar shall be cement mortar having not less than 1 part of Portland cement to 3 parts by volume of fin sharp sand. Before the mortar is applied the surfaces of the stones shall be thoroughly cleaned of adhering dust, soil and vegetation and then moistened.

(iii). When placing stone masonry, the large, selected stones shall be laid with the largest dimension in the horizontal plane at the base of the work. Stones shall individually place to break joints and to provide the minimum of voids and shall be firmly bedded against adjoining stones. The spaces between the stones shall be wholly filled with cement mortar.

*2.1.4.12 REPAIRS TO EXISTING CULVERTS*

(i). Where instructed and/ or indicated on the drawings the contractor shall excavate around the existing pile culverts in order to investigate the condition of the culvert barrel and effect repairs.

(ii). The contractor shall undertake all necessary works of repair to such existing pipe culverts. These works shall include all necessary work to bring the pipe culverts up to the standard of new culverts subject to limitations of all or some of the existing pipes. Works to be executed shall comprise excavating down to and around and beneath the existing pipe. Clean out joints, realign the pipe and remake the joints, including the provision of the appropriately sized collars, make all necessary allowance for remaking the joints with the existing head walls if these are to be retained, protect and properly cure new mortar and concrete and complete back filling to the culvert as though to a new culvert as shown on the drawings in accordance with all the requirements of this specification.

(iii). Backfilling to the repaired culverts shall be carried out with the requirements of clause 4.03. Where the Engineer directs back filling be done granular back fill the work shall be done in accordance with clause 4.07, Granular back fill to structures. When the Engineer has directed that the granular back fill be used then the work shall be paid for under item 4.07.

(iv). Where in the opinion of the Engineer, existing pipes are unsuitable for reuse then new pipes will be provided, either from stocks held by the Employer or by the contractor. In the case of the pipes supplied by the contractor payment will be made under the provisions of item No 4.11, manufacture of RCC pipe culverts.

PART 2 – ELECTRICAL

WORKS

**SPECIFICATION FOR ELECTRICAL INSTALLATION MATERIALS, EQUIPMENT AND WORKS**

**Table of Contents**

**1. GENERAL ..................................................................................................1**

1.1 Regulations ............................................................................................................1

1.2 Quality of materials and manufacturing standards ..............................................1

1.3 Installation requirements ..................................................................................... 2

1.4 Standards ..............................................................................................................2

1.5 Record Drawings ...................................................................................................3

1.6 Contract Drawings .................................................................................................4

1.7 Working Drawings ................................................................................................4

1.8 Co-ordination of Engineering Services .................................................................4

1.9 Labels .....................................................................................................................5

1.10 Instruction of Employer’s Staff .............................................................................5

1.11 Operating and Maintenance Instruction Manuals...............................................5

1.12 Approval/Checking Procedures ............................................................................5

1.13 Equipment Guarantees..........................................................................................6

1.14 Plant and Equipment Performance Testing .........................................................6

**2. SCOPE OF WORK ......................................................................................7**

**3. POWER SUPPLY .......................................................................................8**

3.1 Proposed Mains Power Supply ............................................................................. 8

3.2 Mains Distribution................................................................................................8

**4. LOW VOLTAGE SWITCHBOARDS AND DISTRIBUTION BOARDS ...........8**

4.1 Low Voltage Switchgear Standards .....................................................................8

4.2 General Requirements for Switchboards ..............................................................8

4.2.1 Busbars......................................................................................................10

4.2.2 Over and under-voltage, phase failure and phase sequence protection…10

4.2.3 Surge Voltage Protection...........................................................................11

4.2.4 Terminals...................................................................................................11

4.2.5 Gland Plates...............................................................................................11

4.3 Distribution Boards .............................................................................................12

4.3.1 Construction .............................................................................................12

4.3.2 Mounting ...................................................................................................12

4.3.3 Miniature Circuit Breakers........................................................................12

**5. CABLES ...................................................................................................14**

5.1 PVC Insulated Armored Cables ...........................................................................14

5.2 XLPE Insulated P.V.C. Sheathed Armored Cables ..............................................14

5.3 Installation ..........................................................................................................14

5.3.1 Laying of Cables.........................................................................................14

5.3.2 Protective Covers ......................................................................................15

5.3.3 Cable Position Markers .............................................................................16

5.3.4 Sealing of Cable Entries ............................................................................16

5.3.5 Protection Against Mechanical Damages.....................................16

5.3.6 Rating Plates.................................................................................16

5.3.7 Cable Sealing and Termination ....................................................16

5.3.8 Cabling Details ..............................................................................17

**6. WIRING ACCESSORIES ...........................................................................17**

6.1 Non-metallic conduit ...........................................................................................17

6.1.1 Bends .........................................................................................................17

6.1.2 Expansion .................................................................................................18

6.1.3 Conduit Boxes and Fittings ......................................................................18

6.1.4 Earth Continuity .......................................................................................19

6.1.5 Arrangement of Conduit Layout ..............................................................19

6.2 Final Sub-circuit wiring.......................................................................................19

6.2.1 Socket Outlets ..........................................................................................20

6.2.2 Telephone Outlets ....................................................................................20

6.2.3 Fused connection units ............................................................................20

6.2.4 Fuses.........................................................................................................20

6.2.5 Labeling....................................................................................................20

6.2.6 Lighting Switches ......................................................................................21

6.2.7 Lamp Holders ............................................................................................21

6.2.8 3-Phase plugs and sockets ........................................................................21

6.2.9 Consumer Units........................................................................................21

6.2.10 Sub main Power Distribution ...................................................................22

6.2.11 Power Installation.....................................................................................22

6.2.12 Lighting Installation (Internal) ................................................................22

6.2.13 Cables and Wires......................................................................................22

6.2.14 Fixing/Mounting of Accessories, Fittings, etc .........................................23

**7. LIGHTING FITTINGS ..............................................................................23**

**8. FIRE DETECTION AND ALARM SYSTEM ................................................24**

**9. EARTHING ..............................................................................................24**

9.1 General Installation Earthing.........................................................................................24

9.2 Distribution System Earthing .........................................................................................25

9.3 Lightning Protection ........................................................................................................25

**10. STANDBY GENERATORS ........................................................................26**

10.1 Particular Specification for the Generator Set ............................................................26

**11. TESTING AND INSPECTION....................................................................28**

11.1 Testing of Earthing System .............................................................................................28

11.2 Installation Testing .........................................................................................................28

**12. COMMISSIONING AND SYSTEM DEMONSTRATION ..............................2**

**1. GENERAL**

This section specifies the requirements for plant, equipment and materials forming part of the electrical works of the Contract and shall apply except where otherwise specified.

Where the word “Engineer” is used in these descriptions of Materials and Workmanship, it shall in all appropriate cases be used and construed as the “Electrical Engineer”.

The whole of the electrical work is to be executed by suitably qualified and experienced operatives, and skilled tradesmen employed by the Contractor or by Sub- Contractor and are all to be specifically approved of by the Engineer. All workmanship shall be of good standard and in accordance with the acceptable practices and the relevant Codes of Practice.

**1.1 Regulations**

The Contract works must be carried out strictly in accordance with the following documents: -

i) The current version of the sixteenth edition of the „Regulations for Electrical Installations‟ published by the Institution of Electrical Engineers, London (with local amendments, where applicable).

ii) Local Malawi laws and by-laws and Supply and Local Authority requirements.

iii) Relevant British Standard Specifications and Codes of Practice, published by the British Standards Institution (hereafter referred to as B.S. and C.P. respectively) as implemented in Malawi.

iv) The Specification.

v) Any working drawings produced by the Contractor and approved by the Engineer.

vi) The Engineer’s instructions, drawings and details.

The Contractor shall undertake all modifications demanded by the authorities in order to comply with the regulations, and produce all certificates, if any, from the authorities without extra charge.

**1.2 Quality of materials and manufacturing standards**

Notwithstanding that suppliers may have been named or approved by the Engineer; it shall be the Contractor’s responsibility to ensure that all materials and components are up to Specification in respect of manufacture, finish and performance.

Named manufacturers are those on which the design has been based and whose standards of products are approved and intended only as a guide to the Contractor.

All materials shall be suitable for their intended use and shall comply with relevant Standards and be installed in accordance with Codes of Practice, manufacturer’s recommendations and the Specification.

Materials and/or apparatus supplied by others for installation and/or connection by the Contractor shall be carefully examined on receipt. Should any defects be noted, the Contractor shall notify the Engineer immediately.

Unless otherwise specified, all materials including equipment, fittings, cables etc., shall be in new condition. Defective equipment or that damaged in course of installation or test shall be replaced or repaired to the approval of the Engineer. Should any replacement, be necessary, the Contractor shall bear the cost of substitution and of all associated builder’s work and making good finishes.

All materials to be used shall be fixed or applied in accordance with the manufacturer’s instructions.

**1.3 Installation requirements**

It is necessary that all the Contractor’s proposals and working drawings for and in connection with the electrical works shall be submitted early in the Contract period to facilitate co-ordination with others.

The Engineer reserves the right to call for samples of some or all materials and products to be used.

The contractor shall obtain such samples as required and submit them within 14 days and any costs incurred will be presumed to have been allowed for in the tender.

The Contract works shall be of construction, manufacture and finish as to render them suitable for operating throughout their expected life and maintain design conditions. The Contractor shall be deemed to guarantee satisfactory performance of all quoted for items and fixing and operational accessories.

**1.4 Standards**

The Works shall be constructed and tested in conformity with the standards indicated in these specifications. Wherever reference is made in the contract to specific standards and codes to be met by the materials, plant, and other supplies 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 are national or relate to a particular country or region, other authoritative standards which ensure a substantially equal or higher performance than the standards and codes specified shall be accepted subject to the Engineer's prior review and written approval. The alternative standards and codes proposed shall be translated by the Contractor into the English language prior to submission for 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 15 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 substantially equal performance, the Contractor shall comply with the standards specified in the document.

For convenience and for reference purposes, certain equipment, articles, materials, or processes are designated in the specifications by brand name, trade name or catalogue name and number. Such designation shall be deemed to be followed by the words "or approved alternative" whether such words are shown or not. The Contractor may offer other equipment, articles, materials, or processes which have similar characteristics, and which provide performance at substantially equivalent or better than those specified, which will be accepted, subject to the Engineer's prior review and written approval. The burden of providing evidence as to comparative quality and suitability of alternatives shall be upon the Contractor and such evidence must be submitted to the Engineer at least 15 days prior to the date when the Contractor desires approval. No such alternative shall be used without prior written approval by the Engineer."

**1.5 Record Drawings**

The Contractor shall mark accurately on one set of drawings the conduit or trunking laid during the progress of the work. This information must be made available on site for inspection by the Engineer whenever the Engineer asks for it.

At the completion of the contract, the contractor shall supply the Engineer with four soft copies on flash disc, one set of transparent originals and two complete sets of prints showing the complete installation. The drawings shall include the location of all apparatus, conduit and cable routes and a schematic of mains distribution.

Where portions of the Works are to be concealed, draft copies of “As installed” drawings shall be supplied to the Engineer before the work is concealed in order to facilitate checking and approval.

The Contractor shall maintain on site a set of drawings for the purposes of progressive marking up of alterations and variations. These drawings which shall form the basis for the Record drawings shall be available for inspection by the Engineer from time to time.

A Certificate of Practical Completion will not be issued by the Engineer if the Contractor fails to undertake the above procedure for the preparation of the Record drawings.

Upon the issue of the Certificate of Completion or Making Good of Defects the Contractor shall issue a final set of Record drawings taking into account any changes which occurred in the Defects Liability Period.

**1.6 Contract Drawings**

The drawings forming part of this specification are to be read in conjunction with this Specification to enable the Contractor to prepare a tender.

These drawings are not intended to be used as working drawings unless they are released for that purpose.

**1.7 Working Drawings**

The Contractor shall prepare working drawings as may be necessary. They shall be submitted to the Engineer for approval before the execution of the works.

Working drawings to be prepared by the Contractor shall be detailed as below but not restricted only to these: -

a) General arrangement drawings showing plant, HV and MV switchboards, distribution boards, consumer units, fittings, switches, switch sockets, etc.

b) Layout drawings of concealed and surface conduit, ducts, trunking, etc. c) Any other drawings that are not called for in the Specification.

Two copies of all working drawings shall be submitted to the Engineer for approval. Thereafter, the Contractor shall submit copies of approved working drawings for distribution to all parties concerned.

The Contractor shall not be relieved of any of his obligations under the Contract from correcting any errors on site or elsewhere subsequently found in the approved working drawings and no extra financial claims shall be entertained.

**1.8 Co-ordination of Engineering Services**

All aspects of the Engineering Services installation require detailed coordination to avoid any possible clashes or conflict with other trades and disciplines.

The Contractor shall undertake such co-ordination in relation to his Co-ordination and Installation drawings and builder’s work information, and no extra claim will be allowed due to conflict of works or installations.

The Contractor shall initiate all co-ordination meetings that are necessary and all surveys that are necessary.

**1.9 Labels**

All switchgear, switch fuses, distribution boards, etc., shall be clearly labeled with Black and White background engraved labels to indicate the name, purpose and position of the gear. All circuits on distribution boards shall be clearly identified in respect of the number and location of the miniature circuit breakers. The chart shall be securely fixed inside the cover of the distribution boards.

**1.10 Instruction of Employer’s Staff**

The Contactor shall be responsible for arranging a Scheme for Instruction and

Training of the Employer’s Personnel in relation to the Engineering Services.

Draft proposals for the Scheme content shall be submitted to the Engineer for his approval in writing not less than six months before the anticipated date of Practical Completion. Thereafter the proposals will be finalized, and a timetable shall be provided for the Scheme.

The Contractor is to include for the provision of attendance by himself and by specialist personnel to assist in the training to suit the requirement of the Engineer.

**1.11 Operating and Maintenance Instruction Manuals**

Operating and maintenance manuals shall be provided by the Contractor as detailed in the Specification and Bills of Quantities and as stated below.

A draft copy of the operating and maintenance instruction manuals contained in a temporary loose-leaf binder shall be issued prior to the testing and commissioning period for approval of content, layout and form. Once approved, a draft copy shall be handed over prior to the issue of the Certificate of Practical Completion. This copy shall contain all testing and commissioning data results, actual control setting points and the like in draft form.

Within 28 days of the date of Practical Completion, 2 copies of the final document shall be handed over, which shall include all testing and commissioning results and final plant duties and control settings, etc. in an approved form.

**1.12 Approval/Checking Procedures**

All Contractors ‟Drawings and manufacturers” details shall be approved by the Engineer prior to any orders being placed by the Contractor. The final details including all technical aspects and calculations where applicable shall be submitted in a clear, definable and easily read format with the specified technical details, notes and performance data clearly shown in English language.

All correspondence related to the approvals procedure shall be directed to the Engineer through the office of the Architect.

Unless stated otherwise elsewhere the Contractor shall allow 28 working days from the date of receipt by the Architect of the request for Approval of all data and manufacturers details submitted.

**1.13 Equipment Guarantees**

Plant and equipment guarantee shall commence at the date of Practical Completion and run for a minimum of 12 months after this date. Any costs associated with this requirement shall be met by the Contractor.

**1.14 Plant and Equipment Performance Testing**

Major plant and equipment shall be tested at the manufacturers’ works or in a recognized and approved testing facility to demonstrate performance compliance with the stated and specified duties. Performance testing shall demonstrate but not limited to the following: -

* + Full, Partial and Minimum load
  + Response to load change
  + Efficiency
  + Noise levels

The tests shall be conducted to simulate design conditions and all ancillary plant and equipment needed to support the tests together with all instrumentation shall be provided by the Contractor and included in the tender

Upon successful completion of the performance tests the plant and equipment shall be thoroughly cleaned and returned to its new condition and correctly packaged for delivery to site

Full test certificate records of the tests shall be issued in duplicate to the Engineer. These tests are in addition to works tests stated elsewhere in the Specification.

The Contractor is to include all costs for the Engineer’s attendance at the tests. The Contractor shall notify the Engineer one month in advance of such tests and shall provide within his programme a schedule of works tests visits. The activities to be completed at the visit shall be programmed for approval.

A signed works test document will be submitted to the Engineer on completion of tests before delivery of equipment to site.

**2. SCOPE OF WORK**

The works to be executed under Electrical Installation include the supply on site, storage, installation, keeping clean, protecting, connection, testing and making improvements where necessary, energizing, commissioning to the satisfaction of the Engineer and handing over to the Employer in serviceable condition the complete installation as herein specified and measured in the Contract Bills of Quantities or as may be directed by the Engineer during the course of the works, and shall include all the necessary materials and equipment which although not expressly specified, are necessary for completing the installation. The rates given in the Bills of Quantities for the Electrical Installation shall include all related builders works and materials that are necessary to complete the electrical installation.

The Electrical Installation comprises the following:

a) Securing 3-phase power supply and connection

b) Supply and installation of three synchronized 500kVA generators complete with

2500A/415V Automatic/ Manual change over switch.

c) Installation of two 2MVA, 415KVA, 50Hz DYn 11 air cooled Transformer having +-2 x 2.5% Tapping Range, with other attachments and accessories as to ABB manufacture or approved equivalent

d) Installation of Main distribution boards and Cables as per drawings.

e) Internal and External Lighting Installations.

f) Small Power Installation. The small Power installation shall be carried out as per the drawings.

g) Lightning Protection Scheme

h) Mains System Earthing

i) Builders Works and making good to the satisfaction of the Engineer.

j) Related Builders Works

**3. POWER SUPPLY**

**3.1 Proposed Mains Power Supply**

Proposed power supply to the Site shall include provision of two separate high voltage lines to the complex through a high voltage panel switchboard, for improved availability. The works shall also include the installation of two 2MVA transformers so arranged for redundancy and terminated onto an automatic load transfer switch for scheduled switching of the transformers to ensure sustained and uninterrupted power supply.

**3.2 Mains Distribution**

From the Low Voltage Main Distribution Panel Board, power shall be distributed through sub-main distribution boards appropriately positioned within the OSBP complex. From the sub-main distribution boards, power shall be distributed vertically by means of rising mains busbar ducts contained within lockable electrical ducts and horizontally by means of armored cables terminating on TPN Distribution Boards.

**4. LOW VOLTAGE SWITCHBOARDS AND DISTRIBUTION BOARDS**

**4.1 Low Voltage Switchgear Standards**

The transformer and generator shall supply 415/240 Volts Low Voltage supplies to the low voltage switchgear.

All switchboards shall have a minimum fault capacity of 50kA for one second.

The switchboards for the control of equipment rated 415 Volts shall comply in all respects with BS 5486 (IEC 439), BS 5227, BS 7354, BS 88, BS 5424, BS 7340.

**4.2 General Requirements for Switchboards**

The main low voltage switchboards shall be of modular cubicle pattern, extensible from both ends, of folded sheet steel construction, and floor standing with operation and switch access from the front and cabling access from the rear. The switchboards shall have fully compartmentalized interior sections with withdrawable switchgear and control gear assemblies, with the design based on IEC 439-1 and related international standards. The Main Switch Boards shall be designed for conductor entry from bottom, unless otherwise required.

All switchgear, distribution boards, motor control centres, and other panels shall comprise factory-built assemblies of the multi-cubicle type. Each air circuit breaker, fuse switch, busbar, instrumentation and protective relaying section indicated on the drawing shall be housed in a separate compartment with an individual cover, fully divided from adjacent compartments by the sheet metal housing; circuit interconnection, etc., penetrations shall be contained within ductings or shrouded around. The entire switchboard shall be of fully shrouded type. The busbars shall be coloured according to phase. All equipment shall have fully shrouded fixed contacts and connection terminals, such that contact with adjacent live metal is impossible when working on individual units. All sections of the board shall be suitable for safe, effective working, for maintenance, cable removal and installation, etc., with the switchboard live and without shutting down adjacent sections.

Panels shall be free standing, of uniform height, flush mounted and totally enclosed to not less than IP 31. When the size of starters and other components does not justify this type of construction, wall mounted patterns may be used.

The base of the panel shall be effectively sealed against the ingress of vermin and termites, and all equipment shall be rated for continuous operation in a tropical climate.

Any ventilation louvres shall be backed by brass fine mesh gauze to exclude termites. Framework for the panels shall be of welded construction, and panels shall be fabricated from mild steel sheet of 2mm minimum thickness, folded and braced where necessary to provide a rigid structure.

All bolts, nuts, screws, hinges, handles, etc., shall be corrosion resistant.

Interiors shall be finished white, and the exterior shall be finished to a light grey shade except the plinth, which shall be black.

Cabling access shall be from the rear by means of gasketed bolt-on plates, which shall be fitted with handles to facilitate removal/replacement.

Access to the cubicles or cubicle compartments for all normal routine maintenance shall be from front with hinged and lockable doors fitted with neoprene gaskets (all gaskets shall be termite resistant) and chromium plated lockable tee type handles. All doors shall be electrically bonded to the main frame, using adequate flexible conductors, protected against mechanical damage. All locks on a given panel unit shall be operated by the same key.

Each multi-compartment control panel shall comprise an assembly of individually constructed cubicles. These shall be assembled to include a metallic sheet between adjacent cubicles.

In each multi-compartment panel at least one empty compartment shall be provided for future use. In single unit panels, enough space shall be available for the addition of at least 10% more components for future use.

Panels shall be readily capable of extension at either end, within the bus-bar rating.

Where panel size is excessive, easily handled sections shall be supplied for site assembly. Sections shall be fitted with eyebolts, which after positioning of the panel, shall be removed and replaced with plated bolts and washers.

Bases shall be of rigid construction capable of withstanding stresses during replacement, such as those imposed by moving the sections on rollers.

**4.2.1 Busbars**

All bus bars shall be of electro tinned HDHC copper and shall be of uniform section throughout the length of the panel.

They shall be run in a separate screened compartment, divided with barriers into as many compartments as there are cubicles in the panel. Access to individual compartments shall be via bolt-on cover plates, each bearing the legend in white on a red background: -

**"DANGER - LIVE BUS-BARS"**, also the Red Arrow symbol denoting danger from electric shock.

The neutral busbar shall be equal to the cross-sectional area of the phase bars. Phase bars shall be colour coded Red, Yellow and Blue: the neutral shall be black.

**4.2.2 Over and under-voltage, phase failure and phase sequence protection**

The main incoming 415-volt switchboards and control panels shall be equipped with a relay which detects unacceptably high or low voltage.

It will monitor all phases and will cause all incoming circuit breaker(s) to trip when the voltage exceeds a maximum or minimum (which shall be selected from a range of settings). Visual indication shall be given of the cause of tripping, and an electrical hours counter will record the time during which the supply exceeds the set limits.

Resetting of the relay shall be automatic but re-closure of the tripped circuit breaker shall be manual.

It shall be possible to delay the operation of the relay in order to ride through transient voltage variations.

Phase failure shall cause the circuit breaker to trip immediately and incorrect phase sequence will prevent the circuit breaker from being closed.

The Lovato Electronic Voltmeter Relay type RVT manufactured by the Officine Electtromeccanica Lovato of Italy meets the requirements for this application. Alternatives may be offered for the approval of the Engineer.

**4.2.3 Surge Voltage Protection**

In order to give protection against transient over-voltages or voltage surges such as result from lightning strike, surge arresters shall be installed on the 415-volt busbar of the main LV panel.

They shall be connected permanently between each phase and earth and shall be as near as possible to the incoming circuit breakers.

Each unit shall be sealed and encapsulated with connecting tails and be suitable for continuous operation at 415 volts. It shall also comply with the class 2.5KA requirements according to IEC 99.

All solid-state control or electronic devices which may be located within the panel shall be individually protected by surge arrestors.

**4.2.4 Terminals**

Terminal board insulation shall be polyamide or equivalent. Melamine types are not acceptable.

All connectors shall be of brass or bronze, with screw of similar material. Contact between dissimilar metals is not acceptable. No steel screws plated or otherwise shall be used. Insulating barriers shall be fitted between supplies at different voltages.

All terminal screws shall be captive.

Terminals shall be mounted at least 250mm above their associated gland plates.

Only one conductor shall be connected to each terminal. Multiple connections shall be effected using links.

Main power terminals shall be stud and nut types, with plain and locking washers. Conductors terminating on these shall be fitted with insulated crimped lugs. Rail mounted terminals for cables in excess of 32mm sq. cross-sectional area are not acceptable.

**4.2.5 Gland Plates**

Adequately sized blank gland plates shall be provided below each outgoing terminal section to accommodate the requisite glands.

Gland plates shall be positioned 200mm minimum above the base of the cubicle and shall be solidly bonded to earth.

Suitably sized compression type cable glands shall be provided for all cables. Glands used for armored cables shall include provision for sealing the armored wires to protect them from corrosion and to prevent ingress of moisture in the cable. Brass lugs shall be provided for the connection of cable armoring to earth.

**4.3 Distribution Boards**

The Distribution Board is an MCB-type, and shall be supplied at 415Volts, 3-phases from the existing Main Low Voltage Switchboard located at the Main Load Centre house.

General lighting and power distribution boards shall comply with BS 3817, BS 5861 and BS 5486 and shall be of the metal clad pattern, flush mounted except where otherwise specified on the drawings or Bills of Quantities.

**4.3.1 Construction**

Enclosures shall be substantially constructed from 16SWG minimum thickness sheet steel having hinged front cover and shall be vermin and insect proof. Each unit shall house MCBs and shall be supplied complete with busbars, earthing terminal, neutral bar, circuit chart and any blanking plate for any spare ways. The incoming isolator switch shall be integral with the distribution board in consumer's units only, or as may specifically be requested for. The distribution boards shall be lockable by key.

**4.3.2 Mounting**

All distribution boards and consumer units shall, unless detailed to the contrary, be mounted with the lower edge 1800 mm from the finished floor level.

Notwithstanding the above, generally, switchboards and distribution boards shall be installed so that any item to which easy access is required such as fuse, circuit breaker, instrument, etc. is not more than 2150 mm above finish floor level.

Isolators, switch fuses (other than those mounted on bus-bar chambers or providing local control), cooker control units, water heater controls, etc., shall on the other hand, unless otherwise stated on the drawings, be mounted at 1350mm from the finished floor level to the underside of the fittings.

**4.3.3 Miniature Circuit Breakers**

All distribution boards shall be supplied with MCBs manufactured to BS 3871 and of a rating as specified on the drawings. The circuit breakers shall incorporate both terminal overload and magnetic short circuit tripping, with a trip-free mechanism.

Three phase circuits shall be controlled by integrally manufactured three pole breakers, with one common operating lever. An inter-tripping mechanism shall ensure isolation of all three poles in the event of an overload or short circuit on any one phase.

**5. CABLES**

All cables shall be BASEC approved. P.V.C. insulated cables shall be 500V/1000V grade to B.S. 6004. Flexible cables shall be 300V/500V grade to B.S. 6500.

No cables forming sub-circuits connected to different sub-distribution boards are to be drawn into the same conduit or draw-in box.

No reduction of the strands forming the conductors will be allowed at switch or other terminals, but all strands shall be efficiently secured by screws, nuts and washers or other approved means.

Cables may be jointed together at the terminals of ceiling roses and other accessories. Under no circumstances will joints be permitted in the run of the cable.

All cables shall be of stranded copper conductors.

The minimum size of cables on lighting and power final sub-circuits shall be 1.5mm sq. for lighting and 2.5mm sq. for power.

**5.1 PVC Insulated Armored Cables**

These shall be 500/1000V grade to BS 6346 and BS 6004 having stranded copper conductors, armored and PVC sheathed overall. The cores of four core cables shall be distinctively colored red, yellow, blue and black.

**5.2 XLPE Insulated P.V.C. Sheathed Armored Cables**

XLPE insulated P.V.C. bedded galvanized steel wire armored and P.V.C. overall sheathed twin and multicore cables shall have stranded copper conductors and shall be 600/1000V grade manufactured in accordance with B.S. 5467. This type of case shall generally be treated in a manner similar to that for P.V.C. insulated and sheathed cables.

The Contractor shall provide suitable glands and accessories for all armored cable terminations and the cost of these items shall be included within the rates inserted in the Bills of Quantities.

**5.3 Installation**

**5.3.1 Laying of cables**

The work of excavating and back-filling of all trenches for cables is included in this contract and the responsibility for positioning, width and depth of trenches, laying and bedding of all cables and protective covers is included with the Electrical Works covered by this Specification. Unless otherwise stated, all underground cables shall be laid in uPVC conduits with draw pits as shall be indicated on the drawings or as may be required by the Site conditions. The uPVC pipes shall be laid to a minimum of 750mm below ground. The uPVC ducts shall be sand bedded to a depth of 50mm below and above the pipe. The rates inserted for uPVC pipes shall include the costs of sand bedding.

In case it is required to lay cables directly in ground, the following shall apply: - Where more than one cable is laid in a trench, cables shall be spaced follows: -

Between MV cables 100mm

Between MV and telephone cables 400mm

Between MV and LV cables 400mm

Between LV and telephone cables 400mm

Between LV cables 100mm

In straight run trenches, cable crossings shall not be permitted except where a cable branches from the main run.

At every draw-in point, joint or junction box, the cable should be snaked.

Before cables are laid, the bottom of the trench shall be evenly graded and cleared of all loose stones and shall then be covered with an 80mm layer of sand or sifted soil and lightly compacted. A further 80mm layer shall be placed on top of the cables.

The approved cable protection shall then be laid and the trench refilled with excavated materials in 200mm layers, each layer being well compacted by hand or mechanical punners before the next layer is filled.

The width of the trench shall be such that a clearance of 80mm shall be provided between the outermost cable and the side of the trench.

Where cables are disposed of in more than one layer, the vertical spacing shall be

400mm between centres of cables or cable groups the depth of the trench being made suitable accordingly. Stones or other hard objects shall not be included in any of the backfilling materials.

In the laying of cables in the uPVC ducts, the internal radius of bends shall be six times the overall cable diameter.

The rates inserted for cables shall be deemed to include for the above requirements.

**5.3.2 Protective Covers**

The protective covers, manufactured in accordance with BS 2484 shall be provided over cables laid in the ground, each complete with an interlocking device to prevent lateral displacement. The rates inserted for cables shall be deemed to include for the protective covers.

**5.3.3 Cable Position Markers**

These should be placed adjacent to all points where cables change direction and all intervals of not more than 30 metres and at other positions designated by the Engineer.

**5.3.4 Sealing of Cable Entries**

Where cables enter buildings, pipes, or ducts, the mouths of the pipes or ducts shall be effectively sealed by means of close fitting solignum impregnated wooden plugs and a mixture of compound and transformer oil, or other approved manner.

**5.3.5 Protection Against Mechanical Damages**

All cables located in such positions where they are vulnerable to damage by mechanical or other means shall be protected by suitable lengths of steel pipe bushed to prevent damage to the cable.

**5.3.6 Rating Plates**

Each cable when completely erected shall have permanently attached to it at each end in such intermediate positions as may be considered necessary by the Engineer, metal plates upon which is engraved, or stamped, the identification number of cable together with the voltage, size and make-up, and the service which it supplies.

This information shall be recorded by the contractor so that it may appear in drawings of the completed installation.

**5.3.7 Cable Sealing and Termination**

The contractor shall be wholly responsible for the sealing and jointing of all cables supplied and erected under the contract.

The cable boxes, looping-boxes and glands for LV cables on all items of equipment shall be provided under the contract.

Sealing and jointing shall be in accordance with the best current practice and of first-class workmanship. Where cable armouring is used as earth continuity conductor, the glands shall have the necessary contact surface or provide a low resistance path under fault conditions.

The tender shall include for all cable jointing where appropriate and all labour, joining material and compound, together with the use of all jointers' tools and making off the cable tails to the apparatus terminals.

**5.3.8 Cabling Details**

The contractor shall submit a schedule of all cables, detailing the following for each cable proposed: -

a) Reference Number b) Type

c) Cross Sectional Area d) Number of Cores

e) Origin

f) Destination

g) Cost per metre installed

h) Cost for each termination (glanding and making off)

i) Route Length

j) Operating Voltage k) Estimated Current

l) Percentage Volt Drop

Rate (g) shall be used to assess costs in the event of any agreed route length variation. The Contract Price shall include all cables required for a fully operational installation

and for laying all the cables in accordance with the requirements in Section 5.3 of this

Specification.

**6. WIRING ACCESSORIES**

**6.1 Non-metallic conduit**

All non-metallic conduits shall be class "A" heavy gauge, high impact PVC complying with BS 4606 Part 2, type AH.

The minimum size to be on the contract is 20mm external diameter. All conduit installations shall be concealed in the walls and floors or in structural slabs.

Conduits shall be kept at least 150 mm clear of gas piping and colour coded orange when required.

Conduits shall be kept at least 150 mm clear of steam and hot water systems and preferably beneath the aforementioned services.

Conduit runs shall be complete before wiring is begun and shall not be dismantled for wiring operations.

Conduit used in flameproof installations shall be of the solid drawn type.

**6.1.1 Bends**

Bends and sets in the conduit will be made in accordance with the manufacturer's instructions. The radius of the bend shall not be less than 2.5 times the outside diameter of the conduit, or such greater radius which will facilitate easy drawing in of cables.

All conduit bends are to be made on site and not more than two right angle bends will be permitted without the interposition of a draw box.

**6.1.2 Expansion**

Adequate allowance shall be made for longitudinal expansion and contraction of the conduit under normal working temperature variations as follows: -

a) Expansion couplers should be used in straight runs exceeding 6 metres with a loose or flexible type joint at the long spout end of the coupler.

b) Saddles as supplied by the manufacturers shall include a sliding support tolerance for longitudinal expansion.

c) Saddles shall be installed within 300mm either side of conduit boxes where the free length of conduit exceeds this distance.

d) Multiple saddles shall be used where two or more surface conduits run parallel and adjacent to each other.

e) Special consideration may need to be given to the fixing of accessories where this may prevent natural conduit movements. Oversize or slotted fixing holes may be necessary or introduction of expansion couplers.

**6.1.3 Conduit Boxes and Fittings**

a) All conduit boxes shall be circular or square pattern and of rigid PVC suitable for plan connections conforming to sheet 62 BS 4606, Part 2. Boxes supporting a fitting or accessory shall be fitted with a PVC lid held in position by means of two 2BA round headed screws. Boxes shall have metallic screwed inserts.

b) Circular or square boxes shall be provided at all outlet points, unless otherwise specified; lighting fittings, ceiling fittings, ceiling switches and other accessories will be screwed to the internal lugs of the boxes.

Care must always be taken when considering the use of totally enclosed fittings with PVC circular boxes where the temperature within the box is likely to rise above 60 deg. C (140 deg. F). In this case, special steel insert clips should be used in conjunction with circular boxes where this problem can arise and also in situations where heavy pendants are used.

c) Looping in boxes of circular PVC pattern to sheet 63 BS 4607 Part 2 may be used in such work as dictated by the structure of the buildings. Conduit entry shall be made by means of PVC bushes.

d) Adaptable boxes shall be of molded or fabricated PVC of square or oblong shape complete with PVC lids secured by 2BA brass or steel plated round-headed screws. All adaptable boxes and lids of the same size shall be interchangeable. No adaptable box smaller than 75mmx50mm or larger than

300mmx300mm shall be employed. Boxes shall be of adequate depth in relation to the size of conduit entering them.

e) Conduits shall be terminated at adaptable boxes; fuseboards, switches, sockets or other equipment possessing push-in or threaded spouts, by means of appropriate size female adaptor and PVC hexagonal headed male bush. All cemented joints to be made to a depth of not less than the diameter of the conduit being used.

**6.1.4 Earth Continuity**

Earth continuity shall be provided by a separate insulated conductor drawn into the plastic conduit and rated in accordance with circuit loadings and appropriate Regulations or as mentioned on the drawings.

Where required under the regulations and the earth continuity conductor shall be provided for lighting fittings in which case the control switches shall be equipped with an appropriate earth terminal.

**6.1.5 Arrangement of Conduit Layout**

The conduit system shall be carefully planned and erected to avoid all unnecessary bends or changes in direction. Conduits shall be laid in straight horizontal or vertical lines with easy sets. Where several conduits follow similar routes, they shall be neatly grouped in multiple runs. Where multiple runs change directions, the radii of the sets shall be laid out from a common centre. Where draw-in boxes for right angled change of direction are required in multiple runs, adaptable boxes shall be used for such sizes as to allow all conduits to enter the box with sets.

Where conduits are concealed or laid on structural floors, they shall be secured by a fixed method to be approved by the Engineer. Where it is essential that conduits cross one another in floors, the chases shall be deepened and the conduits set to create the minimum desirable diversion.

Care shall be taken to ensure that there is no obstruction to cables within the conduits caused by the ingress of plaster, concrete or other matter. Conduit ends must be cut square and cleaned of burrs.

**6.2 Final Sub-circuit wiring**

All power and lighting wiring cables shall be 600/1000V grade, single core PVC insulated, with stranded copper conductors in accordance with BS 6004. The minimum sizes of lighting circuits shall be 1.5mm sq; and ring main circuits shall be 2.5mm sq.

**Installation**

No reduction of the strands forming the conductors shall be allowed at switch or other terminal, but all strands shall be effectively secured by screws, nuts and washers or other approved means.

Cables shall be joined together at the terminals of ceiling boxes and other accessories. Under no circumstances will joints be permitted in the running of the cable.

**6.2.1 Socket Outlets**

In all areas, general power outlets shall be of the 13A 3-pin fused plug type complying with BS 1363. They shall be flush pattern, with white or ivory cover plates unless otherwise specified on the drawings. Where the circuits are supplied from a common feed, two outlets shall form a twin unit in a common box. The earthing terminal of every socket outlet shall be connected to the earth continuity conductor of the final sub-circuit by an appropriately sized insulated copper conductor. Unless otherwise stated they shall be mounted at 300mm above the finished floor level or 200 mm above the worktop.

**6.2.2 Telephone Outlets**

These shall be of the type as specified in the Bills of Quantities, or in the particular specification for telephone work. Unless otherwise specified they shall be mounted at 300mm above the finished floor level or 200 above worktop.

**6.2.3 Fused connection units**

All fused connection units shall be of the 13A type with fuse and neon indicator lamp. Boxes shall be flush type with white or ivory cover plates and shall be switched type unless otherwise specified on the drawing.

**6.2.4 Fuses**

All fused connection units shall be fitted with 13A fuses, unless otherwise specified.

**6.2.5 Labeling**

The front plates of each fused connection unit shall, unless otherwise specified, be engraved with the name of the appliance connected to it.

**6.2.6 Lighting Switches**

Lighting switches, unless specified otherwise in the Bills of Quantities, shall be of the all-insulated rocker-operating plate-switch type to BS 3676, and shall be of ample rating. Switch inserts shall be white with ivory cover plates.

Switches controlling points in bathrooms shall be placed outside the bathroom or consist of a ceiling switch operated by a non-conducting cord, as specified. Switches mounted outdoors shall be of a weather tight pattern.

All flush or surface installed switches shall, unless otherwise specified, be mounted at a distance of 1350mm above finished floor level.

Ceiling switches shall on the other hand, be positioned at not less than 300mm from the point which they control.

Switches shall be one-way, two-way or intermediate and where a number of switches are mounted together, they shall be fitted in a common box. All lighting switches shall be connected only in the phase line of all circuits.

**6.2.7 Lamp Holders**

Lamp holders shall generally be of plastic construction with porcelain interiors and bayonet fitting.

Lamp holders for lamps rated 200W and above shall be of the Edison Screw type. Batten type lamp holders shall be of the all-insulated bayonet type.

**6.2.8 3-Phase plugs and sockets**

The plugs and sockets shall be 5-pin suitable for 415 volts, 3-phase, 50 Hz with separate neutral and earth pins. They shall comply with BS 4343 and IEC 309 and be protected to IP 44 or better.

The plugs shall be of polycarbonate material, but the sockets shall be of aluminum alloy, suitable for conduit connections. The socket shall be surface mounted at a height of 1.25m AFL.

**6.2.9 Consumer Units**

All consumer units shall be miniature circuit breaker type for flush mounting as specified in the Bills of Quantities. Covers shall be lockable to restrict the removal of the miniature circuit breakers. The boards shall be a modular type allowing easy rail mounting of other components such as time switches, contactors, etc. without modification.

Cable entry shall be possible from both top and bottom.

**6.2.10 Sub main Power Distribution**

Sub-main cables will distribute power from the main switchboards and from the sub- main boards to the consumer units.

Cables shall be routed as per drawings or Engineer’s instructions on site. But allowance for cable passage (pipes or ducts, etc.) shall be put in place at the earliest possible stage of construction to avoid having to cut walls, floors, roads etc.

**6.2.11 Power Installation**

All power installations shall be concealed in floors, walls and in space above the false ceiling. However, in offices power installations shall be in three compartment PVC trunking mounted at 300mm above the finished floor level (AFFL). Socket outlets shall be mounted at 300mm AFFL and isolators for various equipment at 1350mm AFFL.

Medical service trunking shall be provided above all the patient beds. The trunking shall be finished with powder coat to RAL 9016 complete with 2 wiring compartments, 1 gas compartment, 3 gang gas mounting plates per patient's bed compartible with standard UK wiring and data accessories, as Marshall Tufflex Conquest or approved equivalent.

**6.2.12 Lighting Installation (Internal)**

All lighting installations shall be concealed in the walls, space above the ceiling and on the floors. All light fittings shall be as specified under individual items of the Bills of Quantities. All fittings shall be complete with all the necessary accessories for proper fixing or mounting. All light switches shall be installed 1350 mm AFFL

**6.2.13 Cables and Wires**

All cables and wires to be used in the Electrical Installation shall be of stranded copper conductors.

All cables for outdoor installation as well as sub-main cables installed indoors shall be XLPE-SWA-PVC or PVC-SWA-PVC as specified in the Bills of Quantities. Proper glands shall be used for termination.

Unless specifically indicated otherwise, no conductors smaller than 1.5mm2 shall be used for any purpose.

All conductors for ring main circuits shall not be less than 2.5mm2.

Generally, sizes of conductors for various circuits will be shown on circuit drawings

**6.2.14 Fixing/Mounting of Accessories, Fittings, etc.**

All screws, brackets, saddles, etc. used for fixings shall be of galvanized steel or other non-rusting material of equal strength.

Switchboards, distribution boards, consumer units and all other items of excessive weight or subject to heavy use, shall be fixed with properly sized non-rusting expansion bolts.

**7. LIGHTING FITTINGS**

Luminaires shall comply with BS 4533 and emergency lighting luminaires shall comply with Industry Standard and shall be marked with certification label and shall be installed as indicated on the drawing and the Bill of Quantities.

Tungsten filament lamps shall be of the general service type in accordance with IRR BS 161 and fluorescent lamps shall comply with BS 1853.

The Contractor shall include for the provision of handling, taking delivery, safe storage, wiring, assembling and erecting of all lighting fittings as specified. All means necessary to protect electrical materials and fixtures during transport and before, during and after installation shall be provided to ensure that no damage occurs to the materials or their surfaces. Electrical fixtures shall be supplied in their original packaging.

All pendants fittings shall be fixed to conduit boxes with brass screws. Lighting fittings detailed for the purpose of establishing a high standard of finishing shall under no circumstances be substituted without prior approval of the Project Manager.

In case of rectangular shaped ceiling fitting the extreme ends of the fittings shall be secured to suitable support in addition to the central conduit box fittings. Supports shall be provided and fixed by the contractor.

The whole of the metal work of each lighting fittings shall be effectively bonded to earth. Where ball and/or ankle joints are not made by the manufacturers, the contractor shall include the cost of additional work necessary in his tender. Minimum size of internal wiring shall be 1.5 mm squared. Each lighting fitting shall be provided with the number, type and size of lamps as detailed in the specifications.

Self-contained emergency lighting luminaires shall be of the non-maintained type self-contained and equipped with an 8W fluorescent tube and shall be fitted with a means of testing which shall comprise a push-button or similar device that cannot be left in the test position. They shall be provided with a means of isolating the lamp circuit for maintenance purposes.

Unless otherwise indicated, fixed luminaires shall be Class I and hand lamps shall be Class III rated at 50 volts.

Unless otherwise indicated, enclosure to luminaires shall provide a minimum degree of protection of IP20 when located within buildings and IP23 when located outside buildings, but luminaires mounted externally and less than 2m above finished ground of paved level shall be IP44.

The Contractor must order the appropriate type of lamp holder in ordering lighting fittings, to ensure that the correct lamp holders are provided irrespective of the type normally supplied by the manufacturer.

Lampshades shall be of extra heavy duty and shall be provided for every specified lighting fitting. They shall be heavy brass type (except for plain pendants where reinforced Bakelite type shall be used). Lampshades are supported by flexible cable; the holders shall have “Cord grip” arrangements and in the case of metal shades earthing screws shall be provided on each of the holders.

**8. FIRE DETECTION AND ALARM SYSTEM**

The works shall include supply and installation of the fire detection and alarm system elements complete with fixing accessories of the Menvier / GENT intelligent addressable fire detection system or approved equivalent.

The system components shall be Loop wired using using 2-core fire resistant OHLS 300/500V stranded copper cables.

The works shall also include preparation of 3 Sets of Hard and Soft Copies of "As- Built" Drawings, Manuals, Testing and Commissioning the System to the Satisfaction of the Engineer.

**9. EARTHING**

**9.1 General Installation Earthing**

a) Earth electrodes shall be minimum 1200mm long by 15mm diameter hard drawn copper rod and shall be located at a convenient position as close as possible to the building. The terminal head of each electrode shall be in a concrete inspection pit, with cover. If the resistance to earth is not satisfactory with one electrode, then additional electrodes or an earth mat shall be provided as directed by the Engineer.

b) Particular attention should be given to conduit and trunking installations to ensure that the earth continuity is reliable and permanent.

c) All apparatus or parts thereof not solidly connected to the earthing system shall be connected thereto in an approved manner by solid copper conductors secured by means of substantial bonding clamps.

d) All services entering the installation at earth potential shall be efficiently bonded to the main earth point.

e) All joints in the earth system shall be made with solderless connectors, or by an approved brazing method.

f) The resistance of the earth continuity system when measured between the main earth point and any other point in the installation, including all metalwork, which may provide a path to earth, such as gas, water pipes, etc., shall not exceed 0.5 ohms.

g) All flexible metallic tubing shall have a bare earth conductor run with the tubing, the ends being securely bonded. The size of the earth conductor shall be as indicated in the current edition of the IEE Regulations.

h) Care should be taken that the neutral conductor does not become accidentally earthed.

i) In accordance with the UEDCL's procedure of multiple neutral earthing, the neutral of the supply is to be bonded to the earth pipe. The mechanics of bonding will be performed by an official of the UEDCL.

j) Earthing shall conform to the 16th edition of the IEE Regulations.

**9.2 Distribution System Earthing**

All distribution boards shall be earthed in accordance with the IEE Regulations. All metalwork associated with the installation shall be earthed to comply with the Regulations currently in force.

**9.3 Lightning Protection**

Lightning protection systems in accordance with the requirements of BS 6651/1992 shall be installed. This shall incorporate air terminals down conductors and an earth terminal.

Lightning protection installation shall, in general, consist of copper or aluminum tapes of 25mm x 3mm section with similar clips, test clamps and copper bond earth rods, which shall be mounted in positions in conformance to the 16th edition of the IEE Regulations and as per Standard Code of Practice.

Earth roof tape shall be provided with a similar copper or aluminum down tape to the earth test position and from the earth test position to the earth electrodes enclosed in concrete earth pits.

The earth resistance of the completed system shall in no circumstance exceed 10 ohms. If this value cannot be obtained by means of a single earth electrode, extra rods may be used in parallel, and the Contractor should provide for such eventuality when pricing.

**10. STANDBY GENERATORS**

There will be two synchronized 750kVA / 415V / 50Hz standby generators permanently installed to provide part of the electricity requirements of the project in case of mains failure however the client may opt to supply it.

Incoming circuit breakers shall be included in the 415 V Main Low Voltage Switching Panel and shall be mechanically interlocked with the circuit breakers for the Electricity Supply Corporation of Malawi (ESCOM) mains supply, so that both supplies cannot be connected simultaneously.

**10.1 Particular Specification for the Generator Set**

**10.1.1 Scope**

Supply and transport to site as indicated in the drawings. install and commission the generator sets as per Specification here-below. All ratings are for 40 deg C ambient temperature, 1312 metres altitude above sea level and 66% average relative humidity in accordance with BS 5514. The tenderer shall also state the applicable warranty period for parts and labour.

**10.1.2 Engine**

Radiator cooled heavy duty diesel continuously rated to BS 5514 with sufficient power capacity to supply 10% over base load in one hour in every twelve hours.

**10.1.3 Cooling Radiator**

Tropical capacity with engine driven fan complete with protection guards. Radiator shall cool the engine at rated output in ambient temperature up to 52 deg. C.

**10.1.4 Engine Filtration**

Air Heavy duty dry type filters with replaceable elements.

Fuel Filter with replaceable element

Lubrication Oil filter with replaceable element

**10.1.5 Engine Protection**

Emergency automatic shutdown facilities for: -

(a) Low oil pressure

(b) High water temperature

(c) High oil temperature

(d) Low radiator water level

Heavy duty residential type exhaust silencer system for installation on site. Noise level better than 40dB (A) at 20m from the generator set. 12/24V starting system complete with high-capacity lead acid starting batteries rack mounted on machine base frame, heavy duty interconnecting cables with terminals and direct battery charging system.

**10.1.6 Coupling Arrangement**

Main drive flexible coupling with flange coupling of engine and alternator.

**10.1.7 Base**

Generator set and radiator to be mounted on fabricated base frame with a diesel tank, anti-vibration mounting pads positioned between the set and the base frame.

**10.1.8 Diesel tank**

To be of sufficient capacity for at least 8 hours continuous operation at a rated output. Fittings to include fuel fill point, fuel gauge, breather, drain plug and flexible fuel lines.

**10.1.9 Alternator**

Brush less, revolving field, self-regulating, self-exiting, screen protected, foot mounted, with grease lubricated end shield bearings continuously rated as specified in the Bills of Quantities, with overload (standby) capacity of at least 10% for one hour in twelve to IEC 34-1, BS 5000, BS 4999/40.

**10.1.10 Voltage Regulation**

By Automatic Voltage Control via main exciter with a regulation of +/- 1.5% for 0.8 power factor up to unity power factor loads, and 5% speed variations.

**10.1.11 Automatic Mains Failure Control**

Mains voltage sensing relay with mechanical-electrical interlock changeover MCCBs of appropriate rating. Constant voltage battery charger with charge rate ammeter.

Adjustable timers for engine start/engine stop/ load transfer and 3 attempt start to allow for normal fluctuations in supply.

Duty select switch: Off/manual/auto/test indicating lamps for mains on load/generator on load/mains available. Voltmeter with single or multi-position selection switch as applicable.

3 ammeters

50Hz frequency meter (suitably sealed) Individual fault indication lights

Battery condition indicator

Hours run recorder

**10.1.12 Installation**

The price shall include installation and commissioning complete and ready including installation and maintenance tools and manuals.

**10.1.13 Documentation**

Operation and Maintenance manuals for engine, alternator, circuit wiring diagrams and factory test sheets will have to be supplied.

Manufacturer's specification for engine and alternator to accompany tender.

**10.1.14 Spare Parts**

Standard spare parts kit for 2500 hours operation of the set should be included in the tender price.

**11. TESTING AND INSPECTION**

**11.1 Testing of Earthing System**

The resistance of the earth continuity system, when measured between the main earthing point and any other point in the installation, including all conduit and metal work which may provide a path to earth, shall not exceed 0.5ohms where steel conduit forms part or whole of the system, or 1.0 ohms if the earth continuity system is composed entirely of copper, copper alloy or aluminum. The Contractor is expected to allow for any necessary additional materials required to achieve the above resistance values.

**11.2 Installation Testing**

After completion and before commissioning, the entire installation shall be subjected to the following tests and any faults found shall be rectified by the Contractor at no extra cost.

**11.2.1 Polarity**

All fuses and control devices shall be connected in live conductors only.

**11.2.1 Insulation Resistance**

When tested with a 500V DC supply, the insulation resistance between conductors of live lines, lines and neutral, line and earth, neutral and earth shall not be less than 1 mega-ohm.

**11.2.3 Earth Continuity Resistance**

Resistance of earth continuity measured from a control pillar to the farthest end of a circuit shall not exceed 0.5 ohms.

**In addition to the above, the following tests and inspection shall be carried out where applicable: -**

i) Phase rotation

ii) Earth loop impedance

1. Operation of over current and earth fault relays by injection test.
2. Operation of all other protective relays and devices.
3. Levels of illumination.
4. Correct sequencing of all control equipment.
5. Visual inspection

The Engineer shall be given full opportunity to witness all tests and shall approve all test results.

The Engineer shall have the right to ask for specific tests to be repeated.

**12. COMMISSIONING AND SYSTEM DEMONSTRATION**

The whole installation shall be tested to the statutory requirements of the Malawi Wiring Regulations and commissioned in the presence of and to the satisfaction of the Engineer.

Four copies of test reports shall be provided within seven days of carrying out the test; and the reports shall include full details of how each test was carried out and a copy of all readings taken. These shall include in the Operating and Maintenance Manuals as stated elsewhere in the Specification.

Subsequent to the completion of all testing and commissioning to the approval of the Engineer, prior to the date of issue of the Practical Completion Certificate, the Contractor, when required by the Engineer, shall operate the plant and demonstrate that the overall systems function automatically correctly in accordance with the requirements of this Specification. A period of at least one week’s full running and operation including cost of fuel and other input shall be considered reasonable for this demonstration and shall be included in the Contractor’s price inserted in the Tender documents. During this period the Contractor shall be responsible for the operation and maintenance, if applicable, of the plant and may if appropriate, use this time to instruct the Employer’s staff in the operation and maintenance of the systems. The Contractor will provide an operational report of the demonstration.

PART 3 – MECHANICAL WORKS

**SPECIFICATION FOR MECHANICAL INSTALLATION MATERIALS AND WORKS (PLUMBING AND DRAINAGE)**

**Table of Contents**

**1. GENERAL ......................................................................................................... 1**

**2. APPROVAL .....................................................................................................1**

**3. MATERIALS ....................................................................................................1**

3.1 Copper Tubing.....................................................................................................................1

3.2 Galvanized Steel Pipework.................................................................................................2

3.3 PPR pipes and fittings ........................................................................................................2

3.4 PVC pressure pipework....................................................................................................... 2

3.5 uP.V.C. Soil Systems ...........................................................................................................2

3.6 Stop-Cocks, Taps and Stop Valves .....................................................................................3

3.7 Gate Valves .........................................................................................................................3

3.8 Globe Valves .......................................................................................................................3

3.9 Gas Valves...........................................................................................................................3

3.10 Check or Non-return Valves...................................................................................4

3.11 Ball Valves ...............................................................................................................4

3.12 Waste Fitment Traps ..............................................................................................4

3.12.1 Standard and Deep Seal P & S Traps.....................................................................4

3.12.2 Anti-Syphon Traps .................................................................................................. 4

**4 WORKMANSHIPS.....................................................................................4**

4.1 Water Services Installation................................................................................................4

4.2 Sanitary Services ................................................................................................................5

4.3 Pipe Supports for Suspended Pipework ............................................................................6

4.4 Underground pipe lines ...................................................................................................... 7

4.4.1 Setting Out ..........................................................................................................7

4.4.2 Breaking up Surface (if in roads) ........................................................................7

4.4.3 Excavation for Water Main ................................................................................7

4.4.4 Excavation for Drainage pipes............................................................................9

4.4.5 Laying of Concrete Beds or other Supports for Pipes (if required) .....................9

4.4.6 Pipe Laying and Jointing ....................................................................................9

4.4.7 Protection of Underground Steel Pipes............................................................10

4.4.8 Manholes and Inspection Chambers ................................................................10

4.4.9 Gulley Connections ...........................................................................................11

4.4.10 Surface Boxes, covers, etc. .................................................................................11

4.4.11 Testing of Pipelines ...........................................................................................12

4.4.12 Concrete bedding, Haunching and Surround ...................................................12

4.4.13 Backfilling ..........................................................................................................12

4.4.14 Reinstatement of Surfaces ................................................................................12

4.5 Sanitary Appliances...........................................................................................12

**5.0 COLD WATER BOOSTER PUMPS ...........................................................13**

**6.0 TESTING AND INSPECTION .................................................................13**

**7.0 COLOUR CODING IN GENERAL ...........................................................17**

**8.0 STERILIZATION OF HOT AND COLD-WATER SUPPLY SYSTEM...........17**

**9.0 CHAMBERS AND MANHOLES ..............................................................18**

**10.0 TESTING OF MANHOLES ......................................................................18**

**11. COLD WATER STORAGE TANKS...........................................................18**

**12. FIRE FIGHTING INSTALLATION ..........................................................18**

12.1 Pipe Fittings ....................................................................................................18

12.2 Hose reel Installation ........................................................................................19

12.2.1 Pipes and Pipe Fittings ......................................................................................19

12.2.2 Valves ................................................................................................................19

12.2.3 Hose reels ...........................................................................................................19

12.2.4 Pumps................................................................................................................19

12.2.5 Fire Extinguishers ............................................................................................20

**1. GENERAL**

This section specifies the general requirements for plant, equipment, and materials forming part of the following:

a) Plumbing and Drainage

b) Cold water Supply and Storage

c) Fire Fighting Installation

**2. APPROVAL**

The Contract works must be carried out strictly in accordance with the following documents: -

1. Local Malawi laws and by-laws and Utility and Local Authority requirements.
2. Relevant British Standard Specifications and Codes of Practice, published by the British Standards Institution (hereafter referred to as B.S. and C.P. respectively) as implemented in Malawi
3. Performance Specification.
4. Any working drawings produced by the Contractor and approved by the Engineer.
5. The Engineer’s instructions, drawings and details.

The Contractor shall undertake all modifications demanded by the authorities in order to comply with the regulations, and produce all certificates, if any, from the authorities without extra charge.

After the Contract works are handed over to the Client, the contractor will submit as built drawings to be approved by the Engineer after which the contractor will submit to the Client a set of as built drawings in hard and soft copies.

**3. MATERIALS**

**3.1 Copper Tubing**

All copper tubing shall be manufactured in accordance with B.S. 659 from C.106

'Phosphorus De-oxide Non-Arsenical Copper' in accordance with B.S 6071.

Pipe joints shall be made with soldered capillary fittings and connection to equipment shall be with compression fittings manufactured in accordance with B.S. 864.

Copper tubing is to be used as connection tubes between steel pipework and sanitary or laboratory fittings. In order to avoid direct contact a brass straight connector shall be positioned between the steel pipe and the copper tube.

**3.2 Galvanized Steel Pipework**

Galvanized steel pipework shall be manufactured to comply in all respects with the standards described and in accordance with the requirements of B.S. 1387 and 143 respectively.

**3.3 PPR pipes and fittings**

The PPR pipes and fittings shall be produced from polypropylene Random type PN25 material or equivalent which has high molecular weight and excellent creep resistance.

The installation shall be in accordance with the manufacturer’s recommendation with provision for expansion, including all necessary fittings and accessories. The pipe shall be tested at 15 bars for one hour, immediately after the preliminary test, the main test shall be carried out at 10bars for 24 Hours. There shall be no leakage of any kind not even in the form of moisture in either of the tests. The installation must be perfectly tight.

**3.4 PVC pressure pipework**

All P.V.C pipes for cold water services shall comply with the requirements of BS 3505 and all fittings shall comply with BS4346.

**3.5 uP.V.C. Soil Systems**

u. P.V.C soil pipe and fittings shall be supplied and fixed as indicated on the drawings and Schedules.

The pipes and fittings shall comply in all respects to British Standard 4514 and shall where appropriate bear the British Standard Kite Mark as Terrain Manufacture or equal and approved.

**3.6 Stop-Cocks, Taps and Stop Valves**

Stop cocks for underground use shall be plug cock pattern or screw down pattern complying with requirements of B.S.2580.

Taps and stop valves shall be screw down pattern and shall comply with the requirements pf B.S. 1010 fitted with washers complying with B.S.3457. Hose taps and hose connections shall have outlet nosels screwed in accordance with the requirements of B.S.1010.

**3.7 Gate Valves**

All gate valves 50mm nominal bore and above, other than those required for fitting to buried water mains shall be of cast iron construction in accordance with the requirements of B.S. 5150. All gate valves required for fitting to bury water mains shall be of cast iron construction in accordance with the requirements of B.S. 5163.

All gate valves up to and including 50mm nominal bore shall be of bronze construction in accordance with the requirements of B.S. 1952.

The pressure classification of all gate valves shall depend upon the pressure conditions pertaining to the site of works.

**3.8 Globe Valves**

All globe valves up to and including 50mm nominal bore shall be of bronze construction in accordance with the requirements of B.S. 5154. The pressure classification of all globe valves shall depend upon the pressure conditions pertaining to the site of works.

**3.9 Gas Valves**

To be globe valves in accordance with B.S. 5154.

**3.10 Check or Non-return Valves**

All check or non-return valves up to and including 50mm nominal bore shall be of the swing check type of bronze construction in accordance with B.S. 5154.

All check or non-return valves 50mm nominal bore and above shall be of the swing check type of cast iron construction in accordance with the requirements of B.S. 5153.

The pressure classification of all check non-return valves shall depend on the pressure conditions pertaining to site of the works.

**3.11 Ball Valves**

All ball valves for use in connection with hot and cold-water services shall be of Portsmouth type in accordance with the requirements of B.S 1212 and construction of bronze or other non-corrosive material

**3.12 Waste Fitment Traps**

**3.12.1 Standard and Deep Seal P & S Traps**

Where standard or deep seal traps are specified, they shall be manufactured in suitable non-ferrous materials in accordance with the full requirements of B.S. 1184.

**3.12.2 Anti-Syphon Traps**

Where anti-syphon traps are specified, these shall be similar or equal to the range of traps manufactured by Greenwood and Hughes Ltd., Deacon Works, Littlehampton, Sussex, England.

The trade name for traps manufactured by this Company is 'Grevak'.

**4. WORKMANSHIP**

**4.1 Water Services Installation**

All work shall be carried out in accordance with C.P.342 and C.P.310 and with the approval of the Engineers

All water systems shall be provided with sufficient drain points and automatic air vents to enable them to function correctly. Valves and other user equipment shall be installed with adequate access for operation and maintenance. Where valves and other operational equipment are unavoidably installed beyond normal reach from a short step ladder, extension spindles with floor or wall pedestals shall be provided.

Screwed piping shall be installed with sufficient number of unions to facilitate easy removal of valves and fittings, and to enable alterations of pipework to be carried out without the need to cut the pipe.

Full allowance shall be made for the expansion and contraction of the pipework, precautions being taken to ensure that any forces produced by pipe movements are not transmitted to valves, equipment or plant. All screwed joints to piping and fittings shall be made with P.T.F.E. tape.

**4.2 Sanitary Services**

Soil, waste and vent pipe systems shall be installed in accordance with the best standard of modern practice as described in B.S. 5572:1978 to the approval of the Engineer.

It shall be ensured that all ground floor waste fittings are discharged to a gulley trap before passing to the sewer via a manhole.

All necessary roding and inspection facilities shall be provided within the draining system in positions where easy accessibility is available.

Where a branch requires roding facilities in a position to which normal access is unobtainable, then that branch shall be extended so as to provide a suitable purpose-made roding eye in the nearest adjacent wall or floor to which easy access is available.

The vent stacks shall terminate above roof level and where a stack passes through the roof, a weather skirt shall be provided. The roof shall be sealed after installation of the stacks.

The open of each stack shall be fitted with a plastic coated, or galvanized steel, wire guard.

Access for roding and testing shall be provided at the foot of each stack.

All sanitary appliances associated with the works shall be installed in accordance with CP305 as per the approval of the Engineer.

**4.3 Pipe Supports for Suspended Pipework**

|  |  |  |
| --- | --- | --- |
| Size | Copper Tube | Steel Tube |
| Nominal Bores | to B.S. 659 | to B.S. 1387 |
| ----------------------------------------------------------------------------- | | |
| 15mm | 1.25m | 2.0m |
| 20mm | 2.0m | 2.5m |
| 25mm | 2.0m | 2.5m |
| 32mm | 2.5m | 3.0m |
| 40mm | 2.5m | 3.0m |
|  |  |  |
| 50mm | 2.5m | 3.0m |
| 65mm | 3.0m | 3.5m |
|  |  |  |
| 80mm | 3.0m | 3.5m |
| 100mm | 3.0m | 4.0m |
| 125mm | 3.5m | 4.5m |
| 150mm | 4.5m | 5.5m |

Pipe runs shall be secured by pipe clips connected to pipe hangers, wall brackets, or trapeze type supports. 'U' bolts shall not be used as a substitute for pipe clips without the prior approval of the Engineer.

The support spacing for vertical runs shall not exceed one and a half times the distances given for horizontal runs.

An approximate guide to the maximum permissible support spacings in metres for steel and copper pipe and tube is given in the following table for horizontal runs:

**4.4 Underground pipelines**

All underground water and drainage service installations shall be according to modern practice as described in C.P. 301 and C.P. 310 respectively.

The following sequence shall be followed for operation for Underground Service Installation:

**4.4.1 Setting Out**

As described in B.S. Code of Practice 301 Clause 502

**4.4.2 Breaking up Surface (if in roads)**

As described in B.S. Code of Practice 301 Clause 503

**4.4.3 Excavation for Water Main**

As described in B.S. Code of Practice 301 Clause 503 and the following:-

The contractor shall excavate the pipe trenches in the line and to the depths indicated on the drawings or directed by the Engineer, all pipes must have a minimum cover of 50mm over top of the barrel of the B49 pipe when laid, plus or minus a tolerance of 75mm either way. All trenches shall be excavated in open cuttings.

Where the trench passes through grassland, arable land or garden, whether enclosed or otherwise, the turf, if any, shall be pared off and stacked, and the productive soil shall be carefully removed for a width of 600mm greater than the normal trench width, or equal to the overall width of track of the excavating machine whichever is greater, and laid aside to be subsequently used in reinstating the surface of the ground after the trench has been refilled.

The bottom of the trench shall be properly trimmed off, and all low places or irregularities shall be levelled up with fine material. Where rock or large stones are encountered, they shall be cut down to a depth of at least 75mm below the level at which the bottoms of the barrel of the pipes are to be laid, and covered to a like depth with fine material, so as to form a fine and even bed for the pipes.

Joint holes shall be excavated to such minimum dimensions as will allow the joints to be well and properly jointed.

The pipe trench shall be kept clear of water at all times.

The Contractor shall, whenever necessary, by means of timbering or otherwise, support the sides of the trench so as to make them thoroughly secure, and afford adequate support to adjoining roads, lands, building and property, during the whole time the trench remains open and shall remove such timbering when the trench has been backfilled. The cost of such timbering or other work shall be deemed to be included in the rates for excavation. In case the Contractor is instructed by the Engineer to leave any portion of such timber in position, the contractor will pay for it accordingly.

The clear width inside the timbering, in the case of single pipes, shall be at least 320mm in excess of the external diameter of the pipe being laid, in order to allow it to be freely lowered into position in the trench without damage to the external protection.

There more than one pipe is to be laid parallel, then the clear width inside the timbering shall be at least 520mm in excess of the combined external diameters of the pipes.

Any excavation below the specified depth, in error or without the instruction of the Engineer as the case may be, shall be refilled to the correct levels, at no extra cost, with mix 1:3:6 concrete or other approved materials.

If a mechanical excavator is used by the Contractor, he shall indemnify the Employer against all claims for damage which, in the opinion of the Engineer, may have been caused by the use of this point. When a mechanical excavator is used the bottom 230mm of excavation shall be excavated by hand to ensure an even bed for the pipes.

**4.4.4 Excavation for Drainage pipes**

Excavation shall be made to such depths and dimensions as may be required by the Engineer to obtain proper falls and firm foundations. No permanent construction shall commence at any bottom until the excavation has been examined and approved by the Engineer.

Prices shall include excavating in all materials met with, for trimming bottoms to the necessary falls and for excavation required for planking and strutting and working space.

All prices shall include keeping the whole of the trenches or other excavations free from water and for execution of such works and install such pumps as may be necessary to keep the excavations dry at all times. No sub-soil water shall be discharged into the sewage systems without the written permission of the Engineer.

**4.4.5 Laying of Concrete Beds or other Supports for Pipes (if required)**

As described in B.S. Code of Practice 301 Clause 504 and the following

All drains below buildings shall be encased in concrete 150mm thick. Drains below roads shall be protected by a reinforced concrete slab, 300mm below surface. 150mm thick and with same width as the trench.

Concrete beds and supports shall be concrete of mix 1:3:6 to 25mm maximum aggregate size

**4.4.6 Pipe Laying and Jointing**

Drainpipes shall be laid and jointed as described under B.S. Code of Practice 301 Clause 505.

Water pipes shall be laid and jointed as described under B.S. Code of Practice 310, Clause 401, 402, 403, and 404.

**4.4.7 Protection of Underground Steel Pipes**

Where laid underground, mild steel piping shall be protected by 'Denso' tape, or similar, wound on at least two layers thick or given two coats of approved bitumen.

**4.4.8 Manholes and Inspection Chambers**

Manholes and inspection chambers shall be constructed in accordance with the drawings and in the position shown on the drawings or directed by the Engineer. Foundation slabs and benching shall consist of concrete of the appropriate grades.

Benching to manhole floors shall have a minimum fall of 1 in 12 from the manhole walls and shall be finished tangentially vertical to the bore of the channel diameter. The intersection of the channel sides and the benching shall be finished in a sharp curve not greater than 30mm in diameter.

The benching shall be formed of concrete, as specified, floated to a hard smooth surface with a coat of cement mortar (1:1).

If required half channel pipes, bends and junctions shall be laid and bedded in cement mortar (1:3) to the required lines and levels, and both sides of the channel pipes shall be benched up with concrete of the appropriate grade and finished smooth to the slopes and levels as shown on the drawings or directed by the Engineer. The ends of all pipes shall be neatly built in and finished flush with cement mortar (1:3).

Walls of manholes and access shafts shall be constructed of concrete block work as specified in accordance with the drawings.

Walls shall be rendered internally for the full height with a cement and mortar (1:3) of at least12mm thickness finished with a completely smooth surface.

Infill reinforced concrete covers shall be precast so that the tops of the covers shall be flush at all points with the surrounding surface of the footway, verge or carriageway, as the case may be. Any slight adjustment of the cover level which may be necessary to accomplish this shall be effected by topping the sidewalls with concrete integral with the slab.

Where the depth of the invert exceeds 1 metre below the finished surface of the carriageway or the adjacent ground, step irons of heavy galvanized cast iron or galvanized mild steel round bar shall be built 300mm apart with alternate steps in line vertically and with such additional hand irons as they may direct. Step irons must be set into the walls when these are built and not subsequently.

All manholes when completed shall be watertight and to the satisfaction of the Engineer.

Vertical backdrops shall be positioned inside the manholes or tanks and be constructed in cast iron or PVC drainpipes and fittings.

**4.4.9 Gulley Connections**

Connections from gullies to sewers and surface water drains or ditches shall consist of PVC pipes and fittings as specified jointed with push-fit joints. All pipes, bends and junctions shall be laid to the lines and levels shown in the drawings or as directed by the Engineer.

**4.4.10 Surface Boxes, covers, etc.**

Surface boxes, manhole and other covers lying within the site of the works, shall be raised, lowered, altered or removed as directed by the Engineer.

**4.4.11 Testing of Pipelines**

After pipelines are connected up and joints have been sealed, the pipeline shall be tested before pipes are, if required, hunched or surrounded in concrete.

Methods of testing and inspection shall be in accordance with the requirements of the appropriate section in this Specification.

**4.4.12 Concrete bedding, Haunching and Surround**

Concrete bedding, haunching and surround shall be provided as necessary or where called for by the Engineer in accordance with the requirements laid down in B.S. Code of Practice 301, Clause 310.

**4.4.13 Backfilling**

Backfilling of trenches, headings and around manholes shall be carried out in accordance with the methods described in B.S. Code of Practice 301, Clause 508.

**4.4.14 Reinstatement of Surfaces**

Following the final backfilling of all trenches, headings and manhole surrounds, the surface of the excavated areas shall be fully reinstated to the approval of the Engineer.

Where excavations have been carried out in public highways or other areas not forming part of the site, prices will be deemed to allow for all charges associated with the temporary and final reinstatement requirements of the Local Highway Authority.

**4.5 Sanitary Appliances**

All sanitary appliances associated with the works shall be installed in accordance with CP 305 with the approval of the Engineer.

**5.0 COLD WATER BOOSTER PUMPS**

Cold water pumps shall boost water between the roof top Tank and sanitary drawing off points. The pump shall start and stop automatically by pressure contactor to meet the demand. The cold-water pump booster set shall comprise the following: One Electric motor driven pump, one jockey pump, pressure vessels, valves and accessories complete with a control panel.

**6.0 TESTING AND INSPECTION**

The following site tests for the pipework systems shall be carried out as part of the installation and shall be deemed to have been allowed for in the price.

**6.1 Underground Water Mains**

After laying, jointing and anchoring, the main shall be slowly and carefully charged with water, so that all air is expelled and allowed to stand full for three days before testing under pressure.

Tests shall be applied to sections of pipelines not exceeding 1000 metres in length or such lesser lengths as may be required, and pipe joints shall be left uncovered.

The open end of the main may be temporarily closed for testing under moderate pressure by fitting a water pipe expanding plug, of which several types are available. The end of the main and the plug should be secured by struts or otherwise, to resist the end of thrust of the water pressure in the main. If the section of the main tested terminates with a sluice valve, the wedge of the valve shall not be used to retain the water, with a plug and the wedge shall be placed in the open position while testing. Suitable end supports shall be provided to withstand the end thrust of the water pressure in the main.

The test pressure shall be applied by means of a manually operated test pump or, in case of a long mains of large diameter, by a power-driven test pump that shall be taken to ensure that required pressure is not exceeded. Pressure gauges should be recalibrated before the tests.

Prices shall be deemed to include for all test pumps and other equipment required under this clause of the specification.

The test pressure shall be one and half times the maximum working pressure except where a pipe is manufactured from a material for which the relevant BS specification designates differently, otherwise the maximum test pressure should not exceed 120, 180 and 240 metre head for class B, C or D pipes respectively.

The pipeline or pipework shall be filled with water in such a manner as to prevent any shock or water hammer and allow for the complete evacuation of air and kept under observation for leakages at static head for twenty-four hours. If there are no leakages the pressure shall be raised slowly to the required test pressure for that pipeline and maintained at that pressure for a period long enough for the Engineer to examine the whole section under test, or not less than 4 hours whichever is the longer period. Thereafter, for a period of 2 hours the leakage of water, as measured by the amount drawn into the pump to maintain the pressure must not exceed a rate of 0.1 litre per millimetre nominal internal diameter per kilometre length of main per 30 metres head for each 24 hours.

All pipes or joints which are proved to be in any way defective shall be cut out, remade and retested as often as may be necessary until a satisfactory test is obtained and any work which fails or is proved by test to be unsatisfactory in any way shall be cut out and redone by the contractor at his own expense.

In addition to the tests in separate sections, on completion the main shall be tested in whole or in parts to the same pressure and by the same procedure as that outlined for individual sections.

During pipe laying the gauge shall remain in the pipeline and shall be pulled by a stout rope or chain which shall be threaded through each successive pipe or tube so that the gauge is never more than one pipe length behind laying. Any debris collected in front of the gauge shall be regularly cleaned out before the next pipe is placed in position.

**6.2 Above ground internal water service installation**

All water service pipe systems installed above ground shall be tested hydraulically for a period of one hour to not less than one and a half times the design working pressure.

If preferred, the pipeline may be tested in sections. Any such section found to be satisfactory need not be the subject of a further test when the system has been completed, unless specifically requested by the Engineer.

During the test, each branch and joint shall be examined carefully for leaks any defects revealed shall be made good and the section re-tested.

All necessary precautions shall be taken to prevent damage occurring to special valves and fittings during the tests.

Any damaged item shall be replaced or repaired.

**6.3 Underground Drainage System**

A site test shall be carried out on all drainage pipes before concrete haunching, or surrounds are applied. These tests shall be carried out preferably from manhole to manhole.

Short branch drains connected to a main drain between manholes shall be tested as one system with the main drain. In long branches a testing junction shall be inserted next to the junction with the main drain and the branch tested separately. After the test has been passed, the testing junction shall be effectively sealed.

All tests on underground drains shall be water tests. Smoke tests shall not be permitted.

In certain circumstances, air tests may be permitted on cast iron drains at the discretion and to the approval of the Engineer.

Water tests shall be carried out in accordance with the methods described under B.S. Code of Practice 301, Clause 601 (b) and (c) and the test pressure shall not be less than1.52m head at the highest point in the pipe section and not more than 10.36 m head at any point in the section.

The test pressure shall be maintained for a period of one hour during which time the pipes and joints shall be inspected for sweating and leakage. Any leaks discovered during the test shall be made good and the section re-tested.

In addition to pressure tests, drainpipe runs shall also be tested for straightness where applicable. The test shall be carried out in accordance with one of the two methods described in B.S. Code of Practice 8301, Clause 602.

**6.4 Above Ground Soil, Waste and Ventilating Pipe System**

All soil, waste and ventilating pipe system forming part of the above ground installation shall be given a smoke test to a pressure of 39mm of water gauge and this pressure shall remain constant for a period of not less than 3 minutes.

Water tests on above ground soil, waste and ventilating pipe systems shall not be permitted.

Pressure tests shall be carried out before any work which is to be concealed is finally enclosed.

Any defects revealed by the tests shall be made good and the test repeated to the approval of the Engineer. In all other respects, tests shall comply with the BS58 requirements of B.S. Code of Practice 5572.

Following satisfactory pressure tests on the pipework systems, operational tests shall be carried out in accordance with the relevant B.S. Code of Practice on the system as a whole to establish that special valves, gauges, controls, fittings, equipment and plant are functioning correctly to the satisfaction of the Engineer.

**7.0 COLOUR CODING IN GENERAL**

All pipework shall be colour coded in accordance with the latest edition of B.S. 1710.

**8.0. STERILIZATION OF HOT AND COLD-WATER SUPPLY SYSTEM**

The sterilization procedure shall be carried out in accordance with the requirements of the BS Code of Practice 310, Clause 409 to the approval of the Engineer. The pipelines after testing shall be thoroughly flushed out and cleaned.

After the Engineer has approved the cleaning, the Contractor shall completely fill the pipelines with water to which he shall have added chloride of lime or other approved chemical to give a concentration of free chlorine of 50mg per litre.

Chlorine gas must not be injected directly into the main from a cylinder otherwise than through an approved chlorinator and care must be taken to ensure that there is no flow back into the preceding sections of the main.

The method used for sterilization shall be approved by the engineer and the solution allows them to remain in the pipelines for not less than 6 hours, nor more than 24 hours. Chlorine residual test shall then be taken at the end of the main furthest from the dosing point. The sterilization process shall be repeated until the free chlorine residual is less than 5mg per litre. Chlorine residual tests shall be carried out on site in order to obtain an accurate reading of free chlorine present.

**9.0 CHAMBERS AND MANHOLES**

Chambers and manholes shall be constructed to the dimensions and general arrangement detailed on the drawings and in the Contract. Chamber covers shall be constructed as for manholes.

**10.0 TESTING OF MANHOLES**

Manholes and other chambers shall be tested by filling with water after completion of backfilling.

The first 1.0 metre of depth may be filled as quickly as supply permits. Between this end and top water level the rate of filling must not exceed 1.0 metre in 24 hours. After filling it to top water level, no further water shall be introduced for 2 days. At the end of this period the manhole shall be topped up to water level and allowed to stand satisfactory if the fall in water in 24 hours does not exceed 15mm.

In the event of a fall exceeding the above manhole will be emptied and any defects made good prior to re-test as before, all at the Contractors expense.

**11. COLD WATER STORAGE TANKS**

The 3NO. 20 CUM sectional steel tanks on top of blocks A, B, and C, respectively, 2NO. 25

CUM sectional steel tanks for Blocks D, E, F and the 25 CUM for Block G shall be cleaned, have seal leaking joints sealed, ball valves and associated pipework replaced.

**12. FIRE FIGHTING INSTALLATION**

**12.1 Pipes and Pipe Fittings**

Pipes shall be of galvanized steel tubing to B.S. 1387:1967 Class C with pipe threads to B.S. 21. Pipe fitting shall be of wrought steel seamless pipe fitting to BS 1740 part 1: 1971.

Flanges shall be Steel flanges to B.S. 4504: 1969 PN 16

**12.2 Hose reel Installation**

**12.2.1 Pipes and Pipe Fittings**

Pipes shall be galvanized steel tubing to BS 1387:1967 Class C with pipe threads to BS 21.

Pipe Fittings shall be wrought steel seamless pipe fitting to BS 1740 Part 1: 1971.

**12.2.2 Valves**

Non-return Valves: lift type with bonze body and composition disk conforming to BS 5154 and generally as Crane type DM 118.

Gate Valves shall be bronze body and solid wedge disk having non-rising stem and wheel confirming to BS 5154 and generally as Crane type DM 160.

**12.2.3 Hose reels**

Hose reels shall be recessed, swinging, automatic type with 30 metres long x 25mm diameter hose and nylon spray/jet/shut-off nozzle conforming with BS 3169:1981

Each hose reel shall be fitted with a screw down bronze globe valve to the requirements of BS 5154 on the inlet to the reel.

**12.2.4 Pumps**

Fire Hose reel pumps shall consist of a duplicate set of end-suction centrifugal pumps, each pump rated for 2.27 litres per second flow producing a minimum head to all hose reels of 25 metres and one number diesel engine driven centrifugal pump, pressure vessel, valves and accessories.

Each pump shall be supplied complete with an electric motor, baseplate, antivibration mountings, gate valve on suction port and ate plus non-return valve on the discharge port.

The common suction pipe to the duplicate pumps set shall be fitted with an in-line strainer to BS 5154, generally as Crane type D 287 and foot valve strainer.

The fire hose reel pump shall be controlled by a pressure switch and tank to maintain the required minimum pressure head.

Pumps motors contactors, neon run-fail lamps, duty/stand-by automatic change-over switch and local isolator for the fire hose reels installation to be supplied and installed under this item shall be housed in a proprietary control panel. A bypass shall be constructed for the pumps.

**12.2.5 Fire Extinguishers**

Water/Carbon Dioxide Extinguishers shall be 9 litre/6kilogrammes nominal capacity water filled carbon dioxide cartridge operated portable fire extinguishers to comply with BS 1382.

Dry Powder Extinguishers shall be 9 kg nominal capacity non-toxic, water-repellant power charged/compressed gas expellant portable fire extinguisher to comply with BS 3465 supplied complete with discharge/directional hose.

**SECTION 7C**

**DRAWINGS**

**Section 7C. Drawings**

**Drawings are provided and bound separate as Volume 2:**

**SECTION 7D**

**The Environment, Health and Safety**

**A. ENVIRONMENTAL AND SOCIAL IMPACT MANAGEMENT**

**A 1. ENVIRONMENTAL MANAGEMENT TEAM (EMT)**

The Contracting Authority will be represented on site by a Resident Engineer (RE) and his inspection team will include an Environmental Control Officer (ECO) who shall determine members of the site supervision team as the Environmental Management Team (EMT) that will report on the activities to the Contracting Authority through RE.

The EMT will be responsible for monitoring the performance of the Contractor during the construction phase with regard to Environmental issues and to assess the effectiveness of the impact mitigation measures in protecting the environment on behalf of the Roads Authority and the local communities. The role of the EMT will be “pro-active” with regard to impacts seeking to predict and prevent negative impact and pollution.

The Contractor will provide one full time Contractor’s Health Safety and Environmental Liaison Officer (HSE Officer) to be responsible for the implementation of all environmental mitigation measures. The HSE Officer will also undertake liaison with local community leaders and ensure that the Contractor’s compliance with the requirements of the Malawi Environmental Affairs Department, the District Value’s Office, and other relevant authorities in connection with environmental and social considerations.

The Contractor shall prepare a Project Environmental Management Plan (PEMP) based on the headings, risks and responsibilities given in the EMP Table (see A11).

This Plan shall be particular to the works required under this Contract. The draft PEMP will be discussed, reviewed, where necessary amended and finally agreed in the EMT. The PEMP will form the principal document upon which all Environmental Monitoring will be based throughout the project.

**A 2. IMPACT MITIGATION MEASURES**

**A 2.1. LANDSCAPE PRESERVATION**

1. General

The Contractor shall exercise care to conserve the natural landscape and shall conduct his construction operations so as to prevent any unnecessary destruction, scarring, or defacing of the natural surroundings in the vicinity of the works. Except where clearing is required for permanent works, diversions or excavation operations, all trees, native shrubbery and vegetation shall be preserved and shall be protected from damage by the contractor’s construction operation and equipment. The edges of clearing and cuts through trees, shrubbery, and vegetation shall be irregularly shaped to soften the undesirable visual impact of straight lines. Movement of labour and equipment within the right-of-way and over routes provided for access to the work shall be performed in a manner to prevent damage to grazing land, crops or property.

Except as otherwise provided special reseeding or replanting will not be required under these specifications; however, on completion of the work all work areas not seeded shall be scarified and left in a condition which will facilitate natural re-vegetation provided for proper drainage and prevent erosion. All unnecessary destruction, scarring, damage or defacing reseeded or the landscape resulting from the Contractor’s operations shall be repaired, replanted reseeded or otherwise corrected as directed by the Resident Engineer and at the Contractor’s expense.

1. Construction Roads

The location, alignment, and grade of construction roads shall be subject to approval of the Resident Engineer. When no longer required by the Contractor, construction roads shall, if required by the Resident Engineer, be restored to the original contour and made impassable to vehicular traffic. The surfaces of such diversions shall be scarified as needed to provide a condition that will facilitate natural re-vegetation provided for proper drainage and prevent erosion.

1. Construction Facilities

The Contractor’s workshops office and yard area shall be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent. On completion of the project all temporary buildings including concrete footings and slabs, and all construction materials and debris shall be removed from the site. The area shall be

regarded, as required, so that all surfaces drain naturally, blend with natural terrain, and are left in a condition that will facilitate natural re-vegetation, provide for proper drainage and prevent erosion.

1. Blasting Precautions

In addition to any requirements of local regulations, the contractor shall adopt precautions when using explosives that will prevent scattering rocks, stumps, or other debris outside the work area, and prevent damage to surrounding trees, shrubbery and vegetation.

**A 2.2. PRESERVATION OF TREES AND SHRUBBERY**

1. Preservation

All trees and shrubbery which are not specifically required to be cleared up or removed for construction purposes shall be protected from any damage that may be caused by the construction operations and equipment. Special care shall be exercised where trees or shrubs are exposed to injuries by construction equipment, blasting excavating, dumping, chemical damage or other operations; and the Contractor shall adequately protect such trees by use of protective barriers or other methods approved by the Resident Engineer. The removal of trees or shrubs will only be permitted after prior approval by the Resident Engineer.

The layout of the Contractor’s construction facilities such as workshops, warehouse storage areas and parking areas; location of access and haul routes; and operation in borrow and spoil areas shall be planned and conducted in such a manner that all trees and shrubbery not approved for removal by the Resident Engineer shall be preserved and adequately protected from either direct or indirect damage by the Contractor’s operations.

Except in emergency cases or when otherwise approved by Resident Engineer, trees shall not be used as anchorages. Where such use is approved, the trunk shall be wrapped in with a sufficient thickness of approved protective material before any rope, cable, or wire is placed.

1. Repair or Treatment of Damage

The Contractor shall be responsible for injuries to trees and shrubs caused by his operations. The term “injury” shall include without limitation, bruising, scarring, tearing and breaking of roots, trunk or branches. All injured trees and shrubs shall be repaired or treated without delay, at the Contractor’s expense. If damage occurs, the Resident Engineer will determine method of repair or treatment to be used for injured trees and shrubs as recommended by an experienced horticulturist or a licensed tree surgeon provided by and at the expense of the Contractor.

1. Replacement

Trees or Shrubs that in the opinion of the Resident Engineer are beyond savings shall be removed and replaced early in the next planning season. The replacement shall be the same species or other approved species and of the maximum size that is practicable to plant and sustain growth in the particular environment. Replacement trees and shrubs shall be stayed, watered and maintained for a period of 1 year from the date of replacement.

**A 2.3. PREVENTION OF WATER POLLUTION**

1. General

The Contractor’s construction activities shall be performed by methods that will prevent entrance or accidental spillage, of solid matter, contaminants, debris, and other pollutants and wastes into streams, flowing or dry watercourses, lakes, and underground water sources, concrete, sanitary waste, industrial waste, radioactive substances, oil and other petroleum products, aggregate processing tailings, mineral salts and thermal pollution.

Dewatering work for structure foundations or earthworks operations adjacent to or encroaching on streams or watercourses shall be conducted in a manner to prevent muddy water and eroded materials from entering the streams or watercourses by construction of intercepting ditches, bypass channels, barriers, settling ponds or by other approved means. Excavated materials or other construction materials shall not be stockpiled or deposited near or on stream banks, lake shorelines or other watercourse perimeters where they can be washed away by high water or storm runoff or can in any way encroach upon watercourse itself.

Turbidity increases in a stream or other bodies of after that are caused by construction activities shall be strictly controlled. When necessary to perform required construction work in a stream channel, the turbidity may be increased, as approved by the Resident Engineer, for the shortest practicable period required to complete such work. This required construction work may include such work as diversion of a stream, construction or removal of cofferdams, specified earthworks in or adjacent to a stream channel, pile driving, and construction of turbidity control structures. Mechanized equipment shall not be operating in flowing water except as necessary to construct crossing or to perform the required construction.

Wastewater from aggregate processing, concrete batching, or other construction operations shall not enter streams, watercourses, or other surface waters without the use of such turbidity control methods as settling ponds, gravel-filter entrapment dikes, approved flocculating processes that are not harmful to fish, re-circulation systems for washing of aggregates or other approved methods. Any such wastewaters, discharged into surface of these specifications, settleable material is defined as that material possible. For the purpose of these specifications settleable material is defined as material which will settle from the water by gravity during a 1- hour quiescent detention period.

1. Compliance with law and regulations

The Contractor shall comply with applicable laws and regulations and water quality standards concerning the control and abatement of water pollution.

**A 2.4. ABATEMENT OF AIR POLLUTION**

The Contractor shall comply with applicable laws and regulations concerning the prevention and control of air pollution. Notwithstanding the above in conduct of construction activities and operation of equipment, the Contractor shall utilize such practicable methods and devices as are reasonably available to control prevent and otherwise minimize atmospheric emissions or discharges of air contaminants.

The emission of dust into the atmosphere shall be strictly controlled during the manufacture, handling and storage of concrete and road aggregates, and the Contractor shall use such methods and equipment as are necessary for the collection and disposal or prevention of dust during these operations. The Contractor’s methods of storing and handling cement and lime shall also include means of eliminating atmospheric discharges of dust. Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments or other inefficient operating conditions. Shall not be operated until corrective repairs or adjustments are made.

Burning of materials resulting from clearing of trees and bush, combustible construction materials, and rubbish will be permitted only when atmospheric conditions for burning are considered favourable and when authorized by the Resident Engineer. In lieu of burning, such combustible materials may be disposed of by other methods as provided in Clause B 2.10hereof. Where open burning is permitted, the burn piles shall be properly constructed to minimize smoke, and in no case shall unapproved materials such as tires, plastic rubber products, asphalt products, or other materials, that create heavy black smoke or nuisance odours, be burned.

**A 2.5. DUST ABATEMENT**

During the performance of the work required by this specifications or any other appurtenant thereto, whether on right-of-way provided by the Employer or elsewhere, the Contractor shall furnish all the labour, equipment, materials, and means required, and shall carry out proper and efficient measures wherever and as often as necessary to reduce the dust nuisance and to prevent dust which has originated from his operations from damaging crops, orchards, cultivated fields and dwellings or causing nuisance to obtain adequate control.

**A 2.6. NOISE ABATEMENT**

The Contractor shall comply with applicable National laws, orders and regulations concerning the prevention, control and abatement of excessive noise.

Blasting, the use of jackhammers, pile driving, rock crushing or other operations producing high-intensity impact noise may be not be performed during the night.

**A 2.7. LIGHT ABATEMENT**

The Contractor shall exercise special care to direct all stationary flood-light to shine downwards at an angle less than horizontal. These floodlights shall also be shielded so as not to be a nuisance to surrounding areas. No lighting shall include a residence in its direct beam.

The Contractor shall be responsible for correcting light problems when they occur as directed by the Resident Engineer.

**A 2.8. PRESERVATION OF HISTORICAL & ARCHAELOGICAL DATA**

Should the Contractor or any of his employees in the performance of his contract discover evidence of possible scientific, prehistoric, or archaeological data he will notify the Resident Engineer immediately, giving the location and nature of the findings. Written confirmation shall be forwarded within 2 days. The Contractor shall exercise care so as not to damage artefacts or fossils uncovered during excavation operation and shall provide such co-operation and assistance as may be necessary to preserve the findings for removal or other disposition by the employer. The Contractor will also report his findings for the Ministry of Forestry, Fisheries and Environmental Affairs and the authority responsible for antiquities.

Where appropriate by reasons of a discovery the Resident Engineer may order delays in the time of performance, or changes in the work, or both. If such delays, or changes or both are ordered, the time of performance and contract price shall be adjusted in accordance with the applicable clause in the conditions of contract.

The Contractor shall insert this Clause in all subcontracts that involve the performance of work on the project site.

**A 2.9. PESTCIDES**

Pesticides include herbicides, insecticides, fungicides rodenticides, and pesticides, surface disinfectants, animal repellent and insect repellent. Should the Contractor find it necessary to use pesticides in work areas of this contract, he shall submit his plan for such use to the Resident Engineer for written approval.

The Contractor shall read and comply with all labelling requirements when using pesticides.

**A2.10. CLEAN-UP AND DISPOSAL OF WASTE MATERIALS**

**Clean – Up**

The Contractor shall, at all times keep the construction area, including storage areas used free from accumulation of waste material or rubbish.

All wastewater and sewerage from office, residential and mobile camps shall be piped to soak pits or other disposal areas constructed in accordance with local government regulations, and where and when regulations require it the Contractor shall obtain a permit or other appropriate documentation approving the disposal methods used.

All used fuels, oils, other plant or vehicle fluids, and old tyres and tubes shall be collected to a central disposal area on a daily basis and disposed of in a manner approved by the Resident Engineer.

Servicing of plant equipment and vehicles shall whenever possible be carried out at a workshop area. This workshop area shall be equipped with secure storage areas for fuels oils and other fluids and constructed in such a way as to contain any spillage, which may occur, and similar storage where fluids can be stored securely prior to their disposal.

When servicing of plant, equipment and vehicles is carried out away from the workshop area it shall be done at locations and in such a manner as to avoid spillage and contamination of streams and other drainage courses. Any spillage shall be cleaned up by either burning in place or collecting the contaminated soils and burning them at the central disposal area, all to the satisfaction of the Resident Engineer.

Prior to the completion of the work, the Contractor shall remove from the vicinity of the work all facilities, buildings, rubbish, unused materials, concrete forms and other like material, belonging to him or used under his directions during construction.

All work areas shall be graded and left in a neat manner conforming to the natural appearance of the landscape as provided in Clause 8201.

Any residue deposited on the ground from washing out truck mixers, agitating trucks or any other similar concrete operations shall be buried or cleaned up in a manner acceptable to the Resident Engineer.

In the event of the Contractor’s failure to perform the above work, the work may be performed by the Employer at the expense of the Contractor, and his surety or sureties shall be liable therefore.

**Disposal of Waste Material**

1. General

Waste materials including, but not restricted to refuse, garbage, sanitary wastes industrial wastes and oil and other petroleum products, shall be disposed of by the Contractor. Disposal of combustible materials shall be by burying, where burial of such materials is approved by the Resident Engineer by burning, where burning of approved materials is permitted; or by removal from the construction area. Disposal of non-combustible materials

shall be by burying where burial of such materials is approved by the Resident Engineer or by removal from the construction area. Waste materials removed from the construction area shall be dumped at an approved dump

1. Disposal of Material by Burying

Only materials approved by the Resident Engineer may be buried. Burial shall be in pits and the location, size and depth of which shall be approved by the Resident Engineer. The pits shall be covered by at least 0.6 metre of earth material prior to abandonment.

1. Disposal of Material by Burning

All materials to be burned shall be piled in designated burning areas in such a manner as will cause the least fire hazards. Burning shall be through and complete and all charred pieces remaining after burning, except for scattered small pieces, shall be removed from the construction area and disposed of as otherwise provided in this Clause.

The Contractor shall at all times, take special precautions to prevent fire from spreading beyond the piles being burned and shall be liable for any damage caused by such burning operations. The Contractor shall have available, at all times, suitable equipment and supplies for use in preventing and suppressing fires and shall be subject to all laws and regulations locally applicable for pre-suppression, suppression and prevention of fires.

1. Disposal of Material by Removal

Material to be disposed of by removal from the construction area shall be removed from the area prior to the completion of the work under these specifications. All materials removed shall become the property of the Contractor.

Materials to be disposed of by dumping shall be hauled to an approved dump. It shall be the responsibility of the Contractor to make any arrangements of such dumping. Any fees for charges required to be paid for dumping of materials shall be paid by the Contractor and shall be included in the prices tendered in the Bill of Quantities for other work.

**A 3. PROJECT ENVIRONMENTAL MANAGEMENT PLAN (PEMP)**

The Contractor will be deemed to have prepared his tender upon sound environmental practice and the guidelines contained in this section together with the entire contents of the Guidelines to Environmental Impact Assessment issued by the Ministry of Forestry, Fisheries and Environmental Affairs in December 1997 and the heading applicable to this contract in the Environmental Management Plan that follows this Section; as well as Environmental and Social Management Guidelines in the Road Sector issued by the Roads Authority in March 2008.

The PEMP will be read in conjunction with and shall be deemed to include all descriptions of environmental protection and mitigation described elsewhere in the Specification, Design Standards and Conditions of Contract. The PEMP will supplement but not supersede normal Regulatory Controls from Health and Safety Inspectorates and shall be made available to all parties.

The following is a summary of the guidelines to be incorporated into the PEMP

1. **Specific proposals**

* Drainage and Proper installation of drainage structures

Soil erosion

* Controlling and management of excavation activities
* Installation of erosion control measures such as check dams, scour checks and impact dissipators
* Landscaping and re-vegetating road embankment and gravel sites

Pollution (air, noise, water)

* Supervision of construction traffic, including control of speed
* Sensitisation of workforce
* Maintenance of plant and equipment
* Proper disposal of construction debris, proper handling, storage and disposal of oil and oil wastes, and disposal of wastewater / sewage at Contractor’s /workmen’s camps

Materials sources

* Planned, controlled and restricted access to all materials sites
* Proper management of excavation activities
* Landscaping, terracing where necessary, and grassing and re-vegetation of materials sites
* Compensation of individuals/ communities as required for use of material
* Controlled blasting of hard stone material

Water Sources

* Consultation with communities during identification of sources
* Management of water usage

Deviations

* Planning of deviations
* Reinstating deviations (and old tracks) to original condition

Vegetation

* Prohibition of use of herbicides
* Landscaping and planting all disturbed areas (pits, deviations, embankments, camps sites)
* Planting of trees at main towns/trading centres along road for aesthetics and as pollution screens.

Demobilisation/ Decommissioning

* Proper removal and disposal of construction buildings and structures required for the contractors’/workmen’s camp, and construction wastes including oil, solid wastes, and debris after construction works are complete, and restoration to original condition where applicable.

Land/property and crops

* Notification to people about non – compensation for annual crops within road reserve
* Evaluate land/property loss due to deviations, materials sites and Contractor’s camp
* Compensation to be paid for land, crops and all property on land temporarily acquired for road construction works (camps and deviations) and for all crops outside road reserve that are removed/destroyed for clearing of carriageway, gravel pits and deviations

Public Health and Occupational Safety

* Provision of water supply for the workforce, and proper facilities for the disposal of solid and sanitary waste
* Provision of protective gear to workforce
* Provision of a first aid kit on site

Road Safety

* Supervision of construction traffic and management of construction activities
* Provision of safe access/egress to work sites
* Warning signs are erected.

Site of cultural, historical and traditional value

* All findings to be reported to the Resident Engineer, RA Ministry responsible for antiquities and Department of Environmental Affairs.
* All graves are avoided.

1. **Planning and prevention**

* Frequency of Environmental site meetings to be chaired by the Environmental Control Officer and attended by relevant parties
* Adoption of time scale and planning for all relevant measures
* Procedure for correction of bad practice
* Reinstatement of borrow pits

**Borrow areas**

* Borrow areas shall be reinstated in compliance with the following minimum specifications in the table below:

|  |
| --- |
| PIT AND QUARRY REINSTATEMENT SPECIFICATION |
| 1. At the completion of operations, the Contractor shall rehabilitate used, exhausted and obsolete pits and quarries. |
| 2. The sides and floors of pits shall be formed to a flowing finish with side slopes not steeper than 1 vertical to 6 in horizontal. |
| 3. During pit reshaping any material carried to the pit shall be spread uniformly over the entire shaped surface. The Contractor shall ensure that non – biodegradable and inert waste is removed and disposed of in licenced sites. The same will apply to toxic waste. |
| 4. Topsoil shall be spread over the shaped batters, filled areas and bare areas of the pits to a reasonable depth. |
| 5. Following the spreading of topsoil, the entire pit shall be ripped along the contours to a depth of 500mm and at not more than 500mm spacing. |

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| REVEGETATION SPECIFICATION |
| 1. Planting and direct seeding shall be carried out after the topsoil has been placed, shaped and prepared for planting and seeding operations |
| 2. The Contractor shall prepare a plant and seed species list that is representative of the native vegetation (trees, and understorey species) in adjacent areas and the list is to be included in the Environmental Management Plan. |
| 3. The plant and seed list shall describe the plant size and spacing of all plants, the quantities by seed species in a seed mix and the seeding rate (kg per hectare) to be used in any revegetation of the area to be rehabilitated. |
| 4. The Contractor shall supply and hand-plant tube stock in good condition using the species and spacing chosen in the plant list. |
| 5. The Contractor shall supply and direct seed the areas to be seeded using the seed species mix and seeding rate (kg per hectare) as described in the plant list. |
| 6. All planting, seeding and or weed control operations shall be undertaken in accordance with basic principles of REVEGETATION AND LANDSCAPING. |
| 7. The completion criteria for revegetation shall be in accordance with the Environmental Management Plan. |

**A 4. ENVIRONMENTAL TRAINING**

The ECO will be responsible for organising the environmental training of all the Engineer’s and Contractor’s staff. It is suggested that this training is coupled with the safety training that the Contractor should include in his own site management plan. The Contractor shall ensure that the Resident Engineer is informed of all staff that will work on the site and their general responsibilities and shall make sure that they are available to attend suitable briefing sessions arranged by the ECO on the environmental mitigation measures that are to be in place on the site.

The Contractor shall provide the ECO with a suitable room for the briefing and such administrative support and facilities as shall be ordered by the ECO.

**A 5. MEDICAL AND HIV/AIDS PREVENTATION PROGRAMMES**

To assist in the general health and well-being of both all the site staff and the residents in the community local to the works, the Roads Authority will organize and coordinate appropriate awareness training as well as health screening (other than accident prevention and medical aid facilities provided by the Contractor).

The Contractor shall ensure that the Resident Engineer is informed when any new staff commences work on the site such that health and HIV awareness and counselling can be provided either in group sessions or on an individual basis. The Contractor shall ensure that staff are available for briefing by the RA’s staff and shall make available suitable rooms, administrative support and provide any facilities or supplies against an order from the RA. The Contractor shall ensure that condoms provided as part of the HIV/STD control programme are readily available to all staff.

The RA will also arrange for the health screening of site workers in local medical facilities and the Contractor shall cooperate fully in these programmes by making staff available. The Contractor shall ensure that the Resident Engineer and local medical officials are informed promptly of any workers suffering from the symptoms of infectious disease so appropriate help and treatment can be arranged promptly.

**A 6 ROAD SAFETY TRAINING**

The RA will be arranging road safety training and awareness sessions in local schools and community centres. The Contractor will assist the RA when requested with administrative support and where ordered the provision of supplies for these courses and programmes.

**A 7 Responsible Authorities**

The Contractor is advised that the following authorities have an interest in the environmental and social protective measures associated with this road construction project.

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| Environmental Affairs Department  Public Health Department  Health and Safety Office  District Valuer |
| Mangochi District Assembly  Private Bag 138  Mangochi |

**A 8 Site Clearance**

No trees are to be cut or removed unless required to be cleared or removed for construction works. Where there are branches overhanging roads or traffic diversion routes the Contractor shall agree with the SR the cutting back necessary to provide for clear vehicle access. The Branch cutting shall then be carried carefully using saws to leave a clean-cut face with no damages or snags.

**A 9 Finishing of verges and other works area**

Verges, routes of diversion roads, site camps and all other areas where the Contractor’s work has heavily compacted the soil shall be loosened, spread with a thin layer of grass plant rich soil and firmed by foot or a light roller so as to encourage the re-growth of natural vegetation.

**A 10 Water Pollution**

The Contractor shall avoid the pollution of watercourses and ground water. Sanitary facilities for all site workers convenient to the working sites shall be provided to enable environmentally sensitive disposal of the waste. The storage of bitumen fuel and oil for the works operations shall be arranged in working sites, refuelling of all plant and equipment and servicing practices shall be arranged to prevent the uncontrolled spilling of any oil-based products.

Mitigation measures shall include drip trays, working on paved surfaces with waste collection arrangements and the provision of oil absorbing material for spills that can be subsequently disposed safely by burning.

**A 11 Environmental Management Plan Table**

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| --- | --- | --- | --- | --- | --- |
| **Environmental Social Impact** | **Proposed Mitigation and Aspect for Monitoring** | **Responsibility for intervention and monitoring during design, construction and defects liability period** | **Responsibility for mitigation monitoring and/or maintenance after defects liability period** | **Monitoring means**  **(c) = Construction**  **(o) = operation** | **Recommended frequency of monitoring** |
| **ENVIRONMENTAL MANAGEMENT** | | | | | |
| Changes in hydrology impeded drainage | Install drainage structure properly  Efficiency of drainage structures | Design consultant Supervising Engineer  Supervising Engineer | Contractor  District Works Offices | Inspection  (o) routine maintenance and road condition survey | (c) during construction and on completion of each structure |
| Soil erosion | * Control earthworks * Install drainage structures properly * Install erosion control measures * Landscape and re-vegetate gravel sites * Management of excavation activities * Impact on erosion (on road, off road, embankments, riverbanks etc) * Efficiency of erosion control measures * Landscape and grass road embankment | Supervising Engineer and Contractor Designer /RA  District Works Offices RA | Supervising Engineer and Contractor | (c) inspection   1. routine maintenance and road condition survey   (c) inspection   1. routine maintenance and road condition survey | (c) daily erosion control measures during construction and on completion of measures  (o) once in 6 months  (c) once a month |
| Air pollution | * Control speed of construction vehicles * Prohibit idling of vehicles * Sensitive workforce * Maintenance of plant and equipment * Plant trees in towns as pollution screens * Impose speed limits for all vehicles, especially at towns and villages * sensitize motorists/road users | Supervising Engineer and Contractor  Designer RA | TA \Health and Environment committees Traffic police | (c) inspection/ observation  (o) observation | (c) Daily /random  (o) random |

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| --- | --- | --- | --- | --- | --- |
| Noise pollution | * Sensitize workforce * Supervise construction traffic * Sensitise drivers of construction vehicles * Maintain plant and equipment * Impose speed limits for all vehicles, especially at towns and villages * Sensitize motorists /road users | Supervising Engineer and Contractor | TA Health and environment Committees  Traffic police | (c) inspection/ observation  (o) observation | 1. Daily /random   (o) random |
| Water pollution | * Incorporate erosion control measures * Works on culverts to be done in the dry season * Proper disposal of construction debris * Proper handling, storage and disposal of oil and oil wastes * Proper disposal of wastewater /sewerage at Contractor’s workmen’s camps | Designer RA  Supervising Engineer and Constructor | Contractor | (c) inspection | (c) daily |
| Oil pollution | Construct parking bays at larger trading centres for heavy vehicles.   * Proper storage, handling and disposal of oil and oil wastes * Maintain plant and equipment * Maintenance of construction vehicles should be carried out in the Contractor’s camp | Design Consultant Supervising Engineer and Contractor  Supervising Engineer and Contractor | Contractor | (c) Inspection  (o) routine maintenance | (c) during construction and on completion  (o) once in 6 months  (c) daily |
| Gravel sites | * Inform people living at/near the sites that the pits have been selected for exploitation. * Plan access to gravel sites * Control and restrict access to gravel sites (e.g. by fencing) * Control earthworks * Proper management of excavation activities * Landscape terrace if necessary, and grass site s. Replace trees that were removed during excavation * Discourage pits being made into water pans after construction Rehabilitate old unused gravel pits * Compensate individuals/ communities as required for use of material * Progress of rehabilitated gravel sites (use of site, established vegetation) | Supervising engineer and Contractor  Supervising Engineer and Contractor  Contractor  Supervising Engineer | District Works offices RA | (c) meeting  (c) Inspection  (c) Payment records  (o) Inspection | (c) Once immediately after selection of sites  (c) daily  (o) once before excavation begins and at specified periods as agreed thereafter  (c) once in 2 months  (o) once in 6 months |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Hard stone sources | * Inform communities living at/near the sites that the sites have been selected for exploitation. * Plan access to hard stone sites * Control and restrict access to hard stone sites (e.g. by fencing) * Control blasting * Proper management of exploitation activities * Landscape site after exploitation and grass sites. Replace trees or vegetation that were removed during excavation * Compensate individuals / communities as required for use of material | Supervising Engineer and Contractor  Supervising Engineer and Contractor  Contractor |  | (c) meeting  (c) inspection  (c) payments records | (c) Once immediately after selection of sites  (c) daily  (o) once before excavation begins and at specified periods as agreed thereafter |
| Sand sources | * Take sand from beds of large rivers only * Extraction to be done during low flow | Supervising Engineer and Contractor | n/a | (c) inspection | (c) during mining |
| Water sources | * Consult with communities during identification of sources * Management of water usage | Designer/RA | n/a | (c) meetings, inspection, check plans and schedule | (c) during rains during abstraction at source and at random |
| Deviations | * Plans deviations * Adhere to road reserve if possible * Obtain permission from inhabitant/community if deviation goes beyond road reserve * Re instate deviations (and old tracks) to original condition * Pay compensation for crops/property removed/destroyed by deviations * Monitor rehabilitation of deviations | Supervising Engineer and  Contractor  Contractor | Contractor  District Works Offices RA | (c) check plans inspections  (o) Payment records | (o) daily when deviations are in use  (c) once before constructing deviations   1. Once in 6 months |
| Vegetation / flora / forests | * Control clearing * Prohibit clearing using herbicides * Replant areas where vegetation is unnecessarily removed * Landscaping and planting all disturbed areas (pits, deviations embankments, camp sites) * Plant trees at main towns/trading centre s along road | Supervising Engineer and Contractor  TA Health and Environment Committees | Contractor | (c) inspection | (c) daily |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | * Planting and grassing should be done just before the rains * Discourage use of firewood/charcoal by providing alternatives * Care for tree/plants | |  | TA Health and Environment Committees | (c) observation  (o) observation | (c) weekly  (o) Random |
| Workmanship | * locate camp in terminal town * provide water supply * provide proper sanitation facilities on site * Provide proper solid waste disposal facilities * Have central canteen facilities * Discourage use of firewood/charcoal by providing alternatives * Manage water use in camps | | Supervising Engineer and Contractor | Contractor | (c) inspection | (c) daily |
| Visual Enlargement | * Landscaping and planting of deviations, gravel sites and camp * Plant trees at terminal towns and trading centres * Care for plants and trees | | Designer /RA  TA health and Environment committees | Contractor  TA Health and Environment Committees | (c) inspection  (c) observation  (o) observation | (c) daily / random  (c) Weekly  (o) random |
| Construction waste | * Proper disposal of construction wastes including oil, solid wastes and debris | | Supervising Engineer and Contractor | Contractor | (c) inspection | (c) weekly |
| Demobilisation | * Clean up site * Remove all debris * Remove to original condition | | Supervising Engineer and Contractor | Contractor | (c) inspection and certificate of completion | (c) on completion of road construction works |
| **SOCIAL MITIGATION** | | | | | | |
| Settlement | * Plan for increased population and subsequent expansion of terminal towns and trading centres * Conduct STD/AIDS awareness campaign * Plan for local security | District Physical Planning Department  Supervising Engineer  TAs | | District Physical Planning Department | (c) meetings, barazas  (o) reports  (c) inspection records  (c) meetings, deployment of local police | (c) once during construction  (o) annually  (c) continuous  (c) continuous  (o) continuous |
| Loss of Land /property | * Identify project affected people * Notify people about non-compensation for annual crops within road reserve * Evaluate land/property loss due to deviations, materials sites and contractor’s camp * Compensation to be paid for land and all property on land to temporally acquired for road construction works | RA  Contractor | | n/a | (c) inspection  (c) notices, meetings  (c) inspection  (c) payments records | (c) Once before construction commences  (c) compensation paid once after assessment of loss before construction |
| Loss of crops | * Limits clearing of crops as much as possible * Pay compensation for all crops outside road reserve that are removed/destroyed for clearing of carriage way, gravel pits and deviations * Compensation to be paid for perennial crops within road reserve | RA  Supervising Engineer and Contractor  RA | | Supervising Engineer and Contractor | (c) inspector  (c) payment records | (c) Daily  (c) Once after assessment of loss before construction |
| Employment | Recruit local people, of which at least 25% should be women | Contractor | | n/a | (o) certificate of employment | (o) quarterly |
| Public Health and Occupational safety | * Reduce/minimize pollution as above * Provide water supply at camps * Proper disposal of solid and sanitary waste at camps * Design and locate pit latrines prudently * Have communal ablution facilities * Conduct STD/AIDS awareness campaign and distribute condoms * Provide potable water for workforce * Provision of protective gear to workforce * First Aid Kit on site * Appoint Health Safety and Environment officer on site * Contractor should have workmen’s compensation cover * Monitor impact on public health (incidence of malaria, respiratory diseases, STDs HIV/AIDS) * Conduct COVID-19 awareness and prevention measures, provide hand washing and sanitising facilities, provide face masks, observe social distancing | Supervising Engineer and Contractor  RA/Ministry of health | | Contractor  RA Ministry of Health | (c) Inspection  (o) Independent study | (c) daily  (o) once in 6 months |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Disturbance to public | * Minimise pollution as above * Erect information and warning signs * Control construction activities * Construct special parking bay at terminal towns for trucks/heavy vehicles | Supervising Engineer  Supervising Engineer  Supervising Engineer and Contractor  Design Consultant | Contractor District Works Offices | (c) Inspection  (c) Inspection  (c) Inspection  (c) Inspection  (o) routines maintenance | (c) daily  (c) when affected  (c) daily  (c) during construction and on completion  (o) once in 6 months |
| Road Safety | * Install speed bumps near school and trading centres * Supervise construction traffic * Ensure safe access/egress to work sites * Erect warning signs * Construct shoulders which can be used by pedestrians and non-motorized traffic * Construct special parking bay at large trading centres for trucks/heavy vehicles * Impact on road safety (number of accidents) | Design Engineer  Supervising Engineer and Contractor  Design Consultant | Supervising Engineer and Contractor  District Works Offices  District Works offices  RA | (o) (c) Inspection  (c) Inspection  (o) routines maintenance  (c) Inspection  (o) routine maintenance  (o) Police report | c) daily  (c) when designed  (o) once in 6 moths |
| Sites of cultural historical and traditional value | * Report all findings to Supervising Engineer, RA, Ministry responsible for antiquities and DEA * Avoid all graves | Supervising Engineer and Contractor | n/a | (c) Inspection and report | (c) As need arises |
| Socio-economic status | * Changes in income level * Change in health status * Changes in education levels | n/a | RA | (o) Independent Study | (o) once in 5 years |
| Land use | Change in land use area covered by settlement, arable land, pasture, degraded land shrub/bushland, social land | n/a | District Agriculture Offices  District Physical Planning Dept | (o) Independent Study | (o) once in 5 years |
| Economic activity in project area | * Changes in agricultural production and marketing * Changes in livestock production and marketing | n/a | District Agricultural Officers/RA | (o) Independent study | (o) once in 5 years |

**B. STAFF CONDITIONS AND WORKING HOURS**

**B 1. STAFF CONDITIONS**

The wages paid to staff employed by the contractor shall be fair and reasonable having regard to those commonly paid in the trade or industry in which such staff are employed and undertake to comply with such requirements relating to hours of work and conditions of labour as are or are or may from time to time be laid down in the legislation of Malawi.

In the event of any difference or dispute arising as to what wages ought to be paid, or what hours of working conditions ought to be observed it shall be reported to the Secretary for Labour as prescribed under the Trade Disputes (Arbitration and Settlement) Act (Cap. 54.02 for settlement.

Without prejudice to his obligations under Section 43 of the Employment Act (Cap 55:02)., the Contractor shall keep proper wages books and time sheets showing the wages paid and the time worked by the staff under his employment in and about the carrying out of this Contract and such wages books and time sheets shall be produced whenever required for inspection on of any officer authorized by the Contracting authority.

The Contractor shall recognize the freedom of his employees to be members of Trade Unions.

The Contractor shall at all times during the continuance of the Contract display a copy of this Article in full on his Site Office notice boards for the information of his employees.

Due precautions shall be taken by the contractor, and at his own cost, to ensure the safety of his staff and labour and in collaboration with and to the requirements of the local health authorities, to ensure that medical staff, first aid equipment and stores, sick bay and suitable ambulance service are available at camps, housing and on the site at all times throughout the period of the Contract and that suitable arrangements are made for the prevention of epidemics and for all necessary welfare and hygiene requirements. The Contractor shall ensure that all his staff is given awareness programmes on HIV/AIDS.

The Contractor shall maintain records of health and safety and make reports concerning the health and safety of his employees as the Resident Engineer may from time to time prescribe. The Contractor shall at all times take the necessary precautions to protect all staff and labour employed on the site from insect nuisance occasioned by the same. The contractor shall so far as is reasonably practicable, having regard to local conditions, provide on the site an adequate supply of drinking and other water for the use of his staff and labour.

The Contractor shall report to the Resident Engineer details of any accident as soon as possible after its occurrence. In the case of a fatality or serious accident, the Contractor shall, in addition, notify the Resident Engineer immediately by the quickest means available.

The Contractor shall make all necessary arrangements for the transport to any place as required for burial of any of his expatriate employee or member of their families who may die in Malawi. The Contractor shall also be responsible for the transport to the place of origin and burial of any of his local employees who may die while engaged upon the Works.

The Contractor shall at all times take all reasonable precautions for the protection of persons and property in the neighbourhood of the Works

**B 2. WORKING OUTSIDE NORMAL WORKING HOURS**

If any steps taken by the Contractor for working outside normal working hours involve additional supervision costs to the Engineer, such costs shall be recoverable from the Contractor either by direct payment by the Contractor to the Engineer, or by deduction from the contractor’s payment certificates and paid to the Engineer by the Contracting Authority. The overtime rates charged for additional supervision costs, relating to work outside normal working hours, shall be based on the cost rates in the supervision contract between the Engineer and the Contracting Authority.

The procedure for working outside normal working hours shall be as follows:

1. The Contractor shall present to the Engineer a request to work outside normal working hours.
2. The Engineer shall make arrangements with his personnel and may or may not accept the request to work outside normal working hours.
3. The Engineer shall have his personnel fill and sign time sheet(s) relating to hours worked outside normal working hours.
4. The filled time sheet(s) shall be presented to the contractor for countersigning and certification of the hours worked outside normal working hours.
5. At the end of the month the Engineer shall aggregate all hours worked outside normal working hours in the month and lodge with the Contracting Authority or the contractor a claim for payment of the additional supervision costs.
6. Where the additional supervision costs for working outside normal working hours are recoverable by direct payment by the Contractor, the contractor shall make payment to the Engineer within 30 days of receipt of a claim.

SECTION 7E

##### Contractor’s Representative and Key Personnel

|  |  |  |  |
| --- | --- | --- | --- |
| **Item No.** | **Position/specialization** | **Relevant academic qualifications** | **Minimum years of relevant work experience** |
| *1* | Contractor’s Representative 1x Project Manager | A Minimum of degree in Civil Engineering with Project Management qualification | At least ten years of experience in major building works including road works with demonstrated project leadership with at least 2 similar project as Project Manager |
| *2* | 1x Site Agent | A Minimum of degree in Civil Engineering | At least ten years of experience in major building works including road works with at least 2 similar project as site agent |
| *3* | *1x Quantity Surveyor* | A minimum qualification of a degree in Quantity Surveying | At least ten years of experience in major building works including road works with at least 2 similar project as a Quantity Surveyor |
| *4* | *1x Civil Engineer* | A Minimum of degree in Civil Engineering | At least ten years of experience in major building works including road works with at least 2 similar project as a Civil Engineer |
| *5* | *1x Electromechanical Engineer* | A Minimum of degree in Electrical Engineering | At least ten years of experience in major building works including road works with at least 2 similar project as a Services Engineer |
| *6* | *1x Land Surveyor* | Minimum of Diploma in Surveying | At least five (5) years  of experience in major civil works of similar nature |
| *7* | *1x Environmental Expert* | A minimum qualification of a degree in a relevant discipline | A minimum of two years' experience in construction works |
| *8* | *1x Social Expert* | A minimum qualification of a degree or diploma in a relevant discipline | A minimum two years' experience in construction works |
| *9* | *1x Sexual Exploitation, Abuse and Harassment Officer.* | A minimum of degree in Social Science with experience in handling gender-based issues | A minimum of five years experience in handling gender-based issues |
| *10* | *2x Foremen (Building)* | Minimum of Diploma in Civil Engineering/  Road / Building  Foremanship Certificate or equivalent | *A minimum of seven years experience in major building works* |

The Bidder shall provide details of the proposed personnel and their experience records using Forms PER-1 and PER-2 included in Section IV, Bidding Forms.

Personnel for the listed positions should either:

* Be fluent in written and spoken English or
* At least one interpreter who is fluent in written and spoken English shall be provided by the contractor for every four personnel who are themselves not fluent in written and spoken English.

**1.1**  **Description of the Works**

**a)**

**(b)**

**General**

The project is for construction of Buildings and associated external works inclusive of roads and parking areas within the operative area of the Chiponde One Stop Border Post in Mangochi District of Malawi. This facility on a piece of land spanning from the existing Border Post to the border of Mandimba in Mozambique..

**Buildings**

Buildings are on concrete substructure, while superstructure frame is from structural steel columns and beams. Upper Floors comprise of composite steel/ concrete decking. Roof of major structures is concrete while the surrounding walkway and other minor structures have steel roof sheets on steel structure.

The work will involve also construction of the following:

1. Terminal Building
2. Police & Health Building
3. Commercial Building
4. Scanner Building
5. Cafeteria Building
6. Drivers Toilets
7. Utility Building
8. Bus Inspection
9. Vehicle Maintenance Building
10. Agriculture Building
11. Solid Waste Building
12. Hazardous Goods Store
13. Entry Gates
14. External Works

**(c)** **Roadworks and Parking Areas**

**(i) General**

The scope will involve construction of single carriageway to have 2 lanes of 3.5m, 1.5 m cycle way, 1.5 side walk, width in each direction.

**(ii)**

**(iii)**

**(iv)**

**Horizontal alignment**

The existing horizontal alignment has been maintained as much as possible.

**Vertical alignment**

The road profile has been reviewed due to upgrading indicated herein.

**Pavement**

The works will involve new construction of pavement layers within the operative area.

The pavement layers shall constitute construction of selected fill layers, sub base courses, mechanically stablized base, Asphalt Concrete binder course and surfacing using 50mm Asphaltic Concrete.

**(c) Structures**

**Pipe Culverts**

The works shall involve installation of approved 900mm diameter precast concrete

pipes.

**Box Culverts**

The works shall involve construction of 1300mm x 1300mm, 1500mm x 1500mm, and 1

000mm x 1000mm box culverts.

**(d) Appurtenant Works**

**General**

The road will include among others, the following appurtenant works; construction of raised 1.5m wide walkways. Construction of weighbridge, lined drains, kerbing works, road studs, shaping of road slopes and construction of service ducts along both sides of the road corridor.

**Road Signage**

All temporary road signs used during construction shall conform to requirements of SABS 1519 and shall be in Retro-reflective material.

Road sign Schedule has been provided in the book of drawings. Unless advised otherwise by the Engineer, the upgrading works shall install all signs as indicated in the Book of Drawings. Section 5400 of the Technical Specifications applies.

**Road Markings**

Road marking details are provided in the book of drawings. Retro-reflective paint complying with the requirements of SABS 731-1 for type 1 paint shall be used.

Road marking will typically involve the white centreline, yellow lane demarcation lines,

stop marking, pedestrian markings among others.

**Services**

Major issues of relocation of services were anticipated since the road is traversing in

an urban setting with basic services provided. Services like water pipes, sewer,

electricity poles and telecommunication lines were recorded along the project corridor.

**1.2 Accommodation of Traffic**

The road section is in an urban setup and as such traffic management is critical to ensure that there is minimal disruption to road users. The Contractor is expected to come up with a traffic

accommodation plan that will ensure minimal disruption to road users. `

**1.3 Drawings**

A book of drawings shall be provided comprising layout of plans, long sections, cross sections,

typical sections, drainage structures, road sign schedule, standard drawings and the Setting out

data. `

**1.4**

**(a)**

**(b)**

**Site Facilities**

**Site facilities available**

The Contractor will be responsible for the provision of a suitable site for his construction camp and to provide accommodation for his personnel.

The Contractor shall make his own arrangements for the supply of potable water and water for construction purposes, and for electrical power and all other services as well as all safety and security measures necessary for the duration of the contract. In his Bid he must make provision

for all negotiations and procurement of these services, which will be deemed to have been included in his tendered rates.

**Site facilities required**

The following facilities shall be required on the campsite:

1. Contractor's offices
2. Engineer's laboratory
3. Storage facility for building materials and equipment workshop for servicing vehicles and road construction Parking areas Portable water
4. Sanitation and Refusal disposal facilities
5. Generators to compliment power supply machinery

**1.5**  **Security and Social Issues**

The Contractor will be responsible for the security of his personnel and construction plant on and around the Site of the Works and for the security of his camp, and no claims in this regard will be

considered by the Employer. Special attention shall be given to vulnerable groups such as women,

girls and disabled workers. No underage persons shall be employed

**1.6**  **Climate**

The project site is within Lilongwe district and the climatic conditions for this project area as shown

in the table below;

**1.7 Features Requiring Special Attention**

**Co-operation with others on the Site**

The Contractor shall ensure that there is conducive working environment on the site. The Contractor shall ensure that all grievances arising from the site are resolved amicably within reasonable time with all aggrieved parties satisfied.

**Roads and Site to be Kept Clean**

The Contractor shall make sure that roads and campsite are always kept clean. The

Contractor shall provide dustbins designated for different waste types such as for

biodegradable and non-biodegradable, and harmful and non-harmful. Oils from workshop and other waste from road construction shall only be disposed of in licenced areas.

**Working Hours**

The Contractor shall come up with working schedule for all employees. Working hours for all

employees shall be properly spelled out. However, they should be in accordance with the Malawi Government labour laws.

**1.8 Construction Period**

The estimated time for the Buildings, external works, roads and parking area within the operative area of Chiponde / Mandimba Road is Eighteen (18) calendar months.

**1.9 Extension of Time Resulting from Abnormal Rainfall**

It must be noted that the extension of time resulting from abnormal rainfall shall not be regarded as an

event for which compensation can be claimed. This means that no payments whatsoever will be made, including any payments under time related obligations, regardless of the period of time by which the Time for Completion may be extended due to abnormal rainfall

The works specified under this contract shall include all general and ancillary works and work of any nature that is deemed necessary for the due and satisfactory construction, completion and maintenance of the works to the full extent and meaning of the Drawings and Specifications, whilst complying with all general Conditions of Contract whether specifically mentioned or not in the clause of the specifications.

Some of the Works detailed in this special specifications are only indicative of the Scope of Works associated with this contract and the Engineer may, where necessary, substitute some of the Works with others within the project areas without substantially altering the overall Scope of the Works. Any other activity not listed above but deemed to be necessary by the Engineer shall be carried out subject to the Engineer’s formal instructions. Works shall be measured and paid using the relevant rates and prices in the Bill of Quantities.

The works will also include for any operations necessary for the safe and convenient passage of traffic at all times.

Compliance with Specification.

All materials, plant, labour and workmanship in and connected with the execution of the works shall be the best of their respective kinds without regard to any trade terms and the Contractor shall comply with these and all other respects with the relevant Clauses in the Specification and shall carry out the Contract in a proper and workmanship like manner and in strict accordance with Specifications, Working Drawings and Instructions of the Engineer.

**Specification**

The Standard Specifications for this contract shall be the Southern African Transport Co-ordination Committee (SATCC) Draft Standard Specifications for Road and Bridge Works, September 1998, reprinted July 2001.

This Document, which forms Part of the Tender and Contract documentation, is printed by the SATCC in Maputo in Mozambique and all Tenderers should acquire their own copy of this standard document at their own cost. Tenderers should note that whilst this document is similar to the "Standard Specifications for Road and Bridge Works for State Road Authorities", (otherwise known as the COLTO specification, prepared by the South African Committee of Land Transport Officials), there are significant differences in some items

*The Special Specifications are to be read in conjunction with the General/Particular Conditions of this contract.*

**PART B: PARTICULAR SPECIFICATIONS**

THE PARTICULAR SPECIFICATIONS FORM AN INTEGRAL PART OF THE TENDER AND CONTRACT DOCUMENTATION AND SUPPLEMENT THE STANDARD SPECIFICATIONS.

In the event of any discrepancy with a part or parts of the Standard Specifications, the Bill of Quantities or the Drawings, the Particular Specifications shall take precedence.

The Particular Specifications are contained in the pages that follow.

All references to Project Specifications in the Standard Specifications, shall mean Particular Specifications for this contract.

The terms "Project Specifications" and "Particular Specifications" shall be interpreted to have the exact same meaning.

All works shall be measured as described in the Bill of Quantities.

The Particular Specifications, shall supplement and modify, delete and/or add to the Standard Specifications, as stated. Where any Clause, paragraph or sub-paragraph in the Standard Specifications is supplemented by one of the following paragraphs from the Particular Specifications, the provisions of such Clause, paragraph or sub-paragraph shall remain in effect and the supplemental provisions shall be considered as added thereto, deleted, or superseded by any of the following paragraphs in the Particular Specification, the provisions of such Clause, paragraph, or sub-paragraph in the Standard Specification, not so amended, deleted or superseded shall remain in effect.

**Clauses and pay items modified by the Particular Specifications are numbered "PS"**

**followed by a number corresponding to the number of the relevant clause or pay item in the Standard Specifications. New clauses and pay items not covered in the Standard**

**Specifications are also designated "PS" followed by a number. These numbers follow on**

**from the last clause or payment item number used in the relevant section of the Standard Specifications.**

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| Supplementary Information |

Supplementary information comprises the **Materials Report** and the **Hydrological/ Hydraulics Report** denoted as **Volume (3A)** and **Volume (3B)** of the Bidding Documents.

These reports are marked “FOR INFORMATION ONLY AND WILL NOT FORM PART OF THE CONTRACT”.

These reports only represent investigations and findings, with/without analysis or interpretation of results/ findings of a consultant and it is the Bidder’s responsibility for any source and quality of construction materials, without binding the Employer.

# Part 3: Conditions of Contract

# & Contract Forms

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| Section VIII - General Conditions of Contract (GC) |

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*Roads Authority*

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*Construction of a One-Stop Border Post (OSBP) between Malawi and Mozambique at Chiponde*

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| --- |
| **Red Book**  © FIDIC 2017. All rights reserved.  The Conditions of Contract are the “General Conditions” which form part of the “Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer (“Red book”) Second edition 2017” published by the Federation Internationale Des Ingenieurs – Conseils (FIDIC) and the following “Particular Conditions” which comprise of the AfDB’s COPA and the amendments and additions to such General Conditions.  An original copy of the above FIDIC publication i.e. “*Conditions of Contract for Building and Engineering Works Designed by the Employer*” must be obtained from FIDIC.  **International Federation of Consulting Engineers (FIDIC)**  FIDIC Bookshop – Box- 311 – CH – 1215 Geneva 15 Switzerland  Fax: +41 22 799 49 054  Telephone: +41 22 799 49 01  E-mail: fidic@fidic.org  www.fidic.org  FIDIC code: ISBN13: 978-2-88432-084-9 |

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| Section IX - Particular Conditions |

The following Particular Conditions shall supplement the GC. Whenever there is a conflict, the provisions herein shall prevail over those in the GC.

**Particular Conditions**

**Part A – Contract Data**

| **Conditions** | **Sub-Clause** | **Data** |
| --- | --- | --- |
| Where the Contract allows for Cost Plus Profit, percentage profit to be added to the Cost | 1.1.20 | 5% |
| Employer’s name and address | 1.1.31 | Roads Authority Malawi on behalf of the Government of Malawi  Functional Building  Off Paul Kagame Road  Private Bag B346  Lilongwe 3  MALAWI  Telephone: + 265 1 753699  Electronic mail address: [ipc@ra.org.mw](mailto:ipc@ra.org.mw) |
| Engineer’s name and address | 1.1.35 | Prospectiva & Infraworks Development LLC Consortium  Rua Major Neutel de Abreu, no. 16 A/B/C. 1500 – 411 Lisboa, Portugal  Email: [sede@propectiva.pt](mailto:sede@propectiva.pt) |
| Bank’s name | 1.1.89 | African Development Bank |
| Borrower’s name | 1.1.90 | Government of Malawi |
| Time for Completion | 1.1.84 | 18 months |
| Defects Notification Period | 1.1.27 | 365 days (one year) |
| Sections | 1.1.73 | *N/A* |
| Electronic transmission system | 1.3 (a) (ii) | Electronic transmission systems include email and file sharing web sites. Electronic transmission of documents shall be followed by a hard copy |
| Address of Employer for communications: | 1.3(d) | The address for the Employer is:  Chief Executive Officer  Roads Authority of Malawi  Private Bag B346  Lilongwe  MALAWI  Email: [ipc@ra.org.mw](mailto:%20ipc@ra.org.mw%20) |
| Address of Engineer for communications: | 1.3(d) | Prospectiva & IDEV LLC Consortium  Rua Major Neutel de Abrey  No. 16A/B/C  1500 – 411 Lisboa  Portugal |
| Address of Contractor for communications: | 1.3(d) | TBA |
| Governing Law | 1.4 | Laws of the Republic of Malawi |
| Ruling language | 1.4 | English |
| Language for communications | 1.4 | English |
| Time for the Parties to sign a Contract Agreement | 1.6 | 28 days after receipt of the Letter of Acceptance |
| Number of additional paper copies of Contractor’s Documents | 1.8 | The additional paper copies shall be *Two (2)* |
| Total liability of the Contractor to the Employer under or in connection with the Contract | 1.15 | The product of 1.2 times the Accepted Contract Amount excluding VAT and Provisional Sums |
| Site | 1.1 74 | Existing Border Facilities and those under Construction |
| Joint and Several Liability | 1.14 | ***[Add the following sub-clause]***  *(d) A minor member of the JV having participation in the JV of -----% of the value of the Contract [specify a percentage pursuant to provision made under BDS of ITB 4.1 (a)], is excluded from joint and several liability: No*  *If “Yes” specify the following:*  *i) Name and Address of the minor member is------------ and*  *ii) All other members shall remain jointly and severally liable for the fulfilment of all provisions of the entire Contract*  *[Delete, entire text above if no such exception for a minor member was provided under BDS of ITB 4.1 (a)].*  ***[Add the following sub-clause]***  *(e) Maximum numbers of members in the Joint Venture, Consortium or Association (JV) shall not exceed------------[specify a number pursuant to BDS of ITB 4.1 (c).*  ***[Add the following sub-clause]***  *(f) Minimum share of a member of Joint Venture, Consortium or Association (JV) in the contract shall not be less than 25% percent of the total value of the contract.* |
| Time for access to the Site | 2.1 | *No later than the Commencement Date* |
| Engineer’s Duties and Authority | 3.2 | The Engineer shall obtain the specific approval of the Employer before taking action under the following Clauses:   1. Clause 5.1 Subcontractors 2. Clause 8.5 Extension of Time for Completion 3. Clause 8.9 Employer's Suspension 4. Clause 10.2: Taking Over Parts 5. Clause 13.3: Variation Procedure 6. Clause 20.1: Claims 7. Clause 20.2 Claims for Payment and/or EOT |
| Performance Security | 4.2 | The performance security will be in the form of a **demand guarantee** in the amount(s) of **Eight percent (8%)** of the Accepted Contract Amount and in the same currency (ies) of the Accepted Contract Amount. Contract Amount.  The performance Bank Guarantee/Security shall be unconditional, irrevocable and payable on the first demand on the Bank’s approved form only.  The performance Bank Guarantee/ Security shall be issued either (a) by a bank located in the country of the Employer or a foreign bank through a correspondent bank located in the country of the Employer, or (b) with the agreement of the Employer directly by a foreign bank acceptable to the Employer. |
| Environmental and Social (ES) Performance Security | 4.2 | The ES Performance Security will be in the form of a “demand guarantee” in the amount(s) of **Two percent (2%)** of the Accepted Contract Amount and in the same currency (ies) of the Accepted Contract Amount. |
| Period for notification of errors in the items of reference | 4.7.2 (a) | 28 Days |
| Period of payment for temporary utilities | 4.19 | 28 Days |
| Number of additional paper copies of progress reports | 4.20 | 4 (Four) |
| Maximum allowable accumulated value of work subcontracted (as a percentage of the Accepted Contract Amount or volume of work-as per provision made under BDS of ITB 34.2) | 5.1(a) | 30% |
| Parts of the Works for which subcontracting is not permitted | 5.1(b) | N/A |
| Normal working hours | 6.5 | The working hours shall be the normal working hours as recognized in the Laws of the Republic of Malawi with the exception of Gazetted Public Holidays. |
| Staff Removal | 6.9 | Insert after 6.9(f);  (g) acts in a manner that breaches the Code of  Conduct (ES) (e.g. sexual harassment, gender-based  violence, illicit activity or crime)." |
| Commencement | 8.1 | **ES Management Strategies and Implementation**  **Plans**  The following is inserted at the end of 8.1:  "Notwithstanding the Commencement Date as  specified in this Sub-Clause, the Contractor shall not proceed implementing the works 28 days after the commencement date unless the Engineer is satisfied that appropriate measures are in place to address environmental and social risks and impacts. At a minimum, the Contractor shall apply the Management Strategies and Implementation Plans and Code of Conduct, submitted as part of the Bid and agreed as part of the Contract. The Contractor shall submit, on a continuing basis, for the Engineer's prior approval, such  supplementary Management Strategies and  Implementation Plans as are necessary to manage the ES risks and impacts of ongoing works. These Management Strategies and Implementation Plans collectively comprise the Contractor's Environmental and Social Management Plan (C-ESMP). The C-ESMP shall be approved prior to the commencement of construction activities (e.g. excavation, earth works, bridge and structure works, stream and road diversions, quarrying or extraction of materials, concrete batching and asphalt manufacture). The approved C-ESMP shall be reviewed, periodically (but not less than every six (6) months), and updated in a timely manner, as required, by the Contractor to ensure that it contains measures appropriate to the Works activities to be undertaken. The updated C-ESMP shall be subject to prior approval  by the Engineer." |
| Programme | 8.3(d) (iv) | Insert at end of GC 8.3(d)(iii):  (iv) "In addition to the progress report, the  Contractor shall also provide a report on the  Environmental and Social (ES) metrics set out in Part C and D. In addition to Part C and D reports, the Contractor shall also provide immediate  notification to the Engineer of incidents in the shall be provided to the Engineer within the timeframe agreed with the Project Manager.  (a) confirmed or likely violation of any law or  international agreement;  (b) any fatality or serious (lost time) injury;  (c) significant adverse effects or damage to  private property (e.g. vehicle accident,  damage from fly rock, working beyond the  boundary)  (d) major pollution of drinking water aquifer or  damage or destruction of rare or  endangered habitat (including protected  areas) or species; or  (e) any allegation of sexual harassment or  sexual misbehavior, child abuse, defilement,  or other violations involving children. |
| Delay damages payable for each day of delay | 8.8  14.15 (c) | 0.05% of the Accepted Contract Amount, less provisional sum, for DAAB . |
| Maximum amount of delay damages | 8.8 | 5% of the Accepted Contract Amount less provisional sum for DAAB. |
| Method of measurement | 12.2 | Admeasurement |
| Percentage profit | 12.3 | *As stated under 1.1.20 above* |
| Percentage rate to be applied to Provisional Sums for overhead charges and profit | 13.4 (b)(ii) | 7.5 % |
| Adjustments for changes in cost | 13.7 | Adjustment for changes in cost shall not apply |
| Total advance payment | 14.2 | 20% Percentage of the Accepted Contract Amount (excluding VAT) payable in the currencies and proportions in which the Accepted Contract Amount is payable subject to acceptance of an Advance Payment Guarantee |
| Repayment of Advance payment | 14.2.3 | (a) Repayment to begin when the amount of certified works attains exceeds 20% of the portion of the Accepted Contract Amount payable in that currency less Provisional Sums  (b) deductions shall be completed when certified works reach 80% of the Contract Sum. |
| Number of additional paper copies of Statements | 14.3(b) | Three (3) |
| Percentage of retention | 14.3(iii) | 5% |
| Limit of Retention Money (as a percentage of Accepted Contract Amount) | 14.3(iii) | 5% of the Accepted Contract Amount  • 50% will be released at practical completion  • 50% will be released at the end of defects notification period |
| Plant and Materials | 14.5(b)(i) | If Sub-Clause 14.5 applies:  Plant and Materials for payment when shipped N/A |
| 14.5(c)(i) | Plant and Materials for payment when delivered to the Site but not yet incorporated in the Works is 80% of the receipted Amount |
| Minimum Amount of Interim Payment Certificates | 14.6.2 | **10** % of the Accepted Contract Amount (This requirement will be waived for the first 3 months from commencement of the contract). |
| Period of payment of Advance Payment to the Contractor | 14.7(a) | 28 days |
| Period for the Employer to make interim payments to the Contractor under Sub-Clause 14.6 (interim Payment) | 14.7b(i) | 42 days |
| Period for the Employer to make interim payments to the Contractor under Sub-Clause 14.13 (Final Payment) | 14.7b(ii) | 28 days |
| Period for the Employer to make final payment to the Contractor | 14.7(c) | 56 days |
| financing charges for delayed payment (percentage points above the average bank short-term lending rate as referred to under sub-paragraph (a)) | 14.8 | For Local Currencies:-  Prime Lending Rate of the commercial bank of the Contractor as regulated by the Reserve Bank of Malawi + 1% or if not available the Inter Bank offered rate and shall be calculated at simple interest.  The interest rate for payments in foreign currency is as follows:-  For USD: SOFR of maturity of 1 month plus 1%  For EURO: €STR of maturity of 1 month plus 1% For GBP: SONIA of maturity of 1 month plus 1% |
| Number of additional paper copies of draft Final Statement | 14.11.1(b) | *Four (4)* |
| Forces of nature, the risks of which are allocated to the Contractor | 17.2(d) | *None* |
| Permitted deductible limits | 19.1 | insurance required for the Works: **USD250,000**  insurance required for Goods: **USD80,000**    insurance required for liability for breach of  professional duty: **N/A**  insurance required against liability for fitness for  purpose (if any is required): **0**  insurance required for injury to persons and  damage to property: **USD80,000**    insurance required for injury to employees: **USD80,000**  other insurances required by Laws and by local practice: **5% of the claim** |
| Additional amount to be insured (as a percentage of the replacement value, if less or more than 15%) | 19.2.1(b) | *5%* |
| List of Exceptional Risks which shall not be excluded from the insurance cover for the Works | 19.2.1(iv) | None |
| Extent of insurance required for Goods | 19.2.2 | From the time the Goods are delivered to the Site until they are no longer required for the Works |
| Amount of insurance required for Goods | 110% the cost of Goods as delivered to the site |
| Insurance required against liability for fitness for purpose | 19.2.3(b) | No |
| Period of insurance required for liability for breach of professional duty | 19.2.3 | N/A |
| Amount of insurance required for injury to persons and damage to property | 19.2.4 | (a) The minimum cover for insurance of property is:  **USD250,000**  (b) The minimum cover for personal injury or death  insurance is **USD170,000** |
| Other insurances required by Laws and by local practice (give details) |  | In accordance with the statutory requirements applicable in the Republic of Malawi |
| Time for appointment of DAAB | 21.1 | 42 days after signature by both parties of the Contract Agreement |
| The DAAB shall be comprised of | 21.1 | One Member |
| List of proposed members of DAAB | 21.1 | Proposed by Employer *[Attach CVs to the bidding document and the Contract]*  *1.\_Levi Zulu\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  Proposed by Contractor *[Attach CV to the Contract]*  *1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*  **The parties shall agree on One Member** |
| Appointment (if not agreed) to be made by | 21.2 | The President of the Malawi Engineering Institution |
| Rules of arbitration | 21.6(a) | Any dispute, controversy, or claim arising out of or relating to this Contract, or breach, termination, or invalidity thereof, shall be settled by arbitration in accordance with the Malawi Engineering Institution Arbitration Rules as at present in force. |
|  | 21.6 (b) | Sub-Clause 21.6(b) of PART B – Specific Provisions***[insert* *either “shall” or “shall not”*]** *\_\_\_\_\_\_\_\_\_*apply. |
| Place of arbitration | 21.6(a) | *For Local Contractor:*  *Lilongwe, Malawi*  *For Foreign Contractor:*  *Arusha, United Republic of Tanzania* |

**Table: Summary of Sections (if any)**

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| --- | --- | --- | --- |
| Description of parts of  the Works that shall be  designated a Section  for the purposes of the  Contract  (Sub-Clause 1.1.73) | Value: Percentage\* of  Accepted Contract  Amount  (Sub-Clause 14.9) | Time for Completion  (Sub-Clause 1.1.84) | Delay Damages  (Sub-Clause 8.8) |
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**\***These percentages shall also be applied to each half of the Retention Money under Sub-Clause 14.9

**Part B - Specific Provisions**

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| --- | --- | --- |
| Sub-Clause 1.1.10 **Contract** | | “the Contractor’s Proposal” is deleted. |
| Sub-Clause 1.1.49 **Laws** | | The Sub-Clause is replaced with:  “**Laws**” means all national (or state) legislation, statutes, ordinances and other laws, and regulations and by-laws of any legally constituted public authority.” |
| Sub-Clause 1.1.74Site | | The Sub-Clause is replaced with:  “**Site**” means the places where the Permanent Works are to be executed, including storage and working area, and to which Plant and Materials are to be delivered, and any other places specified in the Contract as forming part of the Site.” |
| **Sub-Clause 1.1.77** Statement | | On the second line after “Payment Certificate under…”, add “Sub-Clause 14.2.1 [Advance Payment Guarantee] (if applicable),”. |
| **Sub-Clause 1.1.81**  **Tender** | | “the Contractor’s Proposal” is deleted. |
| **Sub-Clause 1.1.89 to 1.1.91 are added after Sub-Clause 1.1.88** | | |
| **Sub-Clause 1.1 89** **Bank** | | “**Bank**” means the financing institution (if any) named in the Contract Data. |
| Sub-Clause 1.1.90Borrower | | “**Borrower**” means the person (if any) named as the borrower in the Contract Data. |
| Sub-Clause 1.1.91ES | | “**ES**” means Environmental and Social (including Sexual Exploitation and Assault (SEA)). |
| Sub-Clause 1.1.92Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH) | | “**Sexual Exploitation and Abuse” “(SEA)”** and Sexual Harassment (HS) mean the following:  **Sexual Exploitation** is defined as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another.  **Sexual Abuse** is defined as the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions; and  **“Sexual Harassment” “(SH)”** is defined as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature by the Contractor’s Personnel with other Contractor’s or Employer’s Personnel. |
| Sub-Clause 1.2Interpretation | | Sub-paragraph (a) is replaced with the following:   1. “Words indicating one gender include all genders;   “he/she” is replaced with:” it”;  “him/her” is replaced with “it”;  “his” and “his/her” are replaced with: “its”;  “himself/herself” are replaced with: “itself”.”  Further, “and” is deleted from the end of sub-paragraph (i) and added at the end of sub-paragraph (j).  sub-paragraph (k) is added:  (k) “The word “tender” is synonymous with “bid” or “proposal”, the word tenderer with “bidder” or “proposer” and the words “tender documents” with “request for bids documents” or “request for proposal documents”, as applicable.” |
| Sub-Clause 1.5 **Priority of Documents** | | The following documents are added in the list of Priority Documents after (e):  “(f) the Particular Conditions Part C- Fraud and Corruption;  (g) the Particular Conditions Part D- Environmental and Social (ES) Metrics for Progress Reports;”  and the list renumbered accordingly. |
| Sub-Clause 1.6Contract Agreement | | The last paragraph is replaced with:  “If the Contractor comprises a JV, *the authorised representative of the JV shall sign* the Contract Agreement in accordance with sub –clauses 1.14 (Joint and Several Liability).” |
| Sub-Clause 1.12 **Confidentiality** | | The following is added at the end of the second paragraph: “The Contractor shall be permitted to disclose information required to establish its qualifications to compete for other projects.”  “or” at the end of (b) is deleted.  “or” at the end of (c) is added.  The following is then added as (d): “is being provided to the Bank .” |
| Sub-Clause 1.17 **Inspections & Audit by the Bank** | | The following Sub-Clause is added after Sub-Clause 1.16:  “Pursuant to paragraph 2.2 e. of Particular Conditions - Part C- Fraud and Corruption, the Contractor shall permit and shall cause its agents (where declared or not), subcontractors, subconsultants, service providers, suppliers, and personnel, to permit, the Bank and/or persons appointed by the Bank to inspect the site and/or the accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have such accounts, records and other documents audited by auditors appointed by the Bank. The Contractor’s and its Subcontractors’ and subconsultants’ attention is drawn to Sub-Clause 15.8 (Fraud and Corruption) which provides, inter alia, that acts intended to materially impede the exercise of the Bank’s inspection and audit rights constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank’s prevailing sanctions procedures).” |
| Sub-Clause 2.4 **Employer’s Financial Arrangements** | | The first paragraph is replaced with:  “The Employer shall submit, before the Commencement Date, reasonable evidence that financial arrangements have been made for financing the Employer’s obligations under the Contract.”  The following sub-paragraph is added at the end of Sub-Clause 2.4:  “In addition, if the Bank has notified to the Borrower that the Bank has suspended disbursements under its loan, which finances in whole or in part the execution of the Works, the Employer shall give notice of such suspension to the Contractor with detailed particulars, including the date of such notification, with a copy to the Engineer, within 7 days of the Borrower having received the suspension notification from the Bank. If alternative funds will be available in appropriate currencies to the Employer to continue making payments to the Contractor beyond a date 60 days after the date of Bank notification of the suspension, the Employer shall provide reasonable evidence in its notice of the extent to which such funds will be available.” |
| Sub-Clause 2.6Employer-Supplied Materials and Employer’s Equipment | | *[If Employer- Supplied Materials are listed in the Employer’s Requirements for the Contractor’s use in the execution of Works, the following provisions may be added]:*  The following is added after the last paragraph of Sub-Clause 2.6:  “The Employer shall supply to the Contractor the Employer-Supplied Materials listed in the Specification, at the time(s) stated in the Specification (if not stated, within the times that shall be required to enable the Contractor to proceed with execution of the Works in accordance with the Programme).  When made available by the Employer, the Contractor shall visually inspect the Employer-Supplied Materials and shall promptly give a Notice to the Engineer of any shortage, defect or default in them. Thereafter, the Contractor shall rectify such shortage, defect or default to the extent instructed by the Engineer. Such instruction shall be deemed to have been given under Sub-Clause 13.3.1 [*Variation by Instruction*].  After this visual inspection, the Employer-Supplied Materials shall come under the care, custody and control of the Contractor. The Contractor’s obligations of inspection, care, custody, and control shall not relieve the Employer of liability of any shortage, defect or default not apparent from a visual inspection.”  [*If Employer’s Equipment are listed in the Specification for the Contractor’s use in the execution of Works, the following provisions may be added*]:  The following is added after the last paragraph of Sub-Clause 2.6:  “The Employer shall make the Employer’s Equipment listed in the Specification available to the Contractor at the time(s) stated in the Specification (if not stated, within the times that shall be required to enable the Contractor to proceed with execution of the Works in accordance with the Programme).  Unless expressly stated otherwise in the Specification, the Employer’s Equipment shall be provided for the exclusive use of the Contractor.  When made available by the Employer, the Contractor shall visually inspect the Employer’s Equipment and shall promptly give a Notice to the Engineer of any shortage, defect or default in them. Thereafter, the Contractor shall rectify such shortage, defect or default to the extent instructed by the Engineer. Such instruction shall be deemed to have been given under Sub-Clause 13.3.1 [*Variation by Instruction*].  The Contractor shall be responsible for the Employer’s Equipment while it is under the Contractor’s control and/or any of the Contractor’s Personnel is operating it, driving it, directing it, using it, or in control of it.  The Contractor shall not remove from the Site any items of the Employer’s Equipment without the consent of the Employer. However, consent shall not be required for vehicles transporting Goods or Contractor’s personnel to or from the Site.” |
|  | |  |
| Sub-Clause 3.1The Engineer | | The following is added at the end of the first sub-paragraph:  “The Engineer’s staff shall include suitably qualified engineers and other professionals who are competent to carry out these duties.” |
| Sub-Clause 3.2 **Engineer’s Duties and Authority** | | The Engineer shall obtain the consent in writing of the Employer before taking action under the following Sub-Clauses of these Conditions:   1. Sub-Clause 13.1: Right to vary - instructing a variation, except;    * + 1. in an emergency situation as determined by the Engineer; or        2. (if such a Variation would increase the Accepted Contract Amount by less than the percentage specified in the Contract Data. 2. Sub-Clause 13.2 (Value Engineering): stating consent or otherwise to a value engineering proposal submitted by the Contractor in accordance with Sub-Clause 13.2.   Notwithstanding the obligation, as set out above, to obtain consent in writing, if, in the opinion of the Engineer, an emergency occurs affecting the safety of life or of the Works or of adjoining property, it may, without relieving the Contractor of any of his duties and responsibility under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forthwith comply, despite the absence of consent of the Employer, with any such instruction of the Engineer. The Engineer shall determinean addition to the Contract Price, in respect of such instruction, and EOT if any, in accordance with Clause 13 and shall notify the Contractor accordingly, with a copy to the Employer. |
| Sub-Clause 3.3 **Engineer’s Representative** | | The following is added at the end of Sub-Clause 3.3:  “The Engineer shall obtain the consent of the Employer before appointing or replacing an Engineer’s Representative.” |
| Sub-Clause 3.4 **Delegation by the Engineer** | | The following is added at the end of the second paragraph:  “If any assistants are not fluent in this language, the Engineer shall make competent interpreters available during all working hours, in a number sufficient for those assistants to properly perform their assigned duties and/or exercise their delegated authority.” |
| Sub-Clause 3.6 **Replacement of the Engineer** | | In the first paragraph, “42 days” is replaced with: “21 days”;  In the third para, “shall” is replaced with: “should”. |
| Sub-Clause 4.1 **Contractor’s General Obligations** | | The following is inserted after the paragraph “The Contractor shall provide the Plant (and spare parts, if any) …”:  “All equipment, material, and services to be incorporated in or required for the Works shall have their origin in any eligible source country as defined by the Bank.”  The following is inserted after the paragraph “The Contractor shall, whenever required by the Engineer...”:    The Contractor shall not carry out mobilization to Site (e.g. limited clearance for haul roads, site accesses and work site establishment, geotechnical investigations or investigations to select ancillary features such as quarries and borrow pits) unless the Engineer gives consent, a consent that shall not be unreasonably delayed, that appropriate measures are in place to address environmental and social risks and impacts, which at a minimum shall include applying the Management Strategies and Implementation Plans (MSIPs) and Code of Conduct for Contractor’s Personnel submitted as part of the Bid and agreed as part of the Contract.  The Contractor shall submit, to the Engineer for Review any additional MSIPs as are necessary to manage the ES risks and impacts of ongoing Works (e.g. excavation, earth works, bridge and structure works, stream and road diversions, quarrying or extraction of materials, concrete batching and asphalt manufacture). These MSIPs collectively comprise the Contractor’s Environmental and Social Management Plan (C-ESMP). The Contractor shall review the C-ESMP, periodically (but not less than every six (6) months), and update it as required to ensure that it contains measures appropriate to the Works. The updated C-ESMP shall be submitted to the Engineer for Review  The C-ESMP shall be part of the Contractor’s Documents. The procedures for Review of the C-ESMP and its updates shall be as described in Sub-Clause 4.4.1 *[Preparation and Review].*  The following is added as (g); (g) and (h) of the Sub-Clause are then renumbered as (h) and (i) respectively.  (g) if so stated in the Specification, the Contractor shall:   1. design structural elements of the Works taking into account climate change considerations; 2. apply the concept of universal access (the concept of universal access means unimpeded access for people of all ages and abilities in different situations and under various circumstances; 3. consider the incremental risks of the public’s potential exposure to operational accidents or natural hazards, including extreme weather events; and 4. any other requirement stated in the Specification.”   The following is added at the end of the Sub-Clause:    “The Contractor shall provide relevant contract- related information, as the Employer and/or Engineer may reasonably request to conduct Stakeholder engagements. “Stakeholder” refers to individuals or groups who:   * + - 1. are affected or likely to be affected by the Contract; and       2. may have ab interest in the Contract.   The Contractor may also directly participate in Stakeholder engagements, as the Employer and/or Engineer may reasonably request.” |
| Sub-Clause 4.2 **Performance Security and ES Performance Security** | | The first paragraph is replaced with:  “The Contractor shall obtain (at its cost) a Performance Security for proper performance and, if applicable, an Environmental and Social (ES) Performance Security for compliance with the Contractor’s ES obligations, in the amounts stated in the Contract Data and denominated in the currency(ies) of the Contract or in a freely convertible currency acceptable to the Employer. If amounts are not stated in the Contract Data, this Sub-Clause shall not apply.”  In the following Sub-Clauses of the General Conditions, the term “Performance Security” is replaced with: “Performance Security and, if applicable, an Environmental and Social (ES) Performance Security”:  2.1- Right of Access to the Site;  14.2- Advance Payment;  14.6- Issue of IPC;  14.12- Discharge;  14.13- Issue of FPC;  14.14 Cessation of Employer’s Liability;  15.2- Termination for Contractor’s Default;  15.5- Termination for Employer’s Convenience. |
| Sub-Clause 4.2.1Contractor’sobligations | | The first paragraph is replaced with:  “The Contractor shall deliver the Performance Security and, if applicable, an ES Performance Security to the Employer within 28 days after receiving the Letter of Acceptance and shall send a copy to the Engineer. The Performance Security shall be issued by a reputable bank or financial institution selected by the Contractor and shall be in the form annexed to the Particular Conditions, as stipulated by the Employer in the Contract Data, or in another form approved by the Employer. The ES Performance Security shall be issued by a reputable bank selected by the Contractor and shall be in the form annexed to the Particular Conditions, as stipulated by the Employer in the Contract Data, or in another form approved by the Employer.”  Thereafter, throughout Sub-Clause 4.2 “Performance Security” is replaced with: “Performance Security and, if applicable, ES Performance Security.” |
| Sub-Clause 4.2.2 **Claims under the Performance Security** | | The first paragraph is replaced in its entirety with: “The Employer shall not make a claim under the Performance Security, except for amounts for which the Employer is entitled under the Contract.” |
| Sub-Clause 4.2.3 **Return of Performance Security** | | In sub-paragraph (a) “21 days” is replaced with: “28 days”. |
| Sub-Clause 4.3 **Contractor’s Representative** | | The following is added at the end of the last paragraph: “If any of these persons is not fluent in this language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer.” |
| Sub-Clause 4.6 **Co-operation** | | On the second-last line of the first paragraph before “Contractor’s”, add “of the”.  The following is added after the first paragraph:  “The Contractor shall also, as stated in the Specification or as instructed by the Engineer, cooperate with and allow appropriate opportunities for the Employer’s Personnel to conduct any environmental and social assessment. |
| Sub-Clause 4.7 **Setting out** | | In the second bullet-point of sub-paragraph (b) of Sub-Clause 4.7.3:   * before “if the items of reference”, add: “when examining the items of reference within the period stated in sub-paragraph (a) of Sub-Clause 4.7.2” * On the second and third lines, the following is deleted “and the contractor’s Notice is given after the period stated in sub-paragraph (a) of Sub-Clause 4.7.2”. |
| Sub-Clause 4.8 **Health and Safety Obligations** | | The following are included after deleting “and” at the end of (f) and replacing “.” with “;” at the end of (g):  “  (h) provide health and safety training of Contractor’s Personnel as appropriate and maintain training records;  (i) actively engage the Contractor’s Personnel in promoting understanding, and methods for, implementation of health and safety requirements, as well as in providing information to Contractor’s Personnel, training on occupational safety and health, and provision of personal protective equipment without expense to the Contractor’s Personnel;  (j) put in place workplace processes for Contractor’s Personnel to report work situations that they believe are not safe or healthy, and to remove themselves from a work situation which they have reasonable justification to believe presents an imminent and serious danger to their life or health.  (k) Contractor’s Personnel who remove themselves from such work situations shall not be required to return to work until necessary remedial action to correct the situation has been taken. Contractor’s Personnel shall not be retaliated against or otherwise subject to reprisal or negative action for such reporting or removal;  (l) subject to Sub-Clause 4.6, collaborate with the entities and Personnel under paragraph (a) , (b) and (c) of Sub-Clause 4.6, in applying the health and safety requirements. This is without prejudice to the responsibility of the relevant entities for the health and safety of their own personnel; and  (m) establish and implement a system for regular (not less than six-monthly) review of health and safety performance and the working environment.”  The second and third paragraphs are replaced with the following:  “Subject to Sub-Clause 4.1, the Contractor shall submit to the Engineer for Review a health and safety manual which has been specifically prepared for the Works, the Site and other places (if any) where the Contractor intends to execute the Works. The procedures for Review of the health and safety manual and its updates shall be as described in Sub-Clause 4.4.1 *[Preparation and Review]*.  The health and safety manual shall be in addition to any other similar document required under applicable health and safety regulations and Laws.  The health and safety manual shall set out all the health and safety requirements under the Contract,  (a) which shall include at a minimum:   1. the procedures to establish and maintain a safe working environment without risk to health at all workplaces, machinery, equipment and processes under the control of the Contractor, including control measures for chemical, physical and biological substances and agents; 2. details of the training to be provided, records to be kept; 3. the procedures for prevention, preparedness and response activities to be implemented in the case of an emergency event (i.e. an unanticipated incident, arising from both natural and man-made hazards, typically in the form of fire, explosions, leaks or spills, which may occur for a variety of different reasons including failure to implement operating procedures that are designed to prevent their occurrence, extreme weather or lack of early warning); 4. the measures to be taken to avoid or minimize the potential for community exposure to water-borne, water-based, water-related, and vector-borne diseases, 5. the measures to be implemented to avoid or minimize the spread of communicable diseases (including transfer of Sexually Transmitted Diseases or Infections (STDs), such as HIV virus) and non-communicable diseases associated with the execution of the Works, taking into consideration differentiated exposure to and higher sensitivity of vulnerable groups. This includes taking measures to avoid or minimize the transmission of communicable diseases that may be associated with the influx of temporary or permanent Contract-related labour; 6. the policies and procedures on the management and quality of accommodation and welfare facilities if such accommodation and welfare facilities are provided by the Contractor in accordance with Sub-Clause 6.6; and   (b) any other requirements stated in the Specification.  The paragraph starting with: “In addition to the reporting requirement of…” is deleted and replaced with the addition to GC Sub-Clause 4.20 in Sub-Clause 4.20 of the Special Provisions. |
| Sub-Clause 4.15Access Route | | The following is added at the end of Sub-Clause 4.15:  “The Contractor shall take all necessary safety measures to avoid the occurrence of incidents and injuries to any third party associated with the use of Contractor’s Equipment on public roads or other public infrastructure.  The Contractor shall monitor road safety incidents and accidents to identify negative safety issues, and establish and implement necessary measures to resolve them.” |
| Sub-Clause 4.18 **Protection of the Environment** | | Sub-Clause 4.18 Protection of the Environment is replaced with: “The Contractor shall take all necessary measures to:   * + 1. protect the environment (both on and off the Site); and     2. limit damage and nuisance to people and property resulting from pollution, noise and other results of the Contractor’s operations and/ or activities.   The Contractor shall ensure that emissions, surface discharges, effluent and any other pollutants from the Contractor’s activities shall exceed neither the values indicated in the Specification, nor those prescribed by applicable Laws.  In the event of damage to the environment, property and/or nuisance to people, on or off Site as a result of the Contractor’s operations, the Contractor shall agree with the Engineer the appropriate actions and time scale to remedy, as practicable, the damaged environment to its former condition. The Contractor shall implement such remedies at its cost to the satisfaction of the Engineer.” |
| Sub-Clause 4.20 **Progress Reports** | | Replace “4.20 (g) with: “the Environmental and Social (ES) metrics set out in Particular Conditions - Part D”  The following is added at the end of the Sub-Clause:  “In addition to the reporting requirement of this sub-paragraph (g) of Sub-Clause 4.20 [*Progress Reports*] the Contractor shall inform the Engineer immediately of any allegation, incident or accident, which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Employer’s Personnel or Contractor’s Personnel. This includes, but is not limited to, any incident or accident causing fatality or serious injury; significant adverse effects or damage to private property; or any allegation of SEA and/or SH. In case of SEA and/or SH, while maintaining confidentiality as appropriate, the type of allegation (sexual exploitation, sexual abuse or sexual harassment), gender and age of the person who experienced the alleged incident should be included in the information.  The Contractor, upon becoming aware of the allegation, incident or accident, shall also immediately inform the Engineer of any such incident or accident on the Subcontractors’ or suppliers’ premises relating to the Works which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Employer’s Personnel or Contractor’s, its Subcontractors’ and suppliers’ personnel. The notification shall provide sufficient detail regarding such incidents or accidents. The Contractor shall provide full details of such incidents or accidents to the Engineer within the timeframe agreed with the Engineer.  The Contractor shall require its Subcontractors and suppliers (other than Subcontractors) to immediately notify the Contractor of any incidents or accidents referred to in this Subclause.” |
| Sub-Clause 4.21 **Security of the Site** | | Sub-Clause 4.21 Security of the Site is replaced with:“Sub-Clause 4.21 Security of the Site The Contractor shall be responsible for the security of the Site, and:   1. for keeping unauthorised persons off the Site; 2. authorised persons shall be limited to the Contractor’s Personnel, the Employer’s Personnel, and to any other personnel identified as authorised personnel (including the Employer’s other contractors on the Site), by a Notice from the Employer or the Engineer to the Contractor.   Subject to Sub-Clause 4.1, the Contractor shall submit for the Engineer’s No-objection a security management plan that sets out the security arrangements for the Site.  The Contractor shall (i) conduct appropriate background checks on any personnel retained to provide security; (ii) train the security personnel adequately (or determine that they are properly trained) in the use of force (and where applicable, firearms), and appropriate conduct towards Contractor’s Personnel, Employer’s Personnel and affected communities; and (iii) require the security personnel to act within the applicable Laws and any requirements set out in the Specification.  The Contractor shall not permit any use of force by security personnel in providing security except when used for preventive and defensive purposes in proportion to the nature and extent of the threat.  In making security arrangements, the Contractor shall also comply with any additional requirements stated in the Specification.” |
| Sub-Clause 4.22Contractor’s Operations on Site | | On the third line of the second paragraph before “4.17”, “Sub- Clause” is added. |
| Sub-Clause 4.23 **Archaeological and Geological Findings** | | The first paragraph is replaced with the following: “All fossils, coins, articles of value or antiquity, structures, groups of structures, and other remains or items of geological, archaeological, paleontological, historical, architectural or religious interest found on the Site shall be placed under the care and custody of the Employer. The Contractor shall:   1. take all reasonable precautions, including fencing-off the area or site of the finding, to avoid further disturbance and prevent Contractor’s Personnel or other persons from removing or damaging any of these findings; 2. train relevant Contractor’s Personnel on appropriate actions to be taken in the event of such findings; and 3. implement any other action consistent with the requirements of the Specification and relevant Laws.” |
| Sub-Clause 4.24 **Suppliers (other than Subcontractors)** | | **4.24.1 Forced Labour**  The Contractor shall take measures to require its suppliers (other than Subcontractors) not to employ or engage forced labour including trafficked persons as described in Sub-Clause 6.21. If forced labour/trafficking cases are identified, the Contractor shall take measures to require the suppliers to take appropriate steps to remedy them. Where the supplier does not remedy the situation, the Contractor shall within a reasonable period substitute the supplier with a supplier that is able to manage such risks.  **4.24.2 Child labour**  The Contractor shall take measures to require its suppliers (other than Subcontractors) not to employ or engage child labour as described in Sub-Clause 6.22. If child labour cases are identified, the Contractor shall take measures to require the suppliers to take appropriate steps to remedy them. Where the supplier does not remedy the situation, the Contractor shall within a reasonable period substitute the supplier with a supplier that is able to manage such risks.  **4.24.3 Serious Safety Issues**  The Contractor, including its Subcontractors, shall comply with all applicable safety obligations, including as stated in Sub-Clauses 4.8, 5.1 and 6.7. The Contractor shall also take measures to require its suppliers (other than Subcontractors) to adopt procedures and mitigation measures adequate to address safety issues related to their personnel. If serious safety issues are identified, the Contractor shall take measures to require the suppliers to take appropriate steps to remedy them. Where the supplier does not remedy the situation, the Contractor shall within a reasonable period substitute the supplier with a supplier that is able to manage such risks.  **4.24.4 Obtaining natural resource materials in relation to supplier**  The Contractor shall obtain natural resource materials from suppliers that can demonstrate, through compliance with the applicable verification and/ or certification requirements, that obtaining such materials is not contributing to the risk of significant conversion or significant degradation of natural or critical habitats such as unsustainably harvested wood products, gravel or sand extraction from river beds or beaches.  If a supplier cannot continue to demonstrate that obtaining such materials is not contributing to the risk of significant conversion or significant degradation of natural or critical habitats, the Contractor shall within a reasonable period substitute the supplier with a supplier that is able to demonstrate that they are not significantly adversely impacting the habitats. |
| Sub-Clause 4.25Code of Conduct | | The Contractor shall have a Code of Conduct for the Contractor’s Personnel.  The Contractor shall take all necessary measures to ensure that each Contractor’s Personnel is made aware of the Code of Conduct including specific behaviors that are prohibited, and understands the consequences of engaging in such prohibited behaviors.  These measures include providing instructions and documentation that can be understood by the Contractor’s Personnel and seeking to obtain that person’s signature acknowledging receipt of such instructions and/or documentation, as appropriate.  The Contractor shall also ensure that the Code of Conduct is visibly displayed in multiple locations on the Site and any other place where the Works will be carried out, as well as in areas outside the Site accessible to the local community and project affected people. The posted Code of Conduct shall be provided in languages comprehensible to Contractor’s Personnel, Employer’s Personnel and the local community.  The Contractor’s Management Strategy and Implementation Plans shall include appropriate processes for the Contractor to verify compliance with these obligations. |
| Sub-Clause 5.1 **Subcontractors** | | The following is added at the beginning of the second paragraph.  “The Contractor shall require that its Subcontractors execute the Works in accordance with the Contract, including complying with the relevant ES requirements and the obligations set out in Sub-Clause 4.25 above.”  The following is added at the end of the last paragraph of Sub-Clause 5.1:  “All subcontracts relating to the Works shall include provisions which entitle the Employer to require the subcontract to be assigned to the Employer under sub-paragraph (a) of Sub-Clause 15.2.3 [*After Termination*].  Where practicable, the Contractor shall give fair and reasonable opportunity for contractors from the Country to be appointed as Subcontractors.” |
| Sub-Clause 5.2.2 **Objection to Nomination** | | In sub-paragraph (a), on the first line before “Subcontractor”, “nominated” is added.  In sub-paragraph (c):  “and” is deleted from the end of (i);  “.” at the end of (ii) is replaced with: “, and”.  The following is then added as (iii):  “(iii) be paid only if and when the Contractor has received from the Employer payments for sums due under the Subcontract referred to under Sub-Clause 5.2.3 [ *Payment to nominated Subcontractors*].” |
| Sub-Clause 6.1 **Engagement of Staff and Labour** | | The following paragraphs are added at the end of the Sub-Clause:  The Contractor shall provide the Contractor’s Personnel information and documentation that are clear and understandable regarding their terms and conditions of employment. The information and documentation shall set out their rights under relevant labour Laws applicable to the Contractor’s Personnel (which will include any applicable collective agreements), including their rights related to hours of work, wages, overtime, compensation and benefits, as well as those arising from any requirements in the Specification. The Contractor’s Personnel shall be informed when any material changes to their terms or conditions of employment occur.  “The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour with appropriate qualifications and experience from sources within the Country.” |
| Sub-Clause 6.2 **Rates of Wages and Conditions of Labour** | | The following paragraphs are added at the end of the Sub-Clause:  “The Contractor shall inform the Contractor’s Personnel about:   1. any deduction to their payment and the conditions of such deductions in accordance with the applicable Laws or as stated in the Specification; and 2. their liability to pay personal income taxes in the Country in respect of such of their salaries, wages, allowances and any benefits as are subject to tax under the Laws of the Country for the time being in force.   The Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.  Where required by applicable Laws or as stated in the Specification, the Contractor shall provide the Contractor’s Personnel written notice of termination of employment and details of severance payments in a timely manner. The Contractor shall have paid the Contractor’s Personnel (either directly or where appropriate for their benefit) all due wages and entitlements including, as applicable, social security benefits and pension contributions, on or before the end of their engagement/ employment.” |
| Sub-Clause 6.5 Working Hours | | The following is inserted at the end of the Sub-Clause:  “The Contractor shall provide the Contractor’s Personnel annual holiday and sick, maternity and family leave, as required by applicable Laws or as stated in the Specification.” |
| Sub-Clause 6.6Facilities for Staff and Labour | | The following is added as the last paragraph:  “If stated in the Specification, the Contractor shall give access to or provide services that accommodate the physical, social and cultural needs of the Contractor’s Personnel. The Contractor shall also provide similar facilities for the Employer’s Personnel as stated in the Specification.” |
| Sub-Clause 6.7 **Health and Safety of Personnel** | | In the second paragraph, “The Contractor” is replaced with:  “Except as otherwise stated in the Specification, the Contractor…” |
| Sub-Clause 6.9 **Contractor’s Personnel** | | The Sub-Clause is replaced with:  “The Contractor’s Personnel (including Key Personnel, if any) shall be appropriately qualified, skilled, experienced and competent in their respective trades or occupations.  The Engineer may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor’s Representative and Key Personnel (if any), who:   1. persists in any misconduct or lack of care; 2. carries out duties incompetently or negligently; 3. fails to comply with any provision of the Contract; 4. persists in any conduct which is prejudicial to safety, health, or the protection of the environment; 5. based on reasonable evidence, is determined to have engaged in Fraud and Corruption during the execution of the Works; 6. has been recruited from the Employer’s Personnel in breach of Sub-Clause 6.3 [Recruitment of Persons]; 7. undertakes behavior which breaches the Code of Conduct for Contractor’s Personnel (ES).   If appropriate, the Contractor shall then promptly appoint (or cause to be appointed) a suitable replacement with equivalent skills and experience. In the case of replacement of the Contractor’s Representative, Sub-Clause 4.3 [*Contractor’s Representative*] shall apply. In the case of replacement of Key Personnel (if any), Sub-Clause 6.12 [*Key Personnel*] shall apply.  Subject to the requirements in Sub-Clause 4.3 [*Contractor’s Representative*] and 6.12 [*Key Personnel*], and notwithstanding any requirement from the Engineer to remove or cause to remove any person, the Contractor shall take immediate action as appropriate in response to any violation of (a) through (g) above. Such immediate action shall include removing (or causing to be removed) from the Site or other places where the Works are being carried out, any Contractor’s Personnel who engages in (a), (b), (c), (d), (e) or (g) above or has been recruited as stated in (f) above.” |
| Sub-Clause 6.12 **Key Personnel** | | The following is inserted at the end of the last paragraph:  “If any of the Key Personnel are not fluent in this language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer.” |
| **The following Sub-Clauses 6.13 to 6.27 are added after sub-clause 6.12** | | |
| Sub-Clause 6.13Foreign Personnel | | The Contractor may bring into the Country any foreign personnel who are necessary for the execution of the Works to the extent allowed by the applicable Laws. The Contractor shall ensure that these personnel are provided with the required residence visas and work permits. The Employer will, if requested by the Contractor, use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national, or government permission required for bringing in the Contractor’s personnel.  The Contractor shall be responsible for the return of these personnel to the place where they were recruited or to their domicile. In the event of the death in the Country of any of these personnel or members of their families, the Contractor shall similarly be responsible for making the appropriate arrangements for their return or burial. |
| Sub-Clause 6.14 **Supply of Foodstuffs** | | The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor’s Personnel for the purposes of or in connection with the Contract. |
| Sub-Clause 6.15 **Supply of Water** | | The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor’s Personnel. |
| Sub-Clause 6.16 **Measures against Insect and Pest Nuisance** | | The Contractor shall at all times take the necessary precautions to protect the Contractor’s Personnel employed on the Site from insect and pest nuisance, and to reduce the danger to their health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide. |
| Sub-Clause 6.17 **Alcoholic Liquor or Drugs** | | The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift, barter or disposal thereto by Contractor’s Personnel. |
| Sub-Clause 6.18 **Arms and Ammunition** | | The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor’s Personnel to do so. |
| Sub-Clause 6.19 **Festivals and Religious Customs** | | The Contractor shall respect the Country’s recognized festivals, days of rest and religious or other customs. |
| Sub-Clause 6.20 **Funeral Arrangements** | | The Contractor shall be responsible, to the extent required by local regulations, for making any funeral arrangements for any of its local employees who may die while engaged upon the Works. |
| Sub-Clause 6.21 **Forced Labour** | | The Contractor, including its Subcontractors, shall not employ or engage forced labour. Forced labour consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labour, such as indentured labour, bonded labour or similar labour-contracting arrangements.  No persons shall be employed or engaged who have been subject to trafficking. Trafficking in persons is defined as the recruitment, transportation, transfer, harbouring or receipt of persons by means of the threat or use of force or other forms of coercion, abduction, fraud, deception, abuse of power, or of a position of vulnerability, or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purposes of exploitation. |
| Sub-Clause 6.22 **Child Labour** | | The Contractor, including its Subcontractors, shall not employ or engage a child under the age of 14 unless the national law specifies a higher age (the minimum age).  The Contractor, including its Subcontractors, shall not employ or engage a child between the minimum age and the age of 18 in a manner that is likely to be hazardous, or to interfere with, the child’s education, or to be harmful to the child’s health or physical, mental, spiritual, moral, or social development.  The Contractor including its Subcontractors, shall only employ or engage children between the minimum age and the age of 18 after an appropriate risk assessment has been conducted by the Contractor with the Engineer’s consent. The Contractor shall be subject to regular monitoring by the Engineer that includes monitoring of health, working conditions and hours of work.  Work considered hazardous for children is work that, by its nature or the circumstances in which it is carried out, is likely to jeopardize the health, safety, or morals of children. Such work activities prohibited for children include work:   1. with exposure to physical, psychological or sexual abuse; 2. underground, underwater, working at heights or in confined spaces; 3. with dangerous machinery, equipment or tools, or involving handling or transport of heavy loads; 4. in unhealthy environments exposing children to hazardous substances, agents, or processes, or to temperatures, noise or vibration damaging to health; or 5. under difficult conditions such as work for long hours, during the night or in confinement on the premises of the employer. |
| Sub-Clause 6.23 **Employment Records of Workers** | | The Contractor shall keep complete and accurate records of the employment of labour at the Site. The records shall include the names, ages, genders, hours worked, and wages paid to all workers. These records shall be summarised on a monthly basis and submitted to the Engineer. These records shall be included in the details to be submitted by the Contractor under Sub-Clause 6.10 [Records of Contractor’s Personnel and Equipment]. |
| Sub-Clause 6.24 **Workers’ Organisations** | | In countries where the relevant labour laws recognise workers’ rights to form and to join workers’ organisations of their choosing and to bargain collectively without interference, the Contractor shall comply with such laws. In such circumstances, the role of legally established workers’ organizations and legitimate workers’ representatives will be respected, and they will be provided with information needed for meaningful negotiation in a timely manner. Where the relevant labour laws substantially restrict workers’ organisations, the Contractor shall enable alternative means for the Contractor’s Personnel to express their grievances and protect their rights regarding working conditions and terms of employment. The Contractor shall not seek to influence or control these alternative means. The Contractor shall not discriminate or retaliate against the Contractor’s Personnel who participate, or seek to participate, in such organisations and collective bargaining or alternative mechanisms. Workers’ organisations are expected to fairly represent the workers in the workforce. |
| Sub-Clause 6.25 **Non-Discrimination and Equal Opportunity** | | The Contractor shall not make decisions relating to the employment or treatment of Contractor’s Personnel on the basis of personal characteristics unrelated to inherent job requirements. The Contractor shall base the employment of Contractor’s Personnel on the principle of equal opportunity and fair treatment, and shall not discriminate with respect to any aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices.  Special measures of protection or assistance to remedy past discrimination or selection for a particular job based on the inherent requirements of the job shall not be deemed discrimination. The Contractor shall provide protection and assistance as necessary to ensure non-discrimination and equal opportunity, including for specific groups such as women, people with disabilities, migrant workers and children (of working age in accordance with Sub-Clause 6.22). |
| Sub-Clause 6.26 **Contractor’s Personnel Grievance Mechanism** | | The Contractor shall have a grievance mechanism for Contractor’s Personnel, and where relevant the workers’ organizations stated in Sub-Clause 6.24, to raise workplace concerns. The grievance mechanism shall be proportionate to the nature, scale, risks and impacts of the Contract. The mechanism shall address concerns promptly, using an understandable and transparent process that provides timely feedback to those concerned in a language they understand, without any retribution, and shall operate in an independent and objective manner.  The Contractor’s Personnel shall be informed of the grievance mechanism at the time of engagement for the Contract, and the measures put in place to protect them against any reprisal for its use. Measures will be put in place to make the grievance mechanism easily accessible to all Contractor’s Personnel.  The grievance mechanism shall not impede access to other judicial or administrative remedies that might be available, or substitute for grievance mechanisms provided through collective agreements.  The grievance mechanism may utilize existing grievance mechanisms, providing that they are properly designed and implemented, address concerns promptly, and are readily accessible to such project workers. Existing grievance mechanisms may be supplemented as needed with Contract-specific arrangements. |
|  | |  |
| Sub-Clause 6.27Training of Contractor’s Personnel | | The Contractor shall provide appropriate training to relevant Contractor’s Personnel on ES aspects of the Contract, including appropriate sensitization on prohibition of SEA, and health and safety training referred to in Sub-Clause 4.8    As stated in the Specification or as instructed by the Engineer, the Contractor shall also allow appropriate opportunities for the relevant Contractor’s Personnel to be trained on ES aspects of the Contract by the Employer’s Personnel.  The Contractor shall provide training on SEA, including its prevention, to any of its personnel who has a role to supervise other Contractor’s Personnel. |
| Sub-Clause 7.3 Inspection | | The following is added in the first paragraph after “Employer’s Personnel” “(including the Bank staff or consultants acting on the Bank’s behalf, stakeholders and third parties, such as independent experts, local communities, or non-governmental organizations)”  The following is added as (b) (iv):  “(iv) carryout environmental and social audit, and” |
| Sub-Clause 7.7Ownership of Plant and Materials | | The following is added before the first paragraph:  “Except as otherwise provided in the Contract,” |
| Sub-Clause 8.1 **Commencement of Work** | | The Sub- Clause is replaced in its entirety with the following:  “The Engineer shall give a Notice to the Contractor stating the Commencement Date, not less than 14 days before the Commencement Date.  The Notice shall be issued promptly after the Engineer determines the fulfilment of the following conditions:   1. signature of the Contract Agreement by both Parties, and if required, approval of the Contract by relevant authorities of the Country; 2. delivery to the Contractor of reasonable evidence of the Employer’s financial arrangements (under Sub-Clause 2.4 [Employer’s Financial Arrangements]); 3. except if otherwise specified in the Contract Data, effective access to and possession of the Site given to the Contractor together with such permission(s) under (a) of Sub-Clause 1.13 [Compliance with Laws] as required for the commencement of the Works; 4. receipt by the Contractor of the Advance Payment under Sub-Clause 14.2 [Advance Payment] provided that the corresponding bank guarantee has been delivered by the Contractor; 5. constitution of the DAAB in accordance with Sub-Clause 21.1 and Sub-Clause 21.2 as applicable.   Subject to Sub-Clause 4.1 on the Management Strategies and Implementation Plans and the C-ESMP and Sub-Clause 4.8 on the health and safety manual, the Contractor, shall commence the execution of the Works as soon as is reasonably practicable after the Commencement Date, and shall then proceed with the Works with due expedition and without delay.” |
| Sub-Clause 11.7 **Right of Access after Taking Over** | | In the second paragraph, “Whenever the Contractor intends to access any part of the Works during the relevant DNP:” is replaced with:  “Whenever, until the date 28 days after issue of the Performance Certificate, the Contractor intends to access any part of the Works:” |
| Sub-Clause 13.3.1 **Variation by Instruction** | | Subparagraph 13.3.1 (a) is replaced with: “a description of the varied work performed or to be performed, including details of the resources and methods adopted or to be adopted by the Contractor, and sufficient ES information to enable an evaluation of ES risks and impacts;” |
| Sub-Clause 13.4 **Provisional Sums** | | The following is inserted as the penultimate paragraph:  “The Provisional Sum shall be used to cover the Employer's share of the DAAB members’ fees and expenses, in accordance with Clause 21. No prior instruction of the Engineer shall be required with respect to the work of the DAAB. The Contractor shall submit the DAAB members’ invoices and satisfactory evidence of having paid 100% of such invoices as part of the substantiation of those Statements submitted under Sub-Clause 14.3. |
| Sub-Clause 13.6 **Adjustments for Changes in Laws** | | The following paragraph is added at the end of the Sub-Clause:  “Notwithstanding the foregoing, the Contractor shall not be entitled to an extension of time if the relevant delay has already been taken into account in the determination of a previous extension of time and such Cost shall not be separately paid if the same shall already have been taken into account in the indexing of any inputs to the Table of Adjustment Data in accordance with the provisions of Sub-Clause 13.7 [Adjustments for Changes in Cost].” |
| Sub-Clause 13.7Adjustments for changes in CostSub-Clause 14.1 **The Contract Price** | | Add the following paragraph at the end only if Contract Data specifies adjustment shall apply. Otherwise, prices shall be fixed during the duration of the Contract:  Schedule of Cost Indexation: Formula for Adjustment for Change in Cost:  Pn = a + b Ln/ Lo + c En/Eo + d Mn/Mo + ...... where:  “Pn” is the adjustment multiplier to be applied to the estimated contract value in the relevant currency of the work carried out in period “n”, this period being a month unless otherwise stated in the Contract Data;  “a” is a fixed coefficient, stated in the relevant table of adjustment data, representing the non-adjustable portion in contractual payments;  “b”, “c”, “d”, … are coefficients representing the estimated proportion of each cost element related to the execution of the Works, as stated in the relevant table of adjustment data; such tabulated cost elements may be indicative of resources such as labour, equipment and materials;  “Ln”, “En”, “Mn”, … are the current cost indices or reference prices for period “n”, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the date 49 days prior to the last day of the period (to which the particular Payment Certificate relates); and  “Lo”, “Eo”, “Mo”, … are the base cost indices or reference prices, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the Base Date.  The cost indices or reference prices stated in the table of adjustment data shall be used. If their source is in doubt, it shall be determined by the Engineer. For this purpose, reference shall be made to the values of the indices at stated dates (quoted in the fourth and fifth columns respectively of the table)  If the currency in which the Contract price is expressed is different from the currency of the country of origin of the indices, a correction factor will be applied to avoid incorrect adjustments of the Contract price. The correction factor shall be: Z0 / Z1, where,  Z0  = the number of units of currency of the origin of the indices which equal to one unit of the currency of the Contract Price on the Base date, and  Z1 = the number of units of currency of the origin of the indices which equal to one unit of the currency of the Contract Price on the Date of Adjustment.  ***[Note to the Employer: include one of the following two alternative texts as applicable]***  The following is added at the end of the Sub-Clause:  ***[Alternative 1]***  **“**Notwithstanding the provisions of subparagraph (b), Contractor's Equipment, including essential spare parts therefor, imported by the Contractor for the sole purpose of executing the Contract shall be exempt from the payment of import duties and taxes upon importation.”  ***[Alternative 2]***  “Notwithstanding the provisions of subparagraph (b), Contractor's Equipment, including essential spare parts therefore, imported by the Contractor for the sole purpose of executing the Contract shall be temporarily exempt from the payment of import duties and taxes upon initial importation, provided the Contractor shall post with the customs authorities at the port of entry an approved export bond or bank guarantee, valid until the Time for Completion plus six months, in an amount equal to the full import duties and taxes which would be payable on the assessed imported value of such Contractor's Equipment and spare parts, and callable in the event the Contractor's Equipment is not exported from the Country on completion of the Contract. A copy of the bond or bank guarantee endorsed by the customs authorities shall be provided by the Contractor to the Employer upon the importation of individual items of Contractor's Equipment and spare parts. Upon export of individual items of Contractor's Equipment or spare parts, or upon the completion of the Contract, the Contractor shall prepare, for approval by the customs authorities, an assessment of the residual value of the Contractor's Equipment and spare part to be exported, based on the depreciation scale (s and other criteria used by the customs authorities for such purposes under the provisions of the applicable Laws. Import duties and taxes shall be due and payable to the customs authorities by the Contractor on (a) the difference between the initial imported value and the residual value of the Contractor's Equipment and spare parts to exported; and (b) on the initial imported value of the Contractor's Equipment and spare parts remaining in the Country after completion of the Contract. Upon payment of such dues within 28 days of being invoiced, the bond or bank guarantee shall be reduced or released accordingly; otherwise the security shall be called in the full amount remaining.” |
| Sub-Clause 14.2.1 **Advance Payment Guarantee** | | The first paragraph is replaced with:  “The Contractor shall obtain (at the Contractor’s cost) an Advance Payment Guarantee in amounts and currencies equal to the advance payment, and shall submit it to the Employer with a copy to the Engineer. This guarantee shall be issued by reputable bank or financial institution selected by the Contractor and shall be based on the sample form annexed to the Particular Conditions or in another form agreed by the Employer(but such agreement shall not relieve the Contractor from any obligation under this Sub-Clause).” |
| Sub-Clause 14.3 **Application for Interim Payment** | | The following is inserted at the end of (vi) after: *[Agreement or Determination]*: “any reimbursement due to the Contractor under the Dispute Avoidance/ Adjudication Agreement. (Appendix General Conditions of Dispute Avoidance/ Adjudication Agreement).” |
| Sub-Clause 14.6.2 **Withholding (amounts in) an IPC** | | “and/or” from subparagraph (b) is deleted.    The following is then added as subparagraph (c) and sub-paragraph (c) of the Sub-Clause is renumbered as (d):  “(c) if the Contractor was, or is, failing to perform any ES obligations or work under the Contract, the value of this work or obligation, as determined by the Engineer, may be withheld until the work or obligation has been performed, and/or the cost of rectification or replacement, as determined by the Engineer, may be withheld until rectification or replacement has been completed. Failure to perform includes, but is not limited to the following:   * + - 1. failure to comply with any ES obligations or work described in the Works’ Requirements which may include: working outside site boundaries, excessive dust, damage to offsite vegetation, pollution of water courses from oils or sedimentation, contamination of land e.g. from oils, human waste, damage to archaeology or cultural heritage features, air pollution as a result of unauthorized and/or inefficient combustion;       2. failure to regularly review C-ESMP and/or update it in a timely manner to address emerging ES issues, or anticipated risks or impacts;       3. failure to implement the C-ESMP e.g. failure to provide required training or sensitization;       4. failing to have appropriate consents/permits prior to undertaking Works or related activities;       5. failure to submit ES report/s (as described in Particular Conditions - Part D), or failure to submit such reports in a timely manner;       6. failure to implement remediation as instructed by the Engineer within the specified timeframe (e.g. remediation addressing non-compliance/s).” |
| Sub-Clause 14.7 **Payment** | | At the end of sub-paragraph (b): “and” is replaced with “or” and the following inserted as (iii):  “(iii) at a time when the Bank’s loan or credit (from which part of the payments to the Contractor is being made) is suspended, the amount shown on any statement submitted by the Contractor within 14 days after such statement is submitted, any discrepancy being rectified in the next payment to the Contractor; and”  At the end of sub-paragraph (c): “.” is replaced with “;” and the following inserted:  “or, at a time when the Bank’s loan or credit (from which part of the payments to the Contractor is being made) is suspended the undisputed amount shown in the Final Statement within 56 days after the date of notification of the suspension in accordance with Sub-Clause 16.2 [Termination by Contractor].” |
| Sub-Clause 14.9 **Release of Retention Money** | | The following is added at the end of Sub-Clause 14.9:  “Unless otherwise stated in the Contract, when the Taking-Over Certificate has been issued for the Works and the first half of the Retention Money has been certified for payment by the Engineer, the Contractor shall be entitled to substitute a guarantee, in the form annexed to the Particular Conditions or in another form approved by the Employer and issued by a reputable bank or financial institution selected by the Contractor, for the second half of the Retention Money. The Contractor shall ensure that the guarantee is in the amounts and currencies of the second half of the Retention Money and is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects, as specified for the Performance Security and, if applicable, an ES Performance Security in Sub-Clause 4.2. On receipt by the Employer of the required guarantee, the Engineer shall certify and the Employer shall pay the second half of the Retention Money. The release of the second half of the Retention Money against a guarantee shall then be in lieu of the release after the latest of the expiry dates of the Defects Notification Periods. The Employer shall return the guarantee to the Contractor within 21 days after receiving a copy of the Performance Certificate.  If the Performance Security and, if applicable, an ES Performance Security required under Sub-Clause 4.2 is in the form of a demand guarantee, and the amount guaranteed under them when the Taking-Over Certificate is issued is more than half of the Retention Money, then the Retention Money guarantee will not be required. If the amount guaranteed under the Performance Security and, if applicable, an ES Performance Security, when the Taking-Over Certificate is issued is less than half of the Retention Money, the Retention Money guarantee will only be required for the difference between half of the Retention Money and the amount guaranteed under the Performance Security and, if applicable, an ES Performance Security.” |
| Sub-Clause 14.12 **Discharge** | | On the seventh line of the first paragraph, “Sub-Clause 21.6 [*Arbitration]*” is replaced with: “Clause 21 *[Disputes and Arbitration]’.* |
| Sub-Clause 14.15 **Currencies of Payment** | | Throughout Sub-Clause 14.15, “Contract Data” is replaced with: “Schedule of Payment Currencies”. |
| Sub-Clause 15.1 **Notice to Correct** | | “and” is deleted from (b) and  “.” is replaced by: “; and” in (c).  The following is then added as (d)  “(d) specify the time within which the Contractor shall respond to the Notice to Correct.”  In the third para., “shall immediately respond” is replaced with: “shall respond within the time specified in (d)”. Further, in the third para., “to comply with the time specified in the Notice to Correct.” is replaced with: “to comply with the time specified in (c).” |
| Sub-Clause 15.2.1 **Notice** | | Sub-paragraph (h) is replaced with:“based on reasonable evidence, has engaged in Fraud and Corruption as defined in paragraph 2.2 of the Particular Conditions - Part C- Fraud and Corruption, in competing for or in executing the Contract.” |
| Sub-Clause 15.8 **Fraud and Corruption** | | The following new Sub-Clause is added:  “  15.8.1 The Bank requires compliance with it’s Integrity Framework comprising the African Development Bank Group’s Sanctions Procedures, the Bank’s Whistleblowing and Complaints Policy, the Bank’s Procurement Policy under the Procurement Framework and any other applicable Policies and Procedures including their updates , as set forth in Particular Conditions - Part C- Fraud and Corruption.  15.8.2 The Employer requires the Contractor to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the bidding process or execution of the Contract. The information disclosed must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee.” |
| **Sub-Clause 15.9**  **Eligibility** Sub-Clause 16.1 **Suspension by Contractor** | | The following new Sub-Clause is added:    “The Contractor and its Subcontractor or Suppliers shall have the nationality of an eligible country of the Bank in accordance with the Bank’s Procurement Policy for the Bank Group Funded Operation described under the Bank’s Procurement Framework, and as listed in Section V, Eligible Countries. The Contractor shall be deemed to have the nationality of a country if the Contractor is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed subcontractors or subconsultants for any part of the Contract including related Services. All materials, equipment and services to be supplied under the Contract shall have their country of origin in an eligible country of the Bank in accordance with the Bank’s Procurement Policy for Bank Group Funded Operations described under the Bank’s Procurement Framework, and as set forth in Particular Conditions -Part E- Section V, Eligible Countries.”  The following paragraph is inserted after the first paragraph:  “Notwithstanding the above, if the Bank has suspended disbursements under the loan or credit from which payments to the Contractor are being made, in whole or in part, for the execution of the Works, and no alternative funds are available as provided for in Sub-Clause 2.4 [Employer’s Financial Arrangements], the Contractor may by notice suspend work or reduce the rate of work at any time, but not less than 7 days after the Borrower having received the suspension notification from the Bank.” |
| Sub-Clause 16.2.1 **Notice** | | Sub-paragraph (j) is deleted in its entirety.  At the end of sub-paragraph (i): “; or” is replaced with: “.”  sub-paragraph (f) is replaced with:  “(f) the Contractor does not receive a Notice of the Commencement Date under Sub-Clause 8.1 [*Commencement of Works*] within 180 days after receiving the Letter of Acceptance, for reasons not attributable to the Contractor.” |
| Sub-Clause 16.2.2Termination | | The following is added at the end of Sub-Clause 16.2.2:  “In the event the Bank suspends the loan or credit from which part or whole of the payments to the Contractor are being made, if the Contractor has not received the sums due to him upon expiration of the 14 days referred to in Sub-Clause 14.7 [Payment] for payments under Interim Payment Certificates, the Contractor may, without prejudice to the Contractor's entitlement to financing charges under Sub-Clause 14.8 [Delayed Payment], take one of the following actions, namely (i) suspend work or reduce the rate of work under Sub-Clause 16.1 above, or (ii) terminate the Contract by giving notice to the Employer, with a copy to the Engineer, such termination to take effect 14 days after the giving of the notice.” |
| **Sub-Clause 16.3** Contractor’s Obligations After Termination | | *[If the Employer has made available any Employer- Supplied Materials and/or Employer’s Equipment in accordance with Sub-Clause 2.6, include the following:]*  “and” is deleted from the end of sub-paragraph (b), sub-paragraph (c) deleted and the following added:   * + 1. deliver to the Engineer all Employer- Supplied Materials and/or Employer’s Equipment made available to the Contractor in accordance with Sub-Clause 2.6 *[Employer-Supplied materials and Employer’s Equipment]; and*     2. remove all other Goods from the Site, except as necessary for safety, and leave the Site.” |
| Sub-Clause 17.1 Responsibility for Care of the Works | | On the fourth and fifth lines of the first paragraph, replace “Date of Completion of the Works” with “issue of the Taking- Over Certificate for the Works”.  *[If Employer- Supplied Materials are listed in the Specification for the Contractor’s use in the execution of Works, include the following provision. See also Sub-Clause 2.6* [*Employer-Supplied Materials and Employer’s Equipment]]*  After the two instances of “Goods” in the last paragraph, the following is added: “Employer- Supplied Materials”.  *[If Employer’s Equipment are listed in the Employer’s Requirements for the Contractor’s use in the execution of Works, include the following provision. See also Sub-Clause 2.6* [*Employer-Supplied Materials and Employer’s Equipment]]*  After the two instances of “Goods” in the last paragraph, the following is added: “, Employer’s Equipment,”. |
| Sub-Clause 17.3 **Intellectual and Industrial Property Rights** | | On the first line of the second paragraph, replace “notice” is replaced with “a Notice”. |
| Sub-Clause 17.7 **Use of Employer’s Accommodation/Facilities** | | The following Sub-Clause is added as 17.7:  “The Contractor shall take full responsibility for the care of the Employer-provided accommodation and facilities, if any, as detailed in the Specification, from the respective dates of hand-over to the Contractor until cessation of occupation (where hand-over or cessation of occupation may take place after the date stated in the Taking-Over Certificate for the Works)  If any loss or damage happens to any of the above items while the Contractor is responsible for their care arising from any cause whatsoever other than those for which the Employer is liable, the Contractor shall, at its own cost, rectify the loss or damage to the satisfaction of the Engineer.” |
| Sub-Clause 18.1Exceptional Events | | Sub-paragraph (c) is substituted with:  “(c) riot, commotion, disorder or sabotage by persons other than the Contractor’s Personnel and other employees of the Contractor and Subcontractors;” |
| Sub-Clause 18.4 **Consequences of an Exceptional Event** | | The following is added at the end of sub-paragraph (b) after deleting the “.”:  “, including the costs of rectifying or replacing the Works and/or Goods damaged or destroyed by Exceptional Events, to the extent they are not indemnified through the insurance policy referred to in Sub-Clause 19.2 [ Insurance to be provided by the Contractor].” |
| Sub-Clause 18.5Optional Termination | | In sub-paragraph (c), “and necessarily” is inserted after ““was reasonably”. |
| Sub-Clause 19.1General Requirements | | The following paragraphs are added after the first:  “Wherever the Employer is the insuring Party, each insurance shall be effected with insurers and in terms acceptable to the Contractor. These terms shall be consistent with terms (if any) agreed by both Parties before the date of the Letter of Acceptance.  This agreement of terms shall take precedence over the provisions of this Clause." |
| Sub-Clause 19.2 **insurance to be provided by the Contractor** | | The following is inserted as the first sentence in Sub-Clause 19.2:  “The Contractor shall be entitled to place all insurances relating to the Contract (including, but not limited to the insurance referred to Clause 19) with insurers from any eligible source country.” |
| Sub-Clause 19.2.1 **The Works** | | On the last line of the second paragraph, “Clause 12 *[Tests after completion]*” is deleted. |
| Sub-Clause 19.2.5Injury to employees | | The second paragraph is replaced with:  “The Employer and the Engineer shall also be indemnified under the policy of insurance, against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor’s Personnel, except that this insurance may exclude losses and claims to the extent that they arise from any act or neglect of the Employer or of the Employer's Personnel.” |
| Sub-Clause 20.1Claims | | In a): “any additional payment” is replaced with “payment”. |
| Sub-Clause 20.2 **Claims for Payment and/or EOT** | | The first paragraph is replaced with:  “If either Party considers that it is entitled to claim under 20.1 (a) or (b), the following claim procedure shall apply:” |
| Sub-Clause 21.1Constitution of the DAAB | | In the second paragraph, at the end of the first sentence after deleting: “.”, the following is added: “, each of whom shall meet the criteria set forth in Sub-Clause 3.3 of Appendix- General Conditions of Dispute Avoidance/ Adjudication Agreement.”  After the second paragraph insert the following paragraph: “If the Contract is with a foreign Contractor, the DAAB members shall not have the same nationality as the Employer or the Contractor.” |
| **Sub-Clause 21.2** Failure to Appoint DAAB Member (s) | | For both (a) and (b): “by the date stated in the first paragraph of Sub-Clause 21.1 [*Constitution of the DAAB*]” is replaced with: “within 42 days from the date the Contract is signed by both Parties” |
| Sub-Clause 21.6Arbitration | | In the first paragraph, delete starting from: “international arbitration” up to the end of (c), and replace with the following:  “ arbitration. Arbitration shall be conducted as follows:   1. if the contract is with foreign contractors, unless otherwise specified in the Contract Data; the dispute shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce; by one or three arbitrators appointed in accordance with these Rules. The place of arbitration shall be the neutral location specified in the Contract Data; and the arbitration shall be conducted in the ruling language defined in Sub-Clause 1.4 [Law and Language].   (b) If the Contract is with domestic contractors, arbitration with proceedings conducted in accordance with the laws of the Employer’s country.” |
| **Appendix- General Conditions of Dispute Avoidance / Adjudication Agreement** | | |
| **Title** | | “General Conditions of Dispute Avoidance/Adjudication Agreement” is replaced with “General Conditions of DAAB Agreement”. |
| **1. Definitions**  **2. General provisions** | | Sub-Clause 1.2: In both the first and third lines, “DAA Agreement” is replaced with “DAAB Agreement”.  Sub-Clause 1.3:   * In the first line, “Dispute Avoidance/Adjudication Agreement” or “DAA Agreement” means” is replaced with: * “DAAB Agreement” is as defined under the Contract and is”. * In the first line of sub-paragraph (c), “DAA Agreement” is replaced with “DAAB Agreement”. * In sub-paragraph (c)(ii), “chairman” is replaced with “chairperson”.   Sub-Clause 1.3 “DAAB Activities” is replaced with Sub-Clause 1.4 “DAAB Activities” and the subsequent Sub- Clauses under Clause 1 “Definitions” renumbered:  Sub-Clause 1.7 to 12: Replace all instances of “DAA Agreement” with “DAAB Agreement”.  In Sub-Clause 1.8 a(i):” authorised representative of the contractor or of the Employer” is replaced with: “Contractor’s Representative or authorised representative of the Employer”.  Sub-Clause 2.2 is deleted in its entirety.  **2. General provision** |
| 1. **Warranties** | | Sub-Clause 3.3 is deleted and replaced with the following:  “When appointing the DAAB Member, each Party relies on the DAAB Member’s representations, that he/she;   1. has at least a bachelor’s degree in relevant disciplines such as law, engineering, construction management or contract management; 2. has at least ten years of experience in contract administration/management and dispute resolution, out of which at least five years of experience as an arbitrator or adjudicator in construction-related disputes; 3. has received formal training as an adjudicator from an internationally recognized organization; 4. has experience and/or is knowledgeable in the type of work which the Contractor is to carry out under the Contract; 5. has experience in the interpretation of construction and/or engineering contract documents; 6. has familiarity with the forms of contract published by FIDIC since 1999, and an understanding of the dispute resolution procedures contained therein; and 7. is fluent in the language for communications stated in the Contract Data (or the language as agreed between the Parties and the DAAB).” |
| **7. Confidentiality** | | In Sub-Clause 7.3: “or” is deleted after sub-paragraph (b),  and the following added:  “or (d) is being provided to the Bank.” |
| **9. Fees and Expenses** | | In Sub-Clause 9.1 (c): “business class or equivalent” is replaced with: “in less than first class”. |
|  | | In Sub-Clause 9.4: “and air fares” and “other” are deleted from the first and second sentences respectively. |
| 1. **Resignation & Termination** | | In Sub-Clause 10.3: “the DAA Agreement” is replaced with: “a DAAB member’s DAAB Agreement”. |
| **Annex- DAAB Procedural Rules** | | |
| Rule 4.2 | On the fourth line, “chairman” is replaced with “chairperson”. | |
| Rule 8.3 | On the sixth line, “chairman” is replaced with “chairperson”. | |
| **Form of Dispute Avoidance/Adjudication Agreement** | | |
| All instances of “DAA Agreement” are replaced with: “DAAB Agreement”.  In C (b): “chairman” is replaced with “chairperson”. | | |

**Particular Conditions**

**Part C- Fraud and Corruption**

*(Text in this Particular Conditions - Part C* *shall not be modified)*

1. **Purpose**

1.1 The Bank’s Integrity Framework and this annex apply with respect to procurement under Bank Investment Project Financing operations.

2. **Requirements**

2.1 The Bank requires that Borrowers (including beneficiaries of Bank financing); bidders (applicants), consultants, contractors and suppliers; any sub-contractors, sub- consultants, service providers or suppliers; any agents (whether declared or not); and any of their personnel, observe the highest standard of ethics during the procurement process, selection and contract execution of Bank-financed contracts, and refrain from Fraud and Corruption[[19]](#footnote-19).

2.2 To this end, the Bank:

a. Defines, for the purposes of this provision, the terms set forth below as follows:

i. “corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party[[20]](#footnote-20);

ii. “fraudulent practice” is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party[[21]](#footnote-21) to obtain financial or other benefit or to avoid an obligation;

iii. “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;

iv. “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;

v. “obstructive practice” is:

(a) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harass or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or

(b) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under paragraph 2.2 e. below.

b. Rejects a proposal for award if the Bank determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;

c. In addition to the legal remedies set out in the relevant Legal Agreement, may take other appropriate actions, including declaring misprocurement, if the Bank determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement process, selection and/or execution of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;

d. Pursuant to the Bank’s Integrity Framework, and in accordance with the Bank’s prevailing sanctions policies and procedures, may sanction a firm or individual, either indefinitely or for a stated period of time, including by publicly declaring such firm or individual ineligible (i) to be awarded or otherwise benefit from a Bank-financed contract, financially or in any other manner[[22]](#footnote-22); (ii) to be a nominated [[23]](#footnote-23) sub-contractor, consultant, manufacturer or supplier, or service provider of an otherwise eligible firm being awarded a Bank-financed contract; and (iii) to receive the proceeds of any loan made by the Bank or otherwise to participate further in the preparation or implementation of any Bank-financed project;

e. Requires that a clause be included in bidding/request for proposals documents and in contracts financed by a Bank loan, requiring (i) bidders (applicants), consultants, contractors, and suppliers, and their sub-contractors, sub-consultants, service providers, suppliers, agents personnel, permit the Bank to inspect [[24]](#footnote-24) all accounts, records and other documents relating to the submission of bids and contract performance, and to have them audited by auditors appointed by the Bank.

**Particular Conditions**

**Part D- Environmental and Social (ES)**

**Metrics for Progress Reports**

*[Note to Employer: the following metrics may be amended to reflect the specifics of the Contract.* ***The*** *Employer shall ensure that the metrics provided are appropriate for the Works and impacts/key issues identified in the environmental and social assessment.]*

*Metrics for regular reporting:*

a. environmental incidents or non-compliances with contract requirements, including contamination, pollution or damage to ground or water supplies;

b. health and safety incidents, accidents, injuries that require treatment and all fatalities;

c. interactions with regulators: identify agency, dates, subjects, outcomes (report the negative if none);

d. status of all permits and agreements:

i. work permits: number required, number received, actions taken for those not received;

ii. status of permits and consents:

- list areas/facilities with permits required (quarries, asphalt & batch plants), dates of application, dates issued (actions to follow up if not issued), dates submitted to resident engineer (or equivalent), status of area (waiting for permits, working, abandoned without reclamation, decommissioning plan being implemented, etc.);

- list areas with landowner agreements required (borrow and spoil areas, camp sites), dates of agreements, dates submitted to resident engineer (or equivalent);

- identify major activities undertaken in each area in the reporting period and highlights of environmental and social protection (land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation);

- for quarries: status of relocation and compensation (completed, or details of activities and current status in the reporting period).

e. health and safety supervision:

i. safety officer: number days worked, number of full inspections & partial inspections, reports to construction/project management;

ii. number of workers, work hours, metric of PPE use (percentage of workers with full personal protection equipment (PPE), partial, etc.), worker violations observed (by type of violation, PPE or otherwise), warnings given, repeat warnings given, follow-up actions taken (if any);

f. worker accommodations:

i. number of expats housed in accommodations, number of locals;

ii. date of last inspection, and highlights of inspection including status of accommodations’ compliance with national and local law and good practice, including sanitation, space, etc.;

iii. actions taken to recommend/require improved conditions, or to improve conditions.

g. Health services: provider of health services, information and/or training, location of clinic, number of non-safety disease or illness treatments and diagnoses (no names to be provided);

h. gender (for expats and locals separately): number of female workers, percentage of workforce, gender issues raised and dealt with (cross-reference grievances or other sections as needed);

i. training:

* + 1. number of new workers, number receiving induction training, dates of induction training;

ii. number and dates of toolbox talks, number of workers receiving Occupational Health and Safety (OHS), environmental and social training;

iii. number and dates of communicable diseases (including STDs) sensitization and/or training, no. workers receiving training (in the reporting period and in the past); same questions for gender sensitization, flag person training.

iv. number and date of SEA prevention sensitization and/or training events, including number of workers receiving training on Code of Conduct for Contractor’s Personnel (in the reporting period and in the past), etc.

j. environmental and social supervision:

i. environmentalist: days worked, areas inspected and numbers of inspections of each (road section, work camp, accommodations, quarries, borrow areas, spoil areas, swamps, forest crossings, etc.), highlights of activities/findings (including violations of environmental and/or social best practices, actions taken), reports to environmental and/or social specialist/construction/site management;

ii. sociologist: days worked, number of partial and full site inspections (by area: road section, work camp, accommodations, quarries, borrow areas, spoil areas, clinic, HIV/AIDS center, community centers, etc.), highlights of activities (including violations of environmental and/or social requirements observed, actions taken), reports to environmental and/or social specialist/construction/site management; and

iii. community liaison person(s): days worked (hours community center open), number of people met, highlights of activities (issues raised, etc.), reports to environmental and/or social specialist /construction/site management.

k. Grievances: list new grievances (e.g. number of allegations of SEA) received in the reporting period and number of unresolved past grievances by date received, complainant’s age and sex, how received, to whom referred to for action, resolution and date (if completed), data resolution reported to complainant, any required follow-up (Cross-reference other sections as needed):

i. Worker grievances;

ii. Community grievances

l. Traffic, road safety and vehicles/equipment:

i. traffic and road safety incidents and accidents involving project vehicles & equipment: provide date, location, damage, cause, follow-up;

ii. traffic and road safety incidents and accidents involving non-project vehicles or property (also reported under immediate metrics): provide date, location, damage, cause, follow-up;

iii. overall condition of vehicles/equipment (subjective judgment by environmentalist); non-routine repairs and maintenance needed to improve safety and/or environmental performance (to control smoke, etc.).

m. Environmental mitigations and issues (what has been done):

i. dust: number of working bowsers, number of waterings/day, number of complaints, warnings given by environmentalist, actions taken to resolve; highlights of quarry dust control (covers, sprays, operational status); % of rock/ spoil lorries with covers, actions taken for uncovered vehicles;

ii. erosion control: controls implemented by location, status of water crossings, environmentalist inspections and results, actions taken to resolve issues, emergency repairs needed to control erosion/sedimentation;

iii. quarries, borrow areas, spoil areas, asphalt plants, batch plants: identify major activities undertaken in the reporting period at each, and highlights of environmental and social protection: land clearing, boundary marking, topsoil salvage, traffic management, decommissioning planning, decommissioning implementation;

iv. blasting: number of blasts (and locations), status of implementation of blasting plan (including notices, evacuations, etc.), incidents of off-site damage or complaints (cross-reference other sections as needed);

v. spill clean-ups, if any: material spilled, location, amount, actions taken, material disposal (report all spills that result in water or soil contamination;

vi. waste management: types and quantities generated and managed, including amount taken offsite (and by whom) or reused/recycled/disposed on-site;

vii. details of tree plantings and other mitigations required undertaken in the reporting period;

viii. details of water and swamp protection mitigations required undertaken in the reporting period.

n. compliance:

i. compliance status for conditions of all relevant consents/permits, for the Work, including quarries, etc.): statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance;

ii. compliance status of C-ESMP/ESIP requirements: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance

iii. compliance status of SEA prevention and response action plan: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance

iv. compliance status of Health and Safety Management Plan re: statement of compliance or listing of issues and actions taken (or to be taken) to reach compliance

v. other unresolved issues from previous reporting periods related to environmental and social: continued violations, continued failure of equipment, continued lack of vehicle covers, spills not dealt with, continued compensation or blasting issues, etc. Cross-reference other sections as needed.

**Particular Conditions**

**Part E-Section V - Eligible Countries**

Eligibility for the Provision of Goods, Works and Non-Consulting Services in   
Bank Group Financed Procurement

1. **Provisions under Section 5 “Eligibility” of the Procurement Policy for Bank Group Funded Operations and Chapter A2 of the Operations Procurement Manual under Procurement Framework of the African Development Bank**
2. The African Development Fund (ADF) permits firms and individuals from all countries to offer goods, works and services for ADF funded projects.

However, the proceeds of any Financing undertaken in the operations of the African Development Bank (ADB) and the Nigeria Trust Fund (NTF) shall be used for procurement of goods and works, including the related services, provided by bidders from Eligible[[25]](#footnote-25) Countries.[[26]](#footnote-26) Any conditions for participation shall be limited to those that are essential to ensure the firm’s capability to fulfill the contract in question. In the case of ADB and NTF, bidders from non-Member Countries offering goods, works and related services (including transportation and insurance) are not eligible even if they offer these from Eligible Member Countries. Any waiver to this rule will be in accordance with the Articles 17(1) (d) of the Agreement Establishing the African Development Bank and 4.1 of the Agreement Establishing the Nigeria Trust Fund.

1. **Rules and Procedures for Procurement of Goods and Works**

**Overview**

1. The eligibility criteria for participation in the supply of goods, works and related services, to be procured through the ADB and NTF Financing, derive from the requirements of the Agreement Establishing the African Development Bank, Article 17.1.d, and the Agreement Establishing the Nigeria Trust Fund, Article 4.1. The foregoing requirements basically prescribe two types of eligibility criteria:

1. The eligibility of the bidder; and
2. The eligibility of the goods, works and related services.

**Eligibility of the Bidder under the ADB & NTF**

2. The eligibility of the bidder shall be based on nationality, in accordance with the following rules:

(a) Natural Persons:A natural person is eligible if he or she is a national of a Member Country of the ADB. Where a person has more than one nationality, such a person shall be eligible if the nationality indicated in his or her bid is that of a Member Country of the ADB.

(b) Corporations:A corporation is eligible if it satisfies the following criteria:

1. it is incorporated in a country that is a Member of the Bank, or State Participant of the Fund;
2. it is a national of a country that is a Member of the ADB, as determined by the law of its place of incorporation; and
3. it has its principal place of business in a country that is a Member of the ADB.

(c) Joint Ventures and Associations: An unincorporated joint venture, partnership, or association, shall be eligible if more than 50% of the value of its works and/or services is executed by its members satisfying the eligibility requirements for individuals or corporations.

**Eligibility of the Goods, Works and Related Services**

3. In order to be eligible, the goods to be procured must have been mined, grown, or produced, in the form in which they are purchased, in an Eligible Member Country.

4. For works contracts, which may include civil works, plant construction, or turnkey contracts, the contractor must satisfy the nationality criteria of eligibility, either as a natural person, or corporation, or joint venture and association. Labour, equipment, and materials needed for carrying out the works contract, shall be supplied from Eligible Member Countries.

5. For contracts, which have been awarded on the basis of Cost, Insurance and Freight (CIF), or Carriage and Insurance Paid (CIP), bidders shall be free to arrange for ocean and other transportation, and the related insurance, from any Eligible Member Country. On the other hand, where goods are shipped on FOB basis, and the Bank has agreed to finance transportation and insurance separately, which are arranged by the purchaser, under a separate contract, the Bank shall be satisfied that the services are supplied from Eligible Member Countries.

**List of Eligible Countries**

6. List of Eligible countries can be found in African Development Bank’s website: [*https://www.afdb.org/en/about-us/corporate-information/members/*](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.afdb.org%2Fen%2Fabout-us%2Fcorporate-information%2Fmembers%2F&data=02%7C01%7C%7Cec75998605974f2b8fb408d5a3bb00f0%7C84df9e7fe9f640afb435aaaaaaaaaaaa%7C1%7C0%7C636594946502339839&sdata=B41Q0Bv9a2730LM37HNBnpPc8kms7rlrr6JUiACcvUg%3D&reserved=0)

**Ineligible Countries in reference to ITB 4.8 and ITB 5.1**

7. In reference to ITB 4.8 and ITB 5.1, for the information of the Bidders, at the present time firms, goods and services from the following countries are excluded from this Bidding process:

Under ITB 4.8(a) and ITB 5.1: *[insert a list of the countries following approval by the Bank to apply the restriction or state “none”].*

Under ITB 4.8(b) and ITB 5.1: *[insert a list of the countries following approval by the Bank to apply the restriction or state “none”]*

|  |
| --- |
| Section X - Contract Forms |

Table of Forms

Notification of Intention to Award 245

Beneficial Ownership Disclosure Form 249

Letter of Acceptance 251

Contract Agreement 252

Performance Security: Option 1: Demand Guarantee 254

Performance Security: Option 2: Performance Bond 255

Environmental and Social (ES) Performance Security 257

Advance Payment Security 258

Retention Money Security 260

###### Notification of Intention to Award

**[*This Notification of Intention to Award shall be sent to each Bidder that submitted a Bid.*]**

**[*Send this Notification to the Bidder’s Authorized Representative named in the Bidder Information Form*]**

For the attention of Bidder’s Authorized Representative

Name: *[insert Authorized Representative’s name]*

Address: *[insert Authorized Representative’s Address]*

Telephone/Fax numbers: *[insert Authorized Representative’s telephone/fax numbers]*

Email Address: *[insert Authorized Representative’s email address]*

**[IMPORTANT: insert the date that this Notification is transmitted to Bidders. The Notification must be sent to all Bidders simultaneously. This means on the same date and as close to the same time as possible.]**

**DATE OF TRANSMISSION**: This Notification is sent by: [*email/fax*] on [*date*] (local time)

**Notification of Intention to Award**

**Employer:** *[insert the name of the Employer]*

**Project:***[insert name of project]*

**Contract title:** *[insert the name of the contract]*

**Country:** *[insert country where RFB is issued]*

**Loan No. /Credit No. / Grant No.:** *[insert reference number for loan/credit/grant]*

**RFB No:** *[insert RFB reference number from Procurement Plan]*

This Notification of Intention to Award (Notification) notifies you of our decision to award the above contract. The transmission of this Notification begins the Standstill Period. During the Standstill Period you may:

1. request a debriefing in relation to the evaluation of your Bid, and/or
2. submit a Procurement-related Complaint in relation to the decision to award the contract.
3. **The successful Bidder**

|  |  |
| --- | --- |
| **Name:** | [*insert name* *of successful Bidder*] |
| **Address:** | [*insert address* *of the successful Bidder*] |
| **Contract price:** | [*insert contract price* *of the successful Bid*] |

1. **Other Bidders *[INSTRUCTIONS: insert names of all Bidders that submitted a Bid. If the Bid’s price was evaluated include the evaluated price as well as the Bid price as read out.]***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Name of Bidder** | | **Bid price** | **Evaluated Bid price**  **(if applicable)** | |
| [*insert name*] | [*insert Bid price*] | | | [*insert evaluated price*] | |
| [*insert name*] | [*insert Bid price*] | | | [*insert evaluated price*] | |
| [*insert name*] | [*insert Bid price*] | | | [*insert evaluated price*] | |
| [*insert name*] | [*insert Bid price*] | | | [*insert evaluated price*] | |
| [*insert name*] | [*insert Bid price*] | | | [*insert evaluated price*] | |

1. **Reason/s why your Bid was unsuccessful**

|  |
| --- |
| ***[INSTRUCTIONS: State the reason/s why this Bidder’s Bid was unsuccessful. Do NOT include: (a) a point by point comparison with another Bidder’s Bid or (b) information that is marked confidential by the Bidder in its Bid.]*** |

1. **How to request a debriefing**

|  |
| --- |
| **DEADLINE: The deadline to request a debriefing expires at midnight on [*insert date*] (local time).**  You may request a debriefing in relation to the results of the evaluation of your Bid. If you decide to request a debriefing your written request must be made within three (3) Business Days of receipt of this Notification of Intention to Award.  Provide the contract name, reference number, name of the Bidder, contact details; and address the request for debriefing as follows:  **Attention**: [*insert full name of person, if applicable*]  **Title/position**: [*insert title/position*]  **Agency**: [*insert name of Employer*]  **Email address**: [*insert email address*]  **Fax number**: [*insert fax number*] ***delete if not used***  If your request for a debriefing is received within the 3 Business Days deadline, we will provide the debriefing within five (5) Business Days of receipt of your request. If we are unable to provide the debriefing within this period, the Standstill Period shall be extended by five (5) Business Days after the date that the debriefing is provided. If this happens, we will notify you and confirm the date that the extended Standstill Period will end.  The debriefing may be in writing, by phone, video conference call or in person. We shall promptly advise you in writing how the debriefing will take place and confirm the date and time.  If the deadline to request a debriefing has expired, you may still request a debriefing. In this case, we will provide the debriefing as soon as practicable, and normally no later than fifteen (15) Business Days from the date of publication of the Contract Award Notice. |

1. **How to make a complaint**

|  |
| --- |
| **Period: Procurement-related Complaint challenging the decision to award shall be submitted by midnight, [*insert date*] (local time).**  Provide the contract name, reference number, name of the Bidder, contact details; and address the Procurement-related Complaint as follows:  **Attention**: [*insert full name of person, if applicable*]  **Title/position**: [*insert title/position*]  **Agency**: [*insert name of Employer*]  **Email address**: [*insert email address*]  **Fax number**: [*insert fax number*] ***delete if not used***  At this point in the procurement process, you may submit a Procurement-related Complaint challenging the decision to award the contract. You do not need to have requested, or received, a debriefing before making this complaint. Your complaint must be submitted within the Standstill Period and received by us before the Standstill Period ends.  Further information:  For more information see Part B of the Operations Procurement Manual. In summary, there are four essential requirements:   1. You must be an ‘interested party’. In this case, that means a Bidder who submitted a Bid in this bidding process, and is the recipient of a Notification of Intention to Award. 2. The complaint can only challenge the decision to award the contract. 3. You must submit the complaint within the period stated above. 4. You must include, in your complaint, all necessary information |

1. **Standstill Period**

|  |
| --- |
| **DEADLINE: The Standstill Period is due to end at midnight on [*insert date*] (local time).**  The Standstill Period lasts ten (10) Business Days after the date of transmission of this Notification of Intention to Award.  The Standstill Period may be extended as stated in Section 4 above. |

If you have any questions regarding this Notification, please do not hesitate to contact us.

On behalf of the Employer:

**Signature:** ­­­­­­­­­­­­­­­­­­­­­­­­ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Title/position:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Telephone:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Email:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

###### Beneficial Ownership Disclosure Form

***INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM***

*This Beneficial Ownership Disclosure Form (“Form”) is to be completed by the successful Bidder. In case of joint venture, the Bidder must submit a separate Form for each member. The beneficial ownership information to be submitted in this Form shall be current as of the date of its submission.*

*For the purposes of this Form, a Beneficial Owner of a Bidder is any natural person who ultimately owns or controls the Bidder by meeting one or more of the following conditions:*

* *directly or indirectly holding 25% or more of the shares*
* *directly or indirectly holding 25% or more of the voting rights*
* *directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Bidder*

**RFB No.:** [*insert number of RFB process*]

**Request for Bid No**.: [*insert identification*]

To: **[*insert complete name of Employer*]**

In response to your request in the Letter of Acceptance *dated [insert date of letter of Acceptance]* to furnish additional information on beneficial ownership: *[select one option as applicable and delete the options that are not applicable]*

(i) we hereby provide the following beneficial ownership information.

**Details of beneficial ownership**

|  |  |  |  |
| --- | --- | --- | --- |
| Identity of Beneficial Owner | Directly or indirectly holding 25% or more of the shares  (Yes / No) | Directly or indirectly holding 25 % or more of the Voting Rights  (Yes / No) | Directly or indirectly having the right to appoint a majority of the board of the directors or an equivalent governing body of the Bidder  (Yes / No) |
| *[include full name (last, middle, first), nationality, country of residence]* |  |  |  |

***OR***

(ii) *We declare that there is no Beneficial Owner meeting one or more of the following conditions:*

* directly or indirectly holding 25% or more of the shares
* directly or indirectly holding 25% or more of the voting rights
* directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Bidder

**OR**

*(iii) We declare that we are unable to identify any Beneficial Owner meeting one or more of the following conditions. [If this option is selected, the Bidder shall provide explanation on why it is unable to identify any Beneficial Owner]*

* directly or indirectly holding 25% or more of the shares
* directly or indirectly holding 25% or more of the voting rights
* directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Bidder]”

**Name of the Bidder**: *\*[insert complete name of the Bidder]*

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

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

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

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

\* In the case of the Bid submitted by a Joint Venture specify the name of the Joint Venture as Bidder. In the event that the Bidder is a joint venture, each reference to “Bidder” in the Beneficial Ownership Disclosure Form (including this Introduction thereto) shall be read to refer to the joint venture member.

\*\* Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules.

###### Letter of Acceptance

*[letterhead paper 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 Contract Data]* for the Accepted Contract Amount *[amount in numbers and words] [name of currency]*, as corrected and modified in accordance with the Instructions to Bidders, is hereby accepted by our Agency.

You are requested to furnish (i) the Performance Security and an Environmental and Social Performance Security ***[Delete ES Performance Security if it is not required under the contract]*** within 28 days in accordance with the Conditions of Contract, using, for that purpose, one of the Performance Security Forms and the ES Performance Security Form, ***[Delete reference to the ES Performance Security Form if it is not required under the contract]*** and (ii) the additional information on beneficial ownership in accordance with BDS ITB 47.1, within eight (8) Business days using the Beneficial Ownership Disclosure Form, included in Section X, Contract Forms, of the bidding document.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

**Attachment: Contract Agreement**

|  |
| --- |
| Contract Agreement |

THIS AGREEMENT made the \_\_\_\_\_\_\_\_ day of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, \_\_\_\_\_, between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hereinafter “the Employer”), of the one part, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hereinafter “the Contractor”), of the other part:

WHEREAS the Employer desires that the Works known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein,

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.

1. the Letter of Acceptance;
2. the Letter of Bid;
3. the addenda Nos \_\_\_\_\_\_\_\_ (if any);
4. the Particular Conditions;
5. the General Conditions;
6. the Specification;
7. the Drawings*;* and
8. the completed Schedules and any other documents forming part of the contract, including, but not limited to:
9. the ES Management Strategies and Implementation Plans**;** and
10. Code of Conduct for Contractor’s Personnel (ES);

3. In consideration of the payments to be made by the Employer to the Contractor as specified in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the day, month and year specified above.

Signed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (for the Employer)

Signed by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (for the Contractor)

|  |
| --- |
| Performance Security: Option 1: Demand Guarantee |

*[Guarantor letterhead or SWIFT identifier code]*

**Beneficiary:** *[insert name and Address of Employer]*

**Date:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *[Insert date of issue]*

**Performance Guarantee No.:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

We have been informed that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hereinafter called "the Applicant") has entered into Contract No. \_\_\_\_\_\_\_\_\_\_\_\_\_ *dated* \_\_\_\_\_\_\_\_\_\_\_\_ with the Beneficiary, for the execution of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hereinafter called "the Contract"). Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Applicant to issue this guarantee, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( ),[[27]](#footnote-27)1 such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary’s complying demand supported by the Beneficiary’s statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the …. Day of ……, 2…[[28]](#footnote-28)2, and any demand for payment under it must be received by us at this office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   
*[signature(s)]*

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

###### Performance Security: Option 2: Performance Bond

By this Bond\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as Principal (hereinafter called “the Contractor”) and\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_] as Surety (hereinafter called “the Surety”), are held and firmly bound unto\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_] as Obligee (hereinafter called “the Employer”) in the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, for the payment of which sum well and truly to be made in the types and proportions of currencies in which the Contract Price is payable, the Contractor and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Contractor has entered into a written Agreement with the Employer dated the day of , 20\_\_\_, for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in accordance with the documents, plans, specifications, and amendments thereto, which to the extent herein provided for, are by reference made part hereof and are hereinafter referred to as the Contract.

NOW, THEREFORE, the Condition of this Obligation is such that, if the Contractor shall promptly and faithfully perform the said Contract (including any amendments thereto), then this obligation shall be null and void; otherwise, it shall remain in full force and effect. Whenever the Contractor shall be, and declared by the Employer to be, in default under the Contract, the Employer having performed the Employer’s obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

(1) complete the Contract in accordance with its terms and conditions; or

(2) obtain a Bid or Bids from qualified Bidders for submission to the Employer for completing the Contract in accordance with its terms and conditions, and upon determination by the Employer and the Surety of the lowest responsive Bidder, arrange for a Contract between such Bidder and Employer and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the Balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term “Balance of the Contract Price,” as used in this paragraph, shall mean the total amount payable by Employer to Contractor under the Contract, less the amount properly paid by Employer to Contractor; or

(3) pay the Employer the amount required by Employer to complete the Contract in accordance with its terms and conditions up to a total not exceeding the amount of this Bond.

The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the expiration of one year from the date of the issuing of the Taking-Over Certificate.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Employer named herein or the heirs, executors, administrators, successors, and assigns of the Employer.

In testimony whereof, the Contractor has hereunto set its hand and affixed its seal, and the Surety has caused these presents to be sealed with its corporate seal duly attested by the signature of its legal representative, this day of 20 .

SIGNED ON on behalf of

By in the capacity of

In the presence of

SIGNED ON on behalf of

By in the capacity of

In the presence of

|  |
| --- |
| Environmental and Social (ES) Performance Security |

**ES Demand Guarantee**

*[Guarantor letterhead or SWIFT identifier code]*

**Beneficiary:** *[insert name and Address of* Employer*]*

**Date:** *[Insert date of issue]*

**ES PERFORMANCE GUARANTEE No.:** *[Insert guarantee reference number]*

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

We have been informed that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hereinafter called "the Applicant") has entered into Contract No. \_\_\_\_\_\_\_\_\_\_\_\_\_ dated \_\_\_\_\_\_\_\_\_\_\_\_ with the Beneficiary, for the execution of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hereinafter called "the Contract"). Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Applicant to issue this guarantee, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_\_\_\_\_\_\_ ( ),[[29]](#footnote-29)1 such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of the Beneficiary’s complying demand supported by the Beneficiary’s statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its Environmental and/or Social (ES) obligation(s) under the Contract, without the Beneficiary needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the …. Day of ……, 2… [[30]](#footnote-30)2, and any demand for payment under it must be received by us at this office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   
*[signature(s)]*

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

|  |
| --- |
| Advance Payment Security |

Demand Guarantee

*[Guarantor letterhead or SWIFT identifier code]*

**Beneficiary:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *[Insert name and Address of* Employer*]*

**Date:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *[Insert date of issue]*

**ADVANCE PAYMENT GUARANTEE No.:** *[Insert guarantee reference number]*

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

We have been informed that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hereinafter called “the Applicant”) has entered into Contract No. \_\_\_\_\_\_\_\_\_\_\_\_\_ *dated* \_\_\_\_\_\_\_\_\_\_\_\_ with the Beneficiary, for the execution of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum \_\_\_\_\_\_\_\_\_\_\_ ( )is to be made against an advance payment guarantee.

At the request of the Applicant to issue this guarantee, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_\_\_\_\_\_\_ ( )*[[31]](#footnote-31)1* upon receipt by us of the Beneficiary’s complying demand supported by the Beneficiary’s statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:

1. has used the advance payment for purposes other than the costs of mobilization in respect of the Works; or
2. has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary’s bank stating that the advance payment referred to above has been credited to the Applicant on its account number \_\_\_\_\_\_\_\_\_\_\_ at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Applicant as specified in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, less provisional sums, has been certified for payment, or on the \_\_\_ day of \_\_\_\_\_, 2\_\_\_,[[32]](#footnote-32)2 whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   
*[signature(s)]*

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

|  |
| --- |
| Retention Money Security |

**Demand Guarantee**

*[Guarantor letterhead or SWIFT identifier code]*

**Beneficiary:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *[Insert name and Address of* Employer*]*

**Date:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *[Insert date of issue]*

**RETENTION MONEY GUARANTEE No.:** *[Insert guarantee reference number]*

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

We have been informed that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *[insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Applicant") has entered into Contract No. \_\_\_\_\_\_\_\_\_\_\_\_\_ *[insert reference number of the contract]* dated \_\_\_\_\_\_\_\_\_\_\_\_ with the Beneficiary, for the execution of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *[insert name of contract and brief description of* Works*]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, the Beneficiary retains moneys up to the limit set forth in the Contract (“the Retention Money”), and that when the Taking-Over Certificate has been issued under the Contract and the first half of the Retention Money has been certified for payment, payment of *[*insert the second half of the Retention Money *or* *if* *the amount guaranteed under the Performance Guarantee when the Taking-Over Certificate is issued is less than half of the Retention Money,* the difference between half of the Retention Money and the amount guaranteed under the Performance Security and, if required, the ES Performance Security*]* is to be made against a Retention Money guarantee.

At the request of the Applicant to issue this guarantee, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of \_\_\_\_\_\_\_\_\_\_\_ *[insert amount in figures]* ( ) *[amount in words][[33]](#footnote-33)1* upon receipt by us of the Beneficiary’s complying demand supported by the Beneficiary’s statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without your needing to prove or show grounds for your demand or the sum specified therein.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary’s bank stating that the second half of the Retention Money as referred to above has been credited to the Applicant on its account number \_\_\_\_\_\_\_\_\_\_\_ at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *[insert name and address of Applicant’s bank]*.

This guarantee shall expire no later than the …. Day of ……, 2…[[34]](#footnote-34)2, and any demand for payment under it must be received by us at the office indicated above on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under Article 15(a) is hereby excluded.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   
*[signature(s)]*

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

1. Nonperformance, as decided by the Employer, shall include all contracts where (a) nonperformance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract, and (b) contracts that were so challenged but fully settled against the contractor. Nonperformance shall not include contracts where Employers decision was overruled by the dispute resolution mechanism. Nonperformance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute resolution mechanism under the respective contract and where all appeal instances available to the Bidder have been exhausted. [↑](#footnote-ref-1)
2. This requirement also applies to contracts executed by the Bidder as JV member. [↑](#footnote-ref-2)
3. The Bidder shall provide accurate information on the related Bid Form about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the last five years. A consistent history of awards against the Bidder or any member of a joint venture may result in failure of the Bid. [↑](#footnote-ref-3)
4. The Employer may use this information to seek further information or clarifications in carrying out its due diligence. [↑](#footnote-ref-4)
5. Substantial completion shall be based on 80% or more works completed under the contract. [↑](#footnote-ref-5)
6. For contracts under which the Bidder participated as a joint venture member or sub-contractor, only the Bidder’s share, by value, shall be considered to meet this requirement [↑](#footnote-ref-6)
7. In the case of JV, the value of contracts completed by its members shall not be aggregated to determine whether the requirement of the minimum value of a single contract has been met. Instead, each contract performed by each member shall satisfy the minimum value of a single contract as required for single entity. In determining whether the JV meets the requirement of total number of contracts, only the number of contracts completed by all members each of value equal or more than the minimum value required shall be aggregated. [↑](#footnote-ref-7)
8. Volume, number or rate of production of any key activity can be demonstrated in one or more contracts combined if executed during same time period.  [↑](#footnote-ref-8)
9. If the most recent set of financial statements is for a period earlier than 12 months from the date of Bid, the reason for this should be justified. [↑](#footnote-ref-9)
10. If applicable [↑](#footnote-ref-10)
11. Refer to Bank Procurement Framework for additional information on Eligibility. [↑](#footnote-ref-11)
12. “Eligible Countries" shall mean: (a) in the case of the African Development Bank (ADB) and the Nigeria Trust Fund, the Member Countries of the ADB; and (b) in the case of the African Development Fund (ADF), any country. [↑](#footnote-ref-12)
13. In this context, any action to influence the procurement process or contract execution for undue advantage is improper. [↑](#footnote-ref-13)
14. For the purpose of this sub-paragraph, “another party” refers to a public official acting in relation to the procurement process or contract execution, including Bank staff and employees of other organizations taking or reviewing procurement decisions. [↑](#footnote-ref-14)
15. For the purpose of this sub-paragraph, “party” refers to a public official, including Bank staff and employees of other organizations taking or reviewing procurement decisions.; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.” [↑](#footnote-ref-15)
16. For the avoidance of doubt, a sanctioned party’s ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and bidding, either directly or as a nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract. [↑](#footnote-ref-16)
17. A nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider (different names are used depending on the particular bidding document) is one which has been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower. [↑](#footnote-ref-17)
18. Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Bank or persons appointed by the Bank to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies thereof as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information. [↑](#footnote-ref-18)
19. In this context, any action to influence the procurement process or contract execution for undue advantage is improper. [↑](#footnote-ref-19)
20. For the purpose of this sub-paragraph, “another party” refers to a public official acting in relation to the procurement process or contract execution, including Bank staff and employees of other organizations taking or reviewing procurement decisions. [↑](#footnote-ref-20)
21. For the purpose of this sub-paragraph, “party” refers to a public official, including Bank staff and employees of other organizations taking or reviewing procurement decisions.; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.” [↑](#footnote-ref-21)
22. For the avoidance of doubt, a sanctioned party’s ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and bidding, either directly or as a nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract. [↑](#footnote-ref-22)
23. A nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider (different names are used depending on the particular bidding document) is one which has been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower. [↑](#footnote-ref-23)
24. Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Bank or persons appointed by the Bank to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies thereof as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information. [↑](#footnote-ref-24)
25. Refer to Bank Procurement Framework for additional information on Eligibility. [↑](#footnote-ref-25)
26. “Eligible Countries" shall mean: (a) in the case of the African Development Bank (ADB) and the Nigeria Trust Fund (NTF), the Member Countries of the ADB; and (b) in the case of the African Development Fund, any country. [↑](#footnote-ref-26)
27. 1 The Guarantor shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, less provisional sums, if any, and denominated either in the currency(cies) of the Contract or a freely convertible currency acceptable to the Beneficiary. [↑](#footnote-ref-27)
28. 2 Insert the date twenty-eight days after the expected completion date as described in GC Clause 11.9. The Employer should note that in the event of an extension of this date for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: “The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Beneficiary’s written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.” [↑](#footnote-ref-28)
29. *1 The* Guarantor *shall insert an amount representing the percentage of the Accepted Contract Amount specified in the Letter of Acceptance, less provisional sums, if any, and denominated either in the currency (cies) of the Contract or a freely convertible currency acceptable to the Beneficiary.* [↑](#footnote-ref-29)
30. *2 Insert the date twenty-eight days after the expected completion date as described in GC Clause 11.9. The Employer should note that in the event of an extension of this date for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: “The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months] [one year], in response to the Beneficiary’s written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.”* [↑](#footnote-ref-30)
31. 1 *The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Employer.* [↑](#footnote-ref-31)
32. 2 *Insert the expected expiration date of the Time for Completion. The Employer should note that in the event of an extension of the time for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the* guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: “The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Beneficiary’s written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.” [↑](#footnote-ref-32)
33. 1 The Guarantor shall insert an amount representing the amount of the second half of the Retention Money or if the amount guaranteed under the Performance Guarantee when the Taking-Over Certificate is issued is less than half of the Retention Money, the difference between half of the Retention Money and the amount guaranteed under the Performance Security and denominated either in the currency(ies) of the second half of the Retention Money as specified in the Contract, or in a freely convertible currency acceptable to the Beneficiary. [↑](#footnote-ref-33)
34. 2 Insert the same expiry date as set forth in the performance security, representing the date twenty-eight days after the completion date described in GC Clause 11.9. The Employer should note that in the event of an extension of this date for completion of the Contract, the Employer would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Employer might consider adding the following text to the form, at the end of the penultimate paragraph: “The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Beneficiary’s written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee.” [↑](#footnote-ref-34)