

**GOVERNMENT OF THE
DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA**

**MINISTRY OF HIGHWAYS
ROAD DEVELOPMENT AUTHORITY**

SECOND INTEGRATED ROAD INVESTMENT PROGRAM



FUNDED BY
Asian Development Bank



BIDDING DOCUMENT

**REHABILITATION, IMPROVEMENT AND MAINTENANCE OF BORELLA –
RAJAGIRIYA ROAD (B062) FROM 0+000 KM TO 1+380 KM AND PAGODA –
PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM AND PITAKOTTE –
THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM**

CONTRACT PACKAGE: RDA/ADB/iROAD-2/NCB/WP/NR/08

NATIONAL COMPETITIVE BIDDING

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Section 1 - Instructions to Bidders

This Section specifies the procedures to be followed by Bidders in the preparation and submission of their Bids. Information is also provided on the submission, opening, evaluation of bids, and on the award of contract.

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Section 1 - Instructions to Bidders

A. General

- 1. Scope of Bid**
 - 1.1 In connection with the Invitation for Bids (IFB) indicated in the Bid Data Sheet (BDS), the Employer, as indicated in the BDS, issues this Bidding Document for the procurement of Works as specified in Section 6 (Employer's Requirements). The name, identification, and number of contracts of the international competitive bidding (ICB) are provided in the BDS.
 - 1.2 Throughout this Bidding Document,
 - (a) the term "in writing" means communicated in written form and delivered against receipt;
 - (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and
 - (c) "day" means calendar day.
- 2. Source of Funds**
 - 2.1 The Borrower or Recipient (hereinafter called "Borrower") indicated in the BDS has applied for or received financing (hereinafter called "funds") from the Asian Development Bank (hereinafter called "ADB") toward the cost of 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 Payments by the ADB will be made only at the request of the Borrower and upon approval by ADB in accordance with the terms and conditions of the Financing Agreement between the Borrower and ADB (hereinafter called "Financing Agreement"), and will be subject in all respects to the terms and conditions of that Financing Agreement. No party other than the Borrower shall derive any rights from the Financing Agreement or have any claim to the funds.
- 3. Fraud and Corruption**
 - 3.1 ADB's Anticorruption Policy requires Borrowers (including beneficiaries of ADB-financed activity), as well as Bidders, Suppliers, and Contractors under ADB-financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, ADB
 - (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party;
 - (ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

- (iii) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
 - (iv) "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party;
 - (v) "obstructive practice" means (a) deliberately destroying, falsifying, altering, or concealing of evidence material to an ADB investigation; (b) making false statements to investigators in order to materially impede an ADB investigation; (c) failing to comply with requests to provide information, documents, or records in connection with an Office of Anticorruption and Integrity (OAI) investigation; (d) threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or (e) materially impeding ADB's contractual rights of audit or access to information; and
 - (vi) "integrity violation" is any act which violates ADB's Anticorruption Policy, including (i) to (v) above and the following: abuse, conflict of interest, violations of ADB sanctions, retaliation against whistleblowers or witnesses, and other violations of ADB's Anticorruption Policy, including failure to adhere to the highest ethical standard.
- (b) will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations in competing for the Contract;
 - (c) will cancel the portion of the financing allocated to a contract if it determines at any time that representatives of the Borrower or of a beneficiary of ADB financing engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations during the procurement or the execution of that contract, without the Borrower having taken timely and appropriate action satisfactory to ADB to remedy the situation;
 - (d) will impose remedial actions on a firm or an individual, at any time, in accordance with ADB's Anticorruption Policy and Integrity Principles and Guidelines (both as amended from time to time), including declaring ineligible, either indefinitely or for a stated period of time, to participate¹ in ADB-financed, -administered, or -supported activities or to benefit from an ADB-financed, -administered, or -supported contract, financially or otherwise, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices or other integrity violations; and

¹ Whether as a Contractor, Nominated Subcontractor, Consultant, Manufacturer or Supplier, or Service Provider; or in any other capacity (different names are used depending on the particular Bidding Document). A Nominated Subcontractor is one that either has been (i) included by the Bidder in its prequalification application or bid because it brings specific and critical experience and know-how that are accounted for in the evaluation of the bidder's prequalification application or the bid; or (ii) appointed by the Employer.

- (e) will have the right to require that a provision be included in bidding documents and in contracts financed by ADB, requiring Bidders, suppliers and contractors to permit ADB or its representative to inspect their accounts and records and other documents relating to the bid submission and contract performance and to have them audited by auditors appointed by ADB.

3.2 Furthermore, Bidders shall be aware of the provision stated in Subclauses 1.15 and 15.6 of the Conditions of Contract.

4. Eligible Bidders

4.1 A Bidder may be a natural person, private entity, or government-owned enterprise subject to ITB 4.5 - or any combination of them with a formal intent to enter into an agreement or under an existing agreement in the form of a Joint Venture. In the case of a Joint Venture,

- (a) all partners shall be jointly and severally liable; and
- (b) the Joint Venture shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the Joint Venture during the bidding process and, in the event the Joint Venture is awarded the Contract, during contract execution.

4.2 A Bidder, and all parties constituting the Bidder, shall have the nationality of an eligible country, in accordance with Section 5 (Eligible Countries). A Bidder shall be deemed to have the nationality of a country if the Bidder is a citizen or is constituted, incorporated, or registered, and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed subcontractors or suppliers for any part of the Contract including related services.

4.3 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in the bidding process if any of, including but not limited to, the following apply:

- (a) they have controlling shareholders in common; or
- (b) they receive or have received any direct or indirect subsidy from any of them; or
- (c) they have the same legal representative for purposes of this bid; or
- (d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to material information about or improperly influence the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or
- (e) a Bidder participates in more than one bid in this bidding process, either individually or as a partner in a joint venture, except for alternative offers permitted under ITB 13 of the Bidding Document. This will result in the disqualification of all Bids in which it is involved. However, subject to any finding of a conflict of interest in terms of ITB 4.3(a)-(d) above, this does not limit the participation of a Bidder as a Subcontractor in another Bid or of a firm as a Subcontractor in more than one Bid; or

- (f) a Bidder or any affiliated entity, participated as a Consultant in the preparation of the design or technical specifications of the works that are the subject of the Bid; or
- (g) a Bidder was affiliated with a firm or entity that has been hired (or is proposed to be hired) by the Employer or Borrower as Engineer for the Contract.

- 4.4 A firm shall not be eligible to participate in any procurement activities under an ADB-financed, -administered, or -supported project while under temporary suspension or debarment by ADB pursuant to its Anticorruption Policy (see ITB 3), whether such debarment was directly imposed by ADB, or enforced by ADB pursuant to the Agreement for Mutual Enforcement of Debarment Decisions. A bid from a temporary suspended or debarred firm will be rejected.
- 4.5 Government-owned enterprises in the Employer's country shall be eligible only if they can establish that they (i) are legally and financially autonomous, (ii) operate under commercial law, and (iii) are not a dependent agency of the Employer.
- 4.6 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer, as the Employer shall reasonably request.
- 4.7 Firms shall be excluded if 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 persons or entities in that country.

5. Eligible Materials, Equipment, and Services

- 5.1 The materials, equipment, and services to be supplied under the Contract shall have their origin in eligible source countries as defined in ITB 4.2 above and all expenditures under the Contract will be limited to such materials, equipment, and services. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment, and services.
- 5.2 For purposes of ITB 5.1 above, "origin" means the place where the materials and equipment are mined, grown, produced, or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that differs substantially in its basic characteristics or in purpose or utility from its components.

B. Contents of Bidding Document

6. Sections of Bidding Document

- 6.1 The Bidding Document consist of Parts I, II, and III, which include all the sections indicated below, and should be read in conjunction with any addenda issued in accordance with ITB 8.

PART I Bidding Procedures

Section 1 - Instructions to Bidders (ITB)

Section 2 - Bid Data Sheet (BDS)

Section 3 - Evaluation and Qualification Criteria (EQC)

Section 4 - Bidding Forms (BDF)
Section 5 - Eligible Countries (ELC)

PART II Requirements

Section 6 - Employer's Requirements (ERQ)

PART III Conditions of Contract and Contract Forms

Section 7 - General Conditions of Contract (GCC)

Section 8 - Particular Conditions of Contract (PCC)

Section 9 - Contract Forms (COF)

- 6.2 The IFB issued by the Employer is not part of the Bidding Document.
- 6.3 The Employer is not responsible for the completeness of the Bidding Document and its addenda, if they were not obtained directly from the source stated by the Employer in the IFB.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.

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

- 7.1 A prospective Bidder requiring any clarification on the Bidding Document shall contact the Employer in writing at the Employer's address indicated in the BDS or raise his inquiries during the pre-bid meeting if provided for in accordance with ITB 7.4. The Employer will respond in writing to any request for clarification, provided that such request is received no later than 21 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. Should the Employer deem it necessary to amend the Bidding Document as a result of a request for clarification, it shall do so following the procedure under ITB 8 and ITB 22.2.
- 7.2 The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own 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 its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
- 7.4 The Bidder's designated representative is invited to attend a pre-bid meeting, if provided for in the BDS. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.

7.5 The Bidder is requested to submit any questions in writing, to reach the Employer not later than 1 week before the meeting.

7.6 Minutes of the pre-bid meeting, including the text of the questions raised, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3. Any modification to the Bidding Document that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting.

7.7 Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.

8. Amendment of Bidding Document

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

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

C. Preparation of Bids

9. Cost of Bidding

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

10. Language of Bid

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

11. Documents Comprising the Bid

11.1 The Bid shall comprise the following:

- (a) Letter of Bid;
- (b) completed schedules as required, including priced Bill of Quantities, in accordance with ITB 12 and ITB 14;
- (c) Bid Security or Bid-Securing Declaration, in accordance with ITB 19;
- (d) alternative Bids, if permissible, in accordance with ITB 13;
- (e) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;

- (f) documentary evidence in accordance with ITB 17, establishing the Bidder's qualifications to perform the contract if its Bid is accepted;
- (g) Technical Proposal in accordance with ITB 16;
- (h) any other document required in the BDS.

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

12. 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 4 (Bidding Forms). The forms must be completed without any alterations to the text, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested and as required in the BDS.

13. Alternative Bids

13.1 Unless otherwise indicated in the BDS, alternative Bids shall not be considered.

13.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the BDS, as will the method of evaluating different times for completion.

13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Document must first price the Employer's design as described in the Bidding Document and shall further provide all information necessary for a complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the 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 6 (Employer's Requirements). The method for their evaluation will be stipulated in Section 3 (Evaluation and Qualification Criteria).

14. Bid Prices and Discounts

14.1 The prices and discounts 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 by the Bidder will not be paid for by the Employer when executed, and shall be deemed covered by the rates for other items and prices in the Bill of Quantities.

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

offered. Absence of the total bid price in the Letter of Bid may result in the rejection of the Bid.

- 14.4 The Bidder shall quote any discounts and the methodology for their application in the Letter of Bid, in accordance with ITB 12.1.
- 14.5 Unless otherwise provided in the BDS and the 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 indexes and weightings for the price adjustment formulas in the Tables of Adjustment Data included in Section 4 (Bidding Forms) and the Employer may require the Bidder to justify its proposed indexes and weightings.
- 14.6 If so indicated in ITB 1.1, bids are being invited for individual contracts or for any combination of contracts (packages). Bidders wishing to offer any price reduction for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Price reductions or discounts shall be submitted in accordance with ITB 14.4, provided the Bids for all contracts are submitted and opened at the same time.
- 14.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total Bid Price submitted by the Bidder.

15. Currencies of Bid and Payment

- 15.1 The unit rates and the prices shall be quoted by the Bidder entirely in the currency specified in the BDS.
- 15.2 Bidders shall indicate the portion of the bid price that corresponds to expenditures incurred in the currency of the Employer's country in the Schedule of Payment Currencies included in Section 4 (Bidding Forms).
- 15.3 Bidders expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country and wishing to be paid accordingly may indicate up to three foreign currencies in the Schedule of Payment Currencies included in Section 4 (Bidding Forms).
- 15.4 The rates of exchange to be used by the Bidder for currency conversion during bid preparation shall be the selling rates for similar transactions prevailing on the date 28 days prior to the deadline for submission of bids published by the source specified in the BDS. If exchange rates are not so published for certain currencies, the Bidder shall state the rates used and the source. Bidders should note that for the purpose of payments, the exchange rates confirmed by the source specified in the BDS as the selling rates prevailing 28 days prior to the deadline for submission of Bids shall apply for the duration of the Contract so that no currency exchange risk is borne by the Bidder.

15.5 Foreign currency requirements indicated by the Bidders in the Schedule of Payment Currencies shall include but not limited to the specific requirements for

- (a) expatriate staff and labor employed directly on the Works;
- (b) social, insurance, medical and other charges relating to such expatriate staff and labor, and foreign travel expenses;
- (c) imported materials, both temporary and permanent, including fuels, oil and lubricants required for the Works;
- (d) depreciation and usage of imported Plant and Contractor's Equipment, including spare parts, required for the Works;
- (e) foreign insurance and freight charges for imported materials, Plant and Contractor's Equipment, including spare parts; and
- (f) overhead expenses, fees, profit, and financial charges arising outside the Employer's country in connection with the Works.

15.6 Bidders may be required by the Employer to clarify their foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Payment Currencies are reasonable and responsive to ITB 15.3 above, in which case a detailed breakdown of its foreign currency requirements shall be provided by the Bidder.

15.7 Bidders should note that during the progress of the Works, the foreign currency requirements of the outstanding balance of the Contract Price may be adjusted by agreement between the Employer and the Contractor in order to reflect any changes in foreign currency requirements for the Contract, in accordance with Subclause 14.15 of the Conditions of Contract. Any such adjustment shall be effected by comparing the percentages quoted in the bid with the amounts already used in the Works and the Contractor's future needs for imported items.

**16. Documents
Comprising the
Technical
Proposal**

16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule, and any other information as stipulated in Section 4 (Bidding Forms), in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.

**17. Documents
Establishing the
Qualifications of
the Bidder**

17.1 To establish its qualifications to perform the Contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding information sheets included in Section 4 (Bidding Forms).

17.2 Domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility as described in ITB 33.

**18. Period of Validity
of Bids**

18.1 Bids shall remain valid for the period specified in the BDS after the bid submission deadline date prescribed by the Employer. A bid valid for a shorter period shall be rejected by the Employer as nonresponsive.

18.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 19, it shall also be extended 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.

19. Bid Security / Bid-Securing Declaration

19.1 Unless otherwise specified in the BDS, the Bidder shall furnish as part of its Bid, in original form, either a Bid-Securing Declaration or a bid security as specified in the BDS. In the case of a bid security, the amount and currency shall be as specified in the BDS.

19.2 If a Bid-Securing Declaration is required pursuant to ITB 19.1, it shall use the form included in Section 4 (Bidding Forms). The Employer will declare a Bidder ineligible to be awarded a Contract for a specified period of time, as indicated in the BDS, if the Bid-Securing Declaration is executed.

19.3 If a bid security is specified pursuant to ITB 19.1, the bid security shall be, at the Bidder's option, in any of the following forms:

- (a) an unconditional bank guarantee,
- (b) an irrevocable letter of credit, or
- (c) a cashier's or certified check,

all from a reputable source from an eligible country as described in Section 5 (Eligible Countries). In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included in Section 4 (Bidding Forms) or another form acceptable to the Employer. The form must include the complete name of the Bidder. The bid security shall be valid for 28 days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2.

19.4 Unless otherwise specified in the BDS, any Bid not accompanied by a substantially compliant bid security or Bid-Securing Declaration, if one is required in accordance with ITB 19.1, shall be rejected by the Employer as nonresponsive.

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 furnishing of the performance security pursuant to ITB 41.

19.6 If a bid security is specified pursuant to ITB 19.1, the bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required performance security.

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

- (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letter of Bid, except as provided in ITB 18.2; or

- (b) if the successful Bidder fails to
 - (i) sign the Contract in accordance with ITB 40;
 - (ii) furnish a performance security in accordance with ITB 41;
 - (iii) accept the arithmetical correction of its Bid in accordance with ITB 31; or
 - (iv) furnish a domestic preference security if so required.

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

20. Format and Signing of Bid

20.1 The Bidder shall prepare one original set of the 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 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Bid, except for unamended printed literature, shall be signed or initialed by the person signing the Bid. If a Bidder submits a deficient authorization, the Bid shall not be rejected in the first instance. The Employer shall request the Bidder to submit an acceptable authorization within the number of days as specified in the BDS. Failure to provide an acceptable authorization within the prescribed period of receiving such a request shall cause the rejection of the Bid.

20.3 Any amendments such as interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Bid.

D. Submission and Opening of Bids

21. Sealing and Marking of Bids

21.1 Bidders may always submit their Bids by mail or by hand. When so specified in the BDS, Bidders shall have the option of submitting their Bids electronically. Procedures for submission, sealing, and marking are as follows:

- (a) Bidders submitting Bids by mail or by hand shall enclose the original and all copies of the Bid, including alternative Bids, if permitted in accordance with ITB 13, in separate sealed envelopes, duly marking the envelopes as "ORIGINAL," "ALTERNATIVE," and "COPY." These envelopes containing the original and the copies shall then be enclosed in one single envelope. The rest of the procedure shall be in accordance with ITB 21.2 and ITB 21.3.

- (b) Bidders submitting Bids electronically shall follow the electronic bid submission procedures specified in the BDS.

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 BDS 22.1;
- (c) bear the specific identification of this bidding process indicated in the BDS 1.1; and
- (d) bear a warning not to open before the time and date for bid opening.

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

22. Deadline for Submission of Bids

- 22.1 Bids must be received by the Employer at the address and no later than the date and time indicated in the BDS.

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

23. Late Bids

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

24. Withdrawal, Substitution, and Modification of Bids

- 24.1 A Bidder may withdraw, substitute, or modify its Bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 20.2, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Bid must accompany the respective written notice. All notices must be

- (a) prepared and submitted in accordance with ITB 20 and ITB 21 (except that withdrawal notices do not require copies), and in addition, the respective envelopes shall be clearly marked "WITHDRAWAL," "SUBSTITUTION," "MODIFICATION"; and
- (b) received by the Employer no later than 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.

25. Bid Opening

- 25.1 The Employer shall open the Bids in public at the address, on the date and time 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 21.1, shall be as specified in the BDS.
- 25.2 First, envelopes marked "WITHDRAWAL" shall be opened and read out and the envelope with the corresponding Bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening. Next, envelopes marked "SUBSTITUTION" shall be opened and read out and exchanged with the corresponding Bid being substituted, and the substituted Bid shall not be opened, but returned to the Bidder. No bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at bid opening. Envelopes marked "MODIFICATION" shall be opened and read out with the corresponding Bid. No bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at bid opening. Only envelopes that are opened and read out at bid opening shall be considered further.
- 25.3 All other envelopes shall be opened one at a time, reading out the name of the Bidder and whether there is a modification; the Bid Price(s), including any discounts and alternative offers; the presence of a bid security or Bid-Securing Declaration, if required; and any other details as the Employer may consider appropriate. Only discounts and alternative offers read out at bid opening shall be considered for evaluation. Unless otherwise specified in the BDS, all pages of the Letter of Bid and Bill of Quantities are to be initialed by at least three representatives of the Employer attending bid opening. No Bid shall be rejected at bid opening except for late Bids, in accordance with ITB 23.1.
- 25.4 The Employer shall prepare a record of the bid opening that shall include, as a minimum, the name of the Bidder and whether there is a withdrawal, substitution, or modification; the Bid Price, per contract if applicable, including any discounts and alternative offers; and the presence or absence of a bid security or Bid-Securing Declaration, if one was required. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders who submitted Bids on time, and posted online when electronic bidding is permitted.

E. Evaluation and Comparison of Bids**26. Confidentiality**

- 26.1 Information relating to the examination, evaluation, comparison, and postqualification of Bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on the Contract award is communicated to all Bidders.

- 26.2 Any attempt by a Bidder to influence the Employer in the evaluation of the Bids or Contract award decisions may result in the rejection of its Bid.
- 26.3 Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it may do so in writing.
- 27. Clarification of Bids**
- 27.1 To assist in the examination, evaluation, and comparison of the bids, and qualification of the Bidders, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids, in accordance with ITB 31.
- 27.2 If a Bidder does not provide clarifications of its Bid by the date and time set in the Employer's request for clarification, its Bid may be rejected.
- 28. Deviations, Reservations, and Omissions**
- 28.1 During the evaluation of Bids, the following definitions apply:
- (a) "Deviation" is a departure from the requirements specified in the Bidding Document;
 - (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and
 - (c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.
- 29. Determination of Responsiveness**
- 29.1 The Employer's determination of a Bid's responsiveness is to be based on the contents of the Bid itself, as defined in ITB11.
- 29.2 A substantially responsive Bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,
- (a) if accepted, would
 - (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or
 - (ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the Bidder's obligations under the proposed Contract; or
 - (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.
- 29.3 The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section 6 (Employer's Requirements) have been met without any material deviation, reservation, or reservation.

- 29.4 If a Bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.
- 30. Nonmaterial Nonconformities**
- 30.1 Provided that a Bid is substantially responsive, the Employer may waive any nonconformities in the Bid that do not constitute a material deviation, reservation, or omission.
- 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 nonconforming item or component. The adjustment shall be made using the method indicated in Section 3 (Evaluation and Qualification Criteria).
- 31. Correction of Arithmetical Errors**
- 31.1 Provided that the Bid is substantially responsive, the Employer shall correct arithmetical errors on the following basis:
- (a) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected.
 - (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected.
 - (c) If there is a discrepancy between the bid price in the Summary of Bill of Quantities and the bid amount in item (c) of the Letter of Bid, the bid price in the Summary of Bill of Quantities will prevail and the bid amount in item (c) of the Letter of Bid will be corrected.
 - (d) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a), (b) and (c) above.
- 31.2 If the Bidder that submitted the lowest evaluated Bid does not accept the correction of errors, its Bid shall be disqualified and its bid security may be forfeited or its Bid-Securing Declaration executed.
- 32. Conversion to Single Currency**
- 32.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as specified in the BDS.

- 33. Margin of Preference** 33.1 Unless otherwise specified in the BDS, a margin of preference shall not apply.
- 34. Evaluation of Bids** 34.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.
- 34.2 To evaluate a Bid, the Employer shall consider the following:
- (a) the bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including Daywork items, where priced competitively;
 - (b) price adjustment for correction of arithmetic errors in accordance with ITB 31.1;
 - (c) price adjustment due to discounts offered in accordance with ITB 14.4;
 - (d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 32;
 - (e) adjustment for nonconformities in accordance with ITB 30.3; and
 - (f) application of all the evaluation factors indicated in Section 3 (Evaluation and Qualification Criteria).
- 34.3 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.
- 34.4 If this Bidding Document allows Bidders to quote separate prices for different contracts, and the award to a single Bidder of multiple contracts, the methodology to determine the lowest evaluated price of the contract combinations, including any discounts offered in the Letter of Bid, is specified in Section 3 (Evaluation and Qualification Criteria).
- 34.5 If the Bid, which results in the lowest Evaluated Bid Price, is seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.
- 35. Comparison of Bids** 35.1 The Employer shall compare all substantially responsive Bids to determine the lowest evaluated Bid, in accordance with ITB 34.2.
- 36. Qualification of the Bidder** 36.1 The Employer shall determine to its satisfaction whether the Bidder that is selected as having submitted the lowest evaluated and substantially responsive Bid meets the qualifying criteria specified in Section 3 (Evaluation and Qualification Criteria).

36.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.1.

36.3 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 next lowest evaluated bid to make a similar determination of that Bidder's qualifications to perform satisfactorily.

37. Employer's Right to Accept Any Bid, and to Reject Any or All Bids

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

F. Award of Contract

38. Award Criteria

38.1 The Employer shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated Bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

39. Notification of Award

39.1 Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, that its Bid has been accepted.

39.2 At the same time, the Employer shall also notify all other Bidders of the results of the bidding. The Employer will publish in an English language newspaper or well-known freely accessible website the results identifying the bid and lot numbers and the following information: (i) name of each Bidder who submitted a Bid; (ii) bid prices as read out at bid opening; (iii) name and evaluated prices of each Bid that was evaluated; (iv) name of bidders whose bids were rejected and the reasons for their rejection; and (v) name of the winning Bidder, and the price it offered, as well as the duration and summary scope of the contract awarded. After publication of the award, unsuccessful Bidders may request in writing to the Employer for a debriefing seeking explanations on the grounds on which their Bids were not selected. The Employer shall promptly respond in writing to any unsuccessful Bidder who, after publication of contract award, requests a debriefing.

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

40. Signing of Contract

40.1 Promptly after notification, the Employer shall send the successful Bidder the Contract Agreement.

40.2 Within 28 days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.

41. Performance Security

- 41.1 Within 28 days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the Conditions of Contract, subject to ITB 34.5, using for that purpose the Performance Security Form included in Section 9 (Contract Forms), or another form acceptable to the Employer.
- 41.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security or execution of the Bid-Securing Declaration. In that event, the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.
- 41.3 The above provision shall also apply to the furnishing of a domestic preference security if so required.

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Section 2 - Bid Data Sheet

This Section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section 1 - Instructions to Bidders.

A. General

ITB 1.1	The number of the Invitation for Bids (IFB) is: WP/NR																
ITB 1.1	The Employer is: Road Development Authority (RDA) The Employer's Representative: Director General, RDA																
ITB 1.1	The name of the NCB is: Rehabilitation, Improvement and Maintenance of Borella – Rajagiriya Road (B062) from 0+000 km to 1+380 km and Pagoda – Pitakotte Road (B345) from 0+000 km to 1+530 km and Pitakotte – Thalawathugoda Road (B368) from 0+000 km to 4+230 km The identification number of the NCB is: RDA/ADB/iROAD-2/NCB/WP/NR/08																
ITB 1.1	The National Competitive Bidding will be conducted in accordance with ADB's Single Stage One Envelope Bidding Procedure as per the ADB's Procurement Guidelines published in April 2015.																
ITB 1.1	<p>The Employer with this Bid Invitation is issuing bid invitations for following contract packages also;</p> <table border="1"> <thead> <tr> <th>Package No.</th><th>Title</th></tr> </thead> <tbody> <tr> <td>RDA/ADB/iROAD-2/NCB/WP/NR/01</td><td>Rehabilitation, Improvement and Maintenance of Colombo – Galle – Hambantota – Wellawaya Road (A002) from William Junction to Maliban Junction (8+320 km to 13+350 km) and Ratmalana – Mirihana Road (B389) from Ratmalana to Bekariya Junction (0+000 km to 2+300 km).</td></tr> <tr> <td>RDA/ADB/iROAD-2/NCB/WP/NR/02</td><td>Rehabilitation, Improvement and Maintenance of Peliyagoda – Puttalam Road (A003) from Peliyagoda Roundabout to Nawaloka Roundabout (0+000 km to 0+600 km) and Dandugama to Negombo from 19+000 km to 26+000 km</td></tr> <tr> <td>RDA/ADB/iROAD-2/NCB/WP/NR/03</td><td>Rehabilitation, Improvement and Maintenance of Peliyagoda – Puttalam Road (A003) from Negombo to Kochchikade Bridge (26+000 km to 37+550 km)</td></tr> <tr> <td>RDA/ADB/iROAD-2/NCB/WP/NR/04</td><td>Rehabilitation, Improvement and Maintenance of Kelaniya – Mudungoda Road (B214) from Nagahamula Junction to Delgoda (6+300 km to 19+000 km)</td></tr> <tr> <td>RDA/ADB/iROAD-2/NCB/WP/NR/05</td><td>Rehabilitation, Improvement and Maintenance of Kelaniya – Mudungoda Road (B214) from Delgoda Junction to Belummahara (19+000 km to 29+100 km)</td></tr> <tr> <td>RDA/ADB/iROAD-2/NCB/WP/NR/06</td><td>Rehabilitation, Improvement and Maintenance of Malabe – Kaduwela Road (B263) from 0+000 km to 5+630 km</td></tr> <tr> <td>RDA/ADB/iROAD-2/NCB/WP/NR/07</td><td>Rehabilitation, Improvement and Maintenance of Kotte – Bope Road (B240) from Malabe to Godagama (5+450 km to 16+800 km)</td></tr> </tbody> </table>	Package No.	Title	RDA/ADB/iROAD-2/NCB/WP/NR/01	Rehabilitation, Improvement and Maintenance of Colombo – Galle – Hambantota – Wellawaya Road (A002) from William Junction to Maliban Junction (8+320 km to 13+350 km) and Ratmalana – Mirihana Road (B389) from Ratmalana to Bekariya Junction (0+000 km to 2+300 km).	RDA/ADB/iROAD-2/NCB/WP/NR/02	Rehabilitation, Improvement and Maintenance of Peliyagoda – Puttalam Road (A003) from Peliyagoda Roundabout to Nawaloka Roundabout (0+000 km to 0+600 km) and Dandugama to Negombo from 19+000 km to 26+000 km	RDA/ADB/iROAD-2/NCB/WP/NR/03	Rehabilitation, Improvement and Maintenance of Peliyagoda – Puttalam Road (A003) from Negombo to Kochchikade Bridge (26+000 km to 37+550 km)	RDA/ADB/iROAD-2/NCB/WP/NR/04	Rehabilitation, Improvement and Maintenance of Kelaniya – Mudungoda Road (B214) from Nagahamula Junction to Delgoda (6+300 km to 19+000 km)	RDA/ADB/iROAD-2/NCB/WP/NR/05	Rehabilitation, Improvement and Maintenance of Kelaniya – Mudungoda Road (B214) from Delgoda Junction to Belummahara (19+000 km to 29+100 km)	RDA/ADB/iROAD-2/NCB/WP/NR/06	Rehabilitation, Improvement and Maintenance of Malabe – Kaduwela Road (B263) from 0+000 km to 5+630 km	RDA/ADB/iROAD-2/NCB/WP/NR/07	Rehabilitation, Improvement and Maintenance of Kotte – Bope Road (B240) from Malabe to Godagama (5+450 km to 16+800 km)
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ITB 2.1	The Borrower is: Democratic Socialist Republic of Sri Lanka																
ITB 2.1	The name of the Project is: Second Integrated Road Investment Program																

B. Contents of Bidding Documents

ITB 7.1	<p>For clarification purposes only, the Employer's address is:</p> <p>Attention: Project Director (WP & PC) Second Integrated Road Investment Program Road Development Authority No. 16, Subhuthipura Road Battaramulla. Sri Lanka.</p> <p>Telephone: +94 11 2187164 Facsimile number: +94 11 2187166 Electronic mail address: iroad2.rda@gmail.com</p>
ITB 7.4	<p>A virtual Pre-Bid meeting will take place.</p> <p>Date: 17 August 2021 Time: 11.00 hrs (Local Time)</p> <p>Log in details shall be made available for the interested bidders in the project web page www.iroad2.rda.gov.lk</p>

C. Preparation of Bids

ITB 10.1	The language of the Bid is: English
ITB 11.1 (h)	<p>The Bidder shall submit with its Bid the following additional documents:</p> <ol style="list-style-type: none"> 1. Proposals for subcontracting elements of the works if the total of such subcontracting is more than 10 percent of the bid price. Subcontractors experience for such subcontracting element shall be produced with a letter confirming by the Employer of the Project. However, bidder shall not subcontract whole of the Works. 2. A duly notarized affidavit certifying the accuracy of the information on current contract commitments given in Form FIN 4. 3. VAT Registration Certificate. Bidders already registered for VAT should submit this with their Bid while successful foreign bidders are allowed to complete the requirement before award of the Contract. 4. If Bidder is a joint Venture, a copy of JV agreement or letter of intent to execute a JV Agreement in the event of a successful bid shall be signed by all partners together with the proposed agreement or the Memorandum of Understanding and if the bidder is limited Liability Company, a copy of Certificate of Incorporation and if the bidder is partnership, partnership agreement and business registration, if the bidder is proprietorship, a certificate of business registration. 5. Authority to seek references from the bidder's bankers. 6. The breakdown of the rate build up for all the items in the Bills of Quantities under schedules in Section 4.

ITB 11.2	<p>Joint Venture Agreement or proposed Joint Venture Agreement shall state the following;</p> <ol style="list-style-type: none"> 1. Joint venture agreement / Intention to form joint venture shall identify the lead partner of the joint venture. 2. Degree of physical involvement of the each partner during implementation. 3. Financial contribution of the each partner. 4. Lead partner shall appoint the Contractor's Representative whom a full time Employee of the Lead Partner working for at least two year prior to bid submission date. 5. Contract Agreement shall be signed by the authorized person whom nominated by the lead partner as per ITB 20.2 6. Lead partner shall manage the contract including financial management. 7. If any partner is a foreign party, the foreign party shall also involve in managing the contract.
ITB 12.1	The units and rates in figures entered into the Bill of Quantities and Daywork Schedule should be typewritten or if written by hand, must be in print form. Bill of Quantities and Daywork Schedule not presented accordingly may be considered nonresponsive.
ITB 13.1	Alternative Bids shall not be permitted.
ITB 13.2	Alternative times for completion shall not be permitted.
ITB 13.4	Alternative technical solutions shall not be permitted.
ITB 14.4	Each bid is treated as a separate independent bid. A bidder shall not be awarded more than one contract. Discount for multiple contract combinations does not arise and shall not be accepted.
ITB 14.5	The prices quoted by the Bidder shall be subjected to price adjustment only in respect of local currency component.
ITB 14.7	VAT shall not be included in rates and prices
ITB 15.1	The unit rates and the prices shall be quoted by the Bidder entirely in Sri Lankan Rupees (LKR).
ITB 15.3	Not applicable
ITB 15.4	The rates of exchange shall be the selling rates 28 days prior to the deadline for submission of bids published by the Central Bank of Sri Lanka.
ITB 18.1	The bid validity period shall be 120 days.

ITB 19.1	<p>A separate bid security shall be required for each package. The currency and amount of the bid security for this package shall be LKR 11.3 million, or equivalent amount in freely convertible foreign currency.</p> <p>For the purpose of conversion of the required bid security amount to a freely convertible currency, the selling exchange rate published by the Central Bank of Sri Lanka on the date 28 days prior to the deadline for bid submission shall be applied.</p> <p>If the bid security is obtained from a bank based in another country, it shall be issued by a reputable bank from an eligible country and the security shall be confirmed by a bank operating in Sri Lanka. Foreign Bidders are encouraged to use corresponding bank in Sri Lanka.</p>
ITB 19.2	The ineligibility period will be not applicable.
ITB 19.4	<p>Subject to the succeeding sentences, any bid not accompanied by an irrevocable and callable bid security shall be rejected by the Employer as nonresponsive. If a Bidder submits a bid security that (i) deviates in form, amount, and/or period of validity, or (ii) does not provide sufficient identification of the Bidder (including, without limitation, failure to indicate the name of the Joint Venture or, where the Joint Venture has not yet been constituted, the names of all future Joint Venture Partners), the Employer shall request the Bidder to submit a compliant bid security within 7 days of receiving such a request. Failure to provide a compliant bid security within the prescribed period of receiving such a request shall cause the rejection of the Bid.</p>
ITB 20.1	<p>In addition to the original Bid, the number of copies is: One (1)</p> <p>Bid document must be submitted in signed hard copy form. Additional electronic copy of BOQ shall be prepared in EXCEL format which should be completed and submitted together with the bid. In case of ambiguity between soft copy and original signed hard copy, the content in the original signed hard copy shall prevail.</p>
ITB 20.2	<p>The written confirmation of authorization to sign on behalf of the Bidder shall consist of:</p> <ol style="list-style-type: none"> 1. Bids submitted by a limited liability company or a corporation: It shall be signed by a duly authorized person(s) holding a Power of Attorney notarized by Attorney-at-law or shall include an authorization by the Company's or Corporation's Board of Directors by a Board resolution and certified by the Company Secretary authorizing for such person(s) to sign the documents. 2. Bids submitted by an individual or the Partnership: The person signing on behalf of the bidder shall be duly authorized person holding a Power of Attorney notarized by Attorney-at-law or in respect of a partnership shall include a copy of the partnership agreement to demonstrate relationship of the signing partner to the partnership. 3. Bids submitted by existing or intended Joint Venture (JV) shall include an undertaking signed by all parties (i) stating that all parties shall be jointly and severally liable, and (ii) nominating a notarized representative from the lead partner who shall have the authority to conduct all business for and on behalf of any and all the parties of the JV during the bidding process and, in the event the JV is awarded the Contract, during contract execution.
ITB 20.2	The Bidder shall submit an acceptable authorization within 7 days.

D. Submission and Opening of Bids

ITB 21.1	Bidders shall not have the option of submitting their Bids electronically.
ITB 21.1 (b)	If Bidders shall have the option of submitting their Bids electronically, the electronic bidding submission procedures shall be: Not applicable
ITB 22.1	<p>For <u>bid submission purposes</u> only, the Employer's address is:</p> <p>Attention: The Chairman Ministry Procurement Committee c/o Chief Accountant "Maganeguma Mahamedura" Ministry of Highways Procurement Division 7th Floor, Denzil Kobbekaduwa Mawatha Koswatta, Battaramulla Sri Lanka.</p> <p>The deadline for bid submission is:</p> <p>Date: 08 September 2021 Time: 11.00 hrs (Sri Lankan Time)</p>
ITB 25.1	<p>The opening of the Bid shall take place at:</p> <p>Office of the Chief Accountant Ministry of Highways Floor/Room number: Procurement Division, 7th Floor, "Maganeguma Mahamedura", Denzil Kobbekaduwa Mawatha, Koswatta, Battaramulla, Sri Lanka.</p> <p>Date: 08 September 2021 Time: 11.00 hrs (Sri Lankan Time)</p>
ITB 25.1	Electronic bid opening procedure shall be as follows: Not applicable
ITB 25.3	The Letter of Bid and Bill of Quantities shall be initialed by the representatives of the Employer attending the Bid opening.

E. Evaluation and Comparison of Bids

ITB 30.1	<p>Add the following paragraph</p> <p>The total cost for 5 years Performance Based Maintenance shall not be less than 5% of the cost of rehabilitation/improvement works, i.e. sum of Bill Nos. 2, 3, 4, 5, 6, 7 & 8 of the Bills of Quantities.</p> <p>If the bidder's quoted price is less than 5% of Bill Nos 2, 3, 4, 5, 6, 7 & 8 of the BOQ, then only for evaluation purpose, an amount equivalent to 5% will be considered.</p>
ITB 32.1	<p>The currency that shall be used for bid evaluation and comparison purposes to convert all bid prices expressed in various currencies into a single currency is: Sri Lankan Rupees (LKR)</p> <p>The source of selling exchange rate shall be: Central Bank of Sri Lanka.</p> <p>The date for the selling exchange rate shall be: 28 days prior to the deadline for submission of bids.</p>

ITB 33.1	A margin of preference shall not apply.
ITB 38.1	<p>Add the following:</p> <p>In the event the Bidder becomes lowest evaluated substantially responsive bidder, the Bidder shall be requested to submit the Line of Credit Agreement (if any) entered with the Bank within 14 days.</p> <p>In the event Bidder fails to submit the requested Line of Credit Agreement such line of credit shall not be considered for the calculation of financial resources of the Bidder.</p> <p>Any person acts as an agent, representative or nominee for or on behalf of any bidder shall register himself with the Registrar of Public Contracts if the bid price exceeds LKR 5 million in accordance with the Public Contracts Act No. 3 of 1987 and subsequent gazette notification. Such certificate issued to the local agent/ representative by the Registrar of Public Contracts shall be submitted by the successful bidder before signing of the Contract Agreement.</p>
ITB 40.2	<p>Delete this sub clause and insert as follows.</p> <p>Signing of the Contract shall be done jointly by the Employer and the successful Bidder at a place, date and time to be decided by the Employer within 14 days of accepting the Performance Security by the Employer.</p>

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Section 3 - Evaluation and Qualification Criteria

- Without Prequalification -

This Section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders. In accordance with ITB 34 and ITB 36, no other methods, criteria and factors shall be used. The Bidder shall provide all the information requested in the forms included in Section 4 (Bidding Forms).

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1. Evaluation

In addition to the criteria listed in ITB 34.2 (a)–(e), other relevant factors are as follows:

1.1 Adequacy of Technical Proposal

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section 6 (Employer's Requirements).

Non-compliance with equipment and personnel requirements described in Section 6 (Employer's Requirements) shall not be grounds for bid rejection and such non-compliance will be subject to clarification and rectification prior to contract award. Failure for submission of clarification or complying to rectification prior to contract award shall result in rejection of the bid.

The bidder shall submit an affidavit confirming whether the equipment are in working condition and the current locations of the equipment in case if the equipment are owned by the bidder.

If the bidder provides leased or rented equipment, the bidder shall submit lease / rent agreement if the equipments are already leased / rented by the bidder. Bidder shall also submit an affidavit confirming whether the equipment are in working condition and the current locations of the equipment.

If the bidder intend to lease / rent, bidder shall submit the intend to lease / rent agreement if the equipment are to be leased / rented. Bidder shall also submit an affidavit confirming whether the equipment are in working condition and the current locations of the equipment.

1.2 Completion Time

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

Not permitted. A Bid that deviates from the required completion time shall be declared non-responsive and rejected.

1.3 Technical Alternatives

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

Not permitted.

1.4 Quantifiable Nonconformities and Omissions

Subject to ITB 14.2 and ITB 34.2, the evaluated cost of quantifiable nonconformities including omissions, is determined as follows:

Pursuant to ITB 30.3, the cost of all quantifiable nonmaterial nonconformities shall be evaluated, including omissions in Daywork where competitively priced but excluding omission of prices in the Bill of Quantities. The Employer will make its own assessment of the cost of any nonmaterial nonconformities and omissions for the purpose of ensuring fair comparison of Bids.

1.5 Domestic Preference

If a margin of preference is provided for under ITB 33.1, the following procedure shall apply:

Not applicable.

1.6 Multiple Contracts

Works are grouped in multiple contracts and pursuant to ITB 34.4, the Employer shall evaluate and compare Bids on the basis of a contract, or a combination of contracts, or as a total of contracts in order to arrive at the least-cost combination for the Employer by taking into account discounts offered by Bidders. A bidder shall not be awarded more than one contract. Discounts are accepted for individual packages.

Non-compliance with equipment and personnel requirements described in Section 6 (Employer's Requirements) shall not be grounds for bid rejection and such non-compliance will be subject to clarification and rectification prior to contract award. Failure for submission of clarification or complying to rectification prior to contract award shall result in rejection of the bid.

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2. Qualification

It is the legal entity or entities comprising the Bidder, and not the Bidder's parent companies, subsidiaries, or affiliates, that must satisfy the qualification criteria described below.

One Partner evaluated here shall be the lead partner which will represent the joint venture and appoint the Contractor's Representative.

2.1 Eligibility

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	

2.1.1 Nationality

Nationality in accordance with ITB Subclause 4.2.	must meet requirement	must meet requirement	must meet requirement	not applicable	Forms ELI - 1; ELI - 2 with attachments
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2.1.2 Conflict of Interest

No conflicts of interest in accordance with ITB Subclause 4.3.	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Bid
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2.1.3 ADB Eligibility

Not having been declared ineligible by ADB, as described in ITB Subclause 4.4.	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Bid
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2.1.4 Government-Owned Entity

Bidder required to meet conditions of ITB Subclause 4.5.	must meet requirement	must meet requirement	must meet requirement	not applicable	Forms ELI - 1; ELI - 2 with attachments
----------------------------------------------------------	-----------------------	-----------------------	-----------------------	----------------	-----------------------------------------------

2.1.5 United Nations Eligibility

Not having been excluded by an act of compliance with a United Nations Security Council resolution in accordance with ITB Subclause 4.7.	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Bid
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2.2 Pending Litigation and Arbitration

Pending litigation and arbitration criterion shall apply.

2.2.1 Pending Litigation and Arbitration

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
All pending litigation and arbitration, if any, shall be treated as resolved against the Bidder and so shall in total not represent more than fifty (50%) percent of the Bidder's net worth calculated as the difference between total assets and total liabilities.	must meet requirement by itself or as partner to past or existing Joint Venture	not applicable	must meet requirement by itself or as partner to past or existing Joint Venture	not applicable	Form LIT - 1

2.2.2 Non Performing Contracts

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Non-performance ¹ in a contract has not been occurred as a result of Contractor's default	must meet requirement	not applicable	must meet requirement	not applicable	Form LIT -2
<p>¹⁻ ADB financed road projects in Sri Lanka and RDA projects shall be considered for assessment of Non-performing Contracts (single entity contractor / any JV / any each partner of the JV / sub-contractor / specialized sub-contractor) based on the following criteria.</p> <ol style="list-style-type: none"> 1. If Notice to Correct (NC) has been issued as per Clause 15.1 of FIDIC MDB Harmonized Condition of Contracts on the poor performance of the Contractor or similar notice as per the relevant Conditions of Contract (COC) issued before the date of Invitation of these Bids and within last two years, unless the Engineer certifies that Contractor has corrected the contents of the Notice to Correct. This certificate shall be accompanied with the bid; or 2. (i) If maximum Delay Damage has been imposed within two years before the date of Invitation of Bids, and/or; (ii) If any Contract has been terminated due to the Contractor's default within five years before the date of Invitation of Bids; 					

2.3 Financial Situation

2.3.1 Historical Financial Performance

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Submission of audited financial statements or, if not required by the law of the Bidder's country, other financial statements acceptable to the Employer, for the last seven (7) years to demonstrate the current soundness of the Bidder's financial position. Bidders who have incorporated in the business within the last 7 years shall submit the audited financial statements from the financial year of the commencement of the business. As a minimum, the Bidder's net worth for the last year calculated as the difference between total assets and total liabilities should be positive.	must meet requirement	not applicable	must meet requirement	not applicable	Form FIN - 1 with attachments

The Employer may verify the audited financial statement of the bidders from the Inland Revenue Department for national bidders and from relevant agencies for international bidders.

2.3.2 Average Annual Construction Turnover

Criteria	Compliance Requirements			Documents	
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Minimum average annual construction turnover of LKR 1,135 million calculated as total certified payments received for contracts in progress or completed, within the last seven (7) years. Bidders who have incorporated in the business within the last 7 years shall be computed using the number of years of submitted audited financial statements.	must meet requirement	For joint ventures with international and national bidders			Form FIN - 2
		must meet requirement	must meet 75% of the requirement	Not applicable	
		For joint ventures with international bidders			
		must meet requirement	must meet 75% of the requirement	Not applicable	
		For joint ventures with national bidders			
		must meet requirement	must meet 25% of the requirement	must meet 40% of the requirement	

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 amounts for that year to be converted) was originally established.

2.3.3 Financial Resources

Criteria		Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
For Single Entities: The Bidder must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its current contract commitments defined in FIN - 4, meet or exceed the total requirement for the Subject Contract of LKR 280 million .	must meet requirement	not applicable	not applicable	not applicable	Form FIN – 3 and Form FIN – 4
For Joint Ventures: (1) One partner must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its own current contract commitments defined in FIN - 4, meet or exceed its required share of 40% from the total requirement for the Subject Contract. AND	not applicable	not applicable	not applicable	must meet requirement	Form FIN – 3 and Form FIN – 4

(2) Each partner must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its own current contract commitments defined in FIN - 4, meet or exceed its required share of 25% from the total requirement for the Subject Contract. AND	not applicable	not applicable	must meet requirement	not applicable	Form FIN – 3 and Form FIN – 4
(3) The joint venture must demonstrate that the combined financial resources of all partners defined in FIN - 3, less all the partners' total financial obligations for the current contract commitments defined in FIN - 4, meet or exceed the total requirement for the Subject Contract of LKR 280 million .	not applicable	must meet requirement	not applicable	not applicable	Form FIN – 3 and Form FIN – 4

Working capital and a maximum amount of line of credit equal to the amount of the working capital shall only be considered as bidders financial resources. A duly notarized affidavit certifying the accuracy of the information on current contract commitments given in Form FIN 4 shall be included.

2.4 Construction Experience

2.4.1 Contracts of Similar Size and Nature

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Participation in at least one road construction and / or rehabilitation and improvement contract that has been successfully or substantially completed within the last seven (7) years where the value of the Bidder's participation exceeds LKR 905 million .	must meet requirement	not applicable	not applicable	must meet requirement	Form EXP - 1

If the said contract is a sub-contract, bidder shall submit the sub-contract agreement along with the completion certificate issued by the main contractor and a confirmation letter issued by the Employer and Engineer of the Project stating that the bidder has engaged as an approved sub-contractor and confirming the extent of work performed by the sub-contractor. Failure to submit such document with the bid shall result in disqualification of the bid.

2.4.2 Construction Experience in Key Activities

(May be complied with by specialist subcontractors. The employer shall require evidence of the subcontracting agreement from the bidder. A specialist subcontractor is a specialist enterprise engaged for highly specialized processes, which the main contractor cannot provide.)

Criteria	Compliance Requirements				Documents
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
For the above or other contracts executed during the period stipulated in 2.4.1 above, a minimum construction experience in the following key activities:	must meet requirement	must meet requirement ^a	not applicable	not applicable	Form EXP - 2
42,000 m ² of 50mm thick asphalt concrete wearing course in 12 months of last 7 years					
1,500 m ³ of Aggregate base course in 12 months of last 7 years					

^a In the case of a joint venture bidder, at least one of the partners must have the experience in the key activity if the bidder itself (not its subcontractor) will carry out the relevant activity.

Section 4 - Bidding Forms

- Without Prequalification -

This Section contains the forms to be completed by the Bidder and submitted as part of its Bid.

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Letter of Bid

Note-

The bidder must accomplish the Letter of Bid on its letterhead clearly showing the bidder's complete name and address.

Date:

NCB No.:

Invitation for Bid No.:

To: The Chairman
Road Development Authority

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8.
- (b) We offer to execute in conformity with the Bidding Documents the following Works:

Rehabilitation, Improvement and Maintenance of Borella – Rajagiriya Road (B062) from 0+000 km to 1+380 km and Pagoda – Pitakotte Road (B345) from 0+000 km to 1+530 km and Pitakotte – Thalawathugoda Road (B368) from 0+000 km to 4+230 km – Contract No.: RDA/ADB/iROAD-2/NCB/WP/NR/08

- (c) The total price of our Bid, excluding any discounts offered in item (d) below is:

The total bid price from the Summary of Bill of Quantities should be entered by the bidder inside this box (Total bid price in words and figures).

Absence of the total bid price in the Letter of Bid may result in the rejection of the bid.

- (d) The discounts offered and the methodology for their application are: [. . .insert discounts and methodology for their application if any . . .]
- (e) Our bid shall be valid for a period of [. . .insert bid validity period as specified in ITB 18.1 of the BDS . . .] days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
- (f) If our bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents.
- (g) Our firm, including any Subcontractors or Suppliers for any part of the Contract, have nationalities from eligible countries in accordance with ITB 4.2.

- (h) We, including any Subcontractors or Suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 4.3.
- (i) We are not participating, as a Bidder in more than one Bid in this bidding process in accordance with ITB 4.3(e), other than alternative offers submitted in accordance with ITB 13.
- (j) Our firm, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, has not been declared ineligible by ADB, under the Employer's country laws or official regulations or by an act of compliance with a decision of the United Nations Security Council.
- (k) [We are not a government-owned enterprise] / [We are a government-owned enterprise but meet the requirements of ITB 4.5].¹
- (l) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract:²

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

- (m) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.
- (n) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.
- (o) We agree to permit ADB or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by ADB.
- (p) If our Bid is accepted, we commit to mobilizing key equipment and personnel in accordance with the requirements set forth in Section 6 (Employer's Requirements) and our technical proposal, or as otherwise agreed with the Employer.

Name

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date

¹ Use one of the two options as appropriate.

² If none has been paid or is to be paid, indicate "None".

Schedules

Schedule of Payment Currencies – Not applicable

Forinsert name of Section of the Works

Separate tables may be required if the various sections of the Works (or of the Bill of Quantities) will have substantially different foreign and local currency requirements. In such a case, the Employer should prepare separate tables for each Section of the Works.

	A	B	C	D
Name of Payment Currency	Amount of Currency	Rate of Exchange to Local Currency	Local Currency Equivalent $C = A \times B$	Percentage of Net Bid Price (NBP) $\frac{100 \times C}{NBP}$
Local Currency		1.00		
Foreign Currency #1				
Foreign Currency #2				
Foreign Currency #3				
Net Bid Price				100.00
Provisional Sums Expressed in Local Currency		1.00		
BID PRICE				

- Note -

The rates of exchange shall be the selling rates 28 days prior to the deadline for submission of bids published by the source specified in BDS 15.

Tables of Adjustment Data

1. Adjustment data for construction works other than Performance Based Maintenance Work

Table A - Local Currency

The Bidder may consider applying the given percentages of weightings. The source of index shall be the Construction Industry Development Authority (CIDA), Sri Lanka.

INPUT		PERCENTAGE
NAME	INDICES REFERENCE	
Heavy Equipment	P02	39.14
Skilled Labour	L01	8.98
Bitumen 60/70	M30C	17.45
Fuel	P03	8.25
Semiskilled Labour	L02	3.23
ABC Road Metal	M48	0.50
Unskilled Labour	L03	3.13
Earth	M45	2.99
Aggregate (Metal)	M07	3.50
Cement	M03	0.66
Sand	M08	0.46
Small Equipment	P01	0.67
Precast Concrete	M43	1.04
Total		90.00

2. Adjustment Data for Performance Based Maintenance Works

The Contractor shall submit the rates for each year of Performance Based Maintenance period inclusive of any price fluctuation expected. No price fluctuation shall be paid for Performance Based Maintenance Work in addition to the rates given in the Bills of Quantities.

Table B - Foreign Currency

Not applicable

Bid Security Bank Guarantee

.....*Bank's name, and address of issuing branch or office*¹.....

Beneficiary: The Chairman, Road Development Authority, Maganeguma Mahamedura",
Denzil Kobbekaduwa Mawatha, Koswatta, Battaramulla

Date:

Bid Security No.:

We have been informed that *name of the bidder* (hereinafter called "the Bidder") has submitted to you its bid dated (hereinafter called "the Bid") for the execution of *name of contract* under Invitation for Bids No. ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we *name of bank* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *amount in words* (..... *amount in figures*) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder

- (a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Letter of Bid; or
- (b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or
- (c) having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the performance security, in accordance with the ITB, or (iii) fails or refuses to furnish a domestic preference security, if required.

This guarantee will expire (a) if the Bidder is the successful Bidder, upon our receipt of copies of the Contract Agreement signed by the Bidder and the Performance Security issued to you upon the instruction of the Bidder; or (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy of your notification to the Bidder of the name of the successful Bidder, or (ii) 28 days after the expiration of the Bidder's bid.

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

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.²

.....*Authorized signature(s) and bank's seal (where appropriate)*.....

-- Note --

In case of a joint venture, the bid security must be in the name of all partners to the joint venture that submits the bid.

¹ All italicized text is for use in preparing this form and shall be deleted from the final document.

² Or 758 as applicable.

Technical Proposal

Personnel

Equipment

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

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Personnel

Form PER – 1: Proposed Personnel

Bidder should provide the details of the proposed personnel and their experience record in the relevant Information Forms below for each candidate:

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

-- Note --

* As listed in Section 6 (Employer's Requirements).

Form PER – 2: Resumé of Proposed Personnel

The Bidder shall provide all the information requested below. Use one form for each position.

Position		
Personnel information	Name	Date of birth
	Professional qualifications	
Present employment	Name of employer	
	Address of employer	
	Telephone	Contact (manager / personnel officer)
	Fax	E-mail
	Job title	Years with present employer

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

[illegible]

Equipment

Form EQU: Equipment

The Bidder shall provide adequate information and details to demonstrate clearly that it has the capability to meet the equipment requirements indicated in Section 6 (Employer's Requirements), using the Forms below. 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 <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> 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

Site Organization

Method Statement

Mobilization Schedule

DRAFT

Construction Schedule

Bidders Qualification

To establish its qualifications to perform the contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

DRAFT

Form ELI - 1: Bidder's Information Sheet

Bidder's Information	
Bidder's legal name	
In case of a Joint Venture, legal name of each partner	
Bidder's country of constitution	
Bidder's year of constitution	
Bidder's legal address in country of constitution	
Bidder's authorized representative (name, address, telephone number(s), fax number(s), e- mail address)	
<p>Attached are copies of the following documents.</p> <p><input type="checkbox"/> 1. In case of a single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2.</p> <p><input type="checkbox"/> 2. Authorization to represent the firm or Joint Venture named above, in accordance with ITB 20.2.</p> <p><input type="checkbox"/> 3. In case of a Joint Venture, a letter of intent to form a Joint Venture or Joint Venture agreement, in accordance with ITB 4.1.</p> <p><input type="checkbox"/> 4. In case of a government-owned enterprise, any additional documents not covered under 1 above required to comply with ITB 4.5.</p>	

Form ELI - 2: Joint Venture Information Sheet

Each member of the Joint Venture and Specialist Subcontractor must fill out this form separately.

Joint Venture / Specialist Subcontractor Information	
Bidder's legal name	
Joint Venture Partner's or Specialist Subcontractor's legal name	
Joint Venture Partner's or Specialist Subcontractor's country of constitution	
Joint Venture Partner's or Specialist Subcontractor's year of constitution	
Joint Venture Partner's or Specialist Subcontractor's legal address in country of constitution	
Joint Venture Partner's or Specialist Subcontractor's authorized representative information (name, address, telephone number(s), fax number(s), e-mail address)	
Attached are copies of the following documents: <ul style="list-style-type: none"> <input type="checkbox"/> 1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2. <input type="checkbox"/> 2. Authorization to represent the firm named above, in accordance with ITB 20.2. <input type="checkbox"/> 3. In the case of a government-owned enterprise, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.5. <p>Joint venture agreement / Intention to form joint venture shall clearly indicate the following.</p> <ul style="list-style-type: none"> 1. Shall identify the lead partner of the joint venture. 2. Degree of physical involvement of the each partner during implementation. 3. Financial contribution of the each partner. 4. Lead partner shall appoint the Contractor's Representative whom a full time Employee of the Lead Partner working for at least two year prior to bid submission date. 5. Contract Agreement shall be signed by the authorized person whom nominated by the lead partner as per ITB 20.2 6. Lead partner shall manage the contract including financial management. 7. If any partner is a foreign party, the foreign party shall also involve in managing the contract. 	

A Specialist Subcontractor is a specialist enterprise engaged for highly specialized processes that cannot be provided by the main Contractor.

Form LIT - 1: Pending Litigation and Arbitration

Each Bidder must fill out this form if so required under Criterion 2.2 of Section 3 (Evaluation and Qualification Criteria) to describe any pending litigation or arbitration formally commenced against it.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Pending Litigation and Arbitration			
Choose one of the following: <input type="checkbox"/> No pending litigation and Arbitration. <input type="checkbox"/> Below is a description of all pending litigation and Arbitration involving the Bidder (or each Joint Venture member if Bidder is a Joint Venture).			
Year	Matter in Dispute	Value of Pending Claim in LKR Equivalent	Value of Pending Claim as a Percentage of Net Worth

- Note -

This form shall only be included if Criterion 2.2 of Section 3 (Evaluation and Qualification Criteria) is applicable.

Form LIT - 2: Non-performing Contracts

Each Bidder must fill out this form if so required under Criterion 2.2 of Section 3 (Evaluation and Qualification Criteria) to describe any non-performing Contracts.

In case of a Joint Venture, each Joint Venture Partner, sub-contractors, specialized sub-contractors must fill out this form separately and provide the Joint Venture Partner's name below:

Name of the entity: _____

Non-performing Contracts		
<p>Choose one of the following:</p> <p><input type="checkbox"/> Below is details of Notice to Correct, Delay Damages and Termination due to Contractor's default (or each Joint Venture member if Bidder is a Joint Venture).</p> <p><u>Details of Notice to Correct (NC) or similar notices</u></p>		
Date of issued	Name of the Contract and Employer details	Whether the Engineer certifies that Contractor has corrected the contents of the NC (Yes / No)

<u>Details of Delay Damages</u>			
Date imposed	Name of the Contract and Employer details	Whether delay damages fully imposed? (Yes / No)	Challenged by the Contractor through DRM? (Yes / No)

<u>Details of Contract has been terminated due to the Contractor's default</u>		
Date terminated	Name of the Contract and Employer details	Challenged by the Contractor through DRM? (Yes / No)

- Note -

This form shall only be included if Criterion 2.2 of Section 3 (Evaluation and Qualification Criteria) is applicable. Bidder must attach all documentary evidence to proof.

Form FIN - 1: Historical Financial Performance

Each Bidder must fill out this form.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Financial Data for Previous 7 Years [LKR]

Year 1:	Year 2:	Year 3:	Year 4:	Year 5:	Year 6:	Year 7:

Information from Balance Sheet

Total Assets (TA)							
Total Liabilities (TL)							
Net Worth = TA – TL							
Current Assets (CA)							
Current Liabilities (CL)							

Most Recent Working Capital

To be obtained for most recent year and carried forward to FIN - 3 Line 1; in case of Joint Ventures, to the corresponding Joint Venture Partner's FIN – 3.

Information from Income Statement

Total Revenues							
Profits Before Taxes							
Profits After Taxes							

- ☐ Attached are copies of financial statements (balance sheets including all related notes and income statements) for the last 7 years, as indicated above, complying with the following conditions:
- Unless otherwise required by Section 3 of the Bidding Document, all such documents reflect the financial situation of the legal entity or entities comprising the Bidder and not the Bidder's parent companies, subsidiaries, or affiliates.
 - Historical financial statements must be audited by a certified accountant.
 - Historical financial statements must be complete, including all notes to the financial statements.
 - Historical financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

Form FIN - 2: Average Annual Construction Turnover

Each Bidder must fill out this form.

The information supplied should be the Annual Turnover of the Bidder or each member of a Joint Venture in terms of the amounts billed to clients for each year for work in progress or completed, converted to LKR at the rate of exchange at the end of the period reported.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Annual Turnover Data for the Last 7 Years (Construction only)			
Year	Amount Currency	Exchange Rate	LKR Equivalent

Average Annual Construction Turnover

Form FIN – 3: Availability of Financial Resources

Bidders must demonstrate sufficient financial resources, usually comprising of Working Capital supplemented by credit line statements or overdraft facilities and others to meet the Bidder's financial requirements for

- (a) its current contract commitments, and
- (b) the subject contract.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Financial Resources		
No.	Source of financing	Amount (LKR equivalent)
1	Working Capital (to be taken from FIN - 1)	
2	Credit Line ^a	
Total Available Financial Resources		

Working capital and a maximum amount of line of credit equal to the amount of the working capital shall only be considered as bidders financial resources.

^a To be substantiated by a letter from the bank issuing the line of credit.

Form FIN- 4: Financial Requirements for Current Contract Commitments

Bidders (or each Joint Venture partner) 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.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Current Contract Commitments						
No.	Name of Contract	Employer's Contact (Address, Tel, Fax)	Contract Completion Date	Outstanding Contract Value (X) ^a	Remaining Contract Period in months (Y) ^b	Monthly Financial Resources Requirement (X / Y)
1						
2						
3						
4						
Total Monthly Financial Requirement for Current Contract Commitments						LKR

^a Remaining outstanding contract values to be calculated from 28 days prior to the bid submission deadline (LKR equivalent based on the foreign exchange rate as of the same date).

^b Remaining contract period to be calculated from 28 days prior to bid submission deadline.

A duly notarized affidavit certifying the accuracy of the information on current contract commitments shall be submitted.

Form FIN - 5: Self-Assessment Tool for Bidder's Compliance to Financial Resources (Criterion 2.3.3 of Section 3)

This form requires the same information submitted in Forms FIN - 3 and FIN - 4. All conditions of "Available Financial Resources Net of CCC \geq Requirement for the Subject Contract" must be satisfied to qualify.

Form FIN - 5A: For Single Entities

For Single Entities: (A)	Total Available Financial Resources from FIN – 3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN – 4 (C)	Available Financial Resources Net of CCC $D = (B - C)$	Requirement for the Subject Contract (E)	Results: Yes or No [D must be greater than or equal to E] (F)
_____ (Name of Bidder)				

Form FIN - 5B: For Joint Ventures

For Joint Ventures: (A)	Total Available Financial Resources from FIN – 3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN – 4 (C)	Available Financial Resources Net of CCC $D = (B - C)$	Requirement for the Subject Contract (E)	Results: Yes or No [D must be greater than or equal to E] (F)
One Partner:					
_____ (Name of Partner)				
Each Partner:					
_____ (Name of Partner 1)				
_____ (Name of Partner 2)				
_____ (Name of Partner 3)				
All partners combined	$\Sigma D =$ Sum of available financial resources net of current contract commitments for all partners		$\Sigma D =$ _____	

- Note -

Form FIN – 5 is made available for use by the bidder as a self-assessment tool, and by the employer as an evaluation work sheet, to determine compliance with the financial resources requirement as stated in 2.3.3. Failure to submit Form FIN - 5 by the Bidder shall not lead to bid rejection.

Form EXP – 1: Contracts of Similar Size and Nature

Fill out one (1) form per contract.

Contract of Similar Size and Nature		
Contract No of	Contract Identification	
Award Date		Completion Date
Total Contract Amount	LKR	
If partner in a Joint Venture or subcontractor, specify participation of total contract amount	Percent of Total	Amount
Employer's name Address Telephone number Fax number E-mail		
Description of the Similarity in Accordance with Criterion 2.4.1 of Section 3 (Evaluation and Qualification Criteria)		

Bidder shall submit the following as supporting document.

- Letter of Acceptance
- Completion certificate

If the said contract is a sub-contract, bidder shall submit the sub-contract agreement along with the completion certificate issued by the main contractor and a confirmation letter issued by the Employer and Engineer of the Project stating that the bidder has engaged as an approved sub-contractor and confirming the extent of work performed by the sub-contractor. Failure to submit such document with the bid shall result in disqualification of the bid.

Form EXP - 2: Construction Experience in Key Activities

Fill out one (1) form per contract.

Contract with Similar Key Activities		
Contract No of	Contract Identification	
Award Date		Completion Date
Total Contract Amount	\$	
If partner in a Joint Venture or subcontractor, specify participation of total contract amount	Percent of Total	Amount
Employer's name Address Telephone number Fax number E-mail		
Description of the Key Activities in Accordance with Criterion 2.4.2 of Section 3 (Evaluation and Qualification Criteria)		

Pro-forma Bank Guarantee for the Revolving Line of Credit

Date :
NCB No :
Invitation for Bid No :

To:
The Chairman,
Road Development Authority,
"Maganeguma Mahamedura", Denzil Kobbekaduwa Mawatha,
Koswatta, Battaramulla
SRI LANKA

Sub: Letter of Guarantee Confirming Bank's Undertaking for Opening a line of Credit in favour (1).....in case of award to them of Works (insert name of the contract package) (insert contract number) under Asian Development Bank funded Integrated Road Investment Program.

Dear Sir,

I/We the authorized representative of (2).....hereby agree and undertake for and on behalf of the Bank that if M/s (Bidder).

(1).....
Are awarded a Contract(s) on the Asian Development Bank funded Second Integrated Road Investment Program – (insert name of the contract package and contract number) they will be provided by us with a revolving line of credit for an amount of Sri Lankan Rupees.....for the purpose of the execution of the above mentioned Contract(s). This revolving line of credit will be maintained until the completed works are taken over by the Asian Development Bank funded Second Integrated Road Investment Program.

In the event the Bidder becomes lowest evaluated substantially responsive bidder, we, the bank, undertakes to sign a Line of Credit Agreement with the Bidder (based on the latest facility available for the bidder) for the amount Rs..... for the duration of contract period and a copy of the said agreement shall be forwarded to the Chairman, Road Development Authority on request before the award of Contract.

In witness whereof, the authorized representative of the Bank has herein to signed and sealed this letter of Guarantee.

GUARANTO

.....
.....
.....

- (1) Insert name of the intending Bidder
(2) Insert name and address of the Bank

WITNESS

.....
.....
.....

Rate Analysis

The Rate Analysis shall be provided for all the items in the Bills of Quantities in accordance with the format given.

Rate Analysis for BOQ Work Items

Pay Item No:

Work (Item

Item : description).....

Mark-up :%

Assumed Quantity for rate build-up XXX

Norm

Ref.:

Price Code	Labour Component	Unit	Quantity	Rate	Amount
Total Cost for Labour - A					

Price Code	Plant/Equipment Component	Unit	Quantity	Rate	Amount
Total Cost for Plant/Equipment - B					

Price Code	Material Component	Unit	Quantity	Rate	Amount
Total Cost for Material - C					

Price Code	Miscellaneous Cost Component	Unit	Quantity	Rate	Amount
Total Cost for Miscellaneous - D					

	Estimated Direct Cost - E	(A+B+C+D)	
	Overheads and Profit - F% of E	
	Total for XXX - G	(E+F)	
	Rate per unit	(G/XXX)	
	Say Rate		

The Bidders shall properly fill this form quantifying all resources, incidentals etc. required for all items in the List of BOQ Items for Rate Analysis.

Bill of Quantities

A. Preamble To Bill Of Quantities

1. General

The Contractor's attention is specifically directed to the Conditions of Contract, the Particular Conditions, the Specifications, the Particular Specifications and the Drawings, which are to be read in conjunction with the Bill of Quantities and the Preamble. The rate analysis for the listed BOQ items shall be provided in detail in accordance with the format given under "Rate Analysis for BOQ Work Items".

2. Application of Preamble to Subsequent Work

The relevant clause of this Preamble shall be deemed to apply equally to work subsequently ordered for execution by the Contractor, either under Provisional Sum orders or variation orders, except where specifically varied therein.

3. Method of Measurement

The Works as executed will be measured for payment in accordance with the method adopted in the Bills of Quantities and under the item as therein set forth. The net measurement or weight of the finished work in place will always be taken, and except where otherwise stated or where separate items are provided, no allowance will be made for cutting, waste, laps, circular work, etc., and no deductions will be made for grout nicks, joggle holes, rounded arises or for shrinkage for fitting ironwork and the like.

Payment will be made for only those materials, which are specified and permanently installed in the works to the approval of the Engineer. Construction materials supplied and delivered to the site by the Contractor which become surplus to the requirements of the works shall become the property of the Contractor who shall reimburse the Employer any money that was paid to the Contractor for the supply and delivery to site of the surplus materials.

4. Units and Extension of Bills of Quantities

All sizes and quantities have been entered in the Bills of Quantities in Metric Units. Figures involving decimals, including sums of money are written in the British tradition, namely, with a full stop in the decimal position and commas between each successive group of three digits to the left of the decimal position.

The Bidder shall indicate the total amount for each item (i.e. the quantity multiplied by the rate) to the nearest cent when inserting the figures in the BOQ.

5. Rates and Sums to be for Work Complete

Notwithstanding any limits which may be implied by the wording of the individual items and/or explanation in this preamble it is to be clearly understood by the Contractor that the rates and sums which he enters in the Bills of Quantities shall be for the work finished complete in every respect, he shall be deemed to have taken full account of all requirements and obligations, whether expressed or implied, covered by all parts of the Contract, and to have priced the items herein accordingly. The rates and sums must therefore include for all incidental and contingent expenses and risks of every kind necessary to construct, complete and maintain the whole of the Works in accordance with the Contract. Full allowance shall be made in the rates and/or sums against the various items in the Bills of Quantities for all costs involved in the following *inter-alia*, which are referred to and/or specified herein except where separate items are provided.

- (1) All site investigations, which may be necessary;
- (2) All setting out and survey work;
- (3) Temporary fencing, watching, and lighting;
- (4) Paying fees and giving notice to authorities;
- (5) Payment of all patent rights and royalties;
- (6) Reinstatement of the site;
- (7) Safety precautions and all measures to prevent and suppress fire and other hazards;
- (8) Interference to the works by persons, vehicles, and the like using the existing facilities;
- (9) Works in connection with the protection and safety of adjacent structures;
- (10) Supplying, maintaining and removing on completion Contractor's own accommodation, offices, stores, workshops, transport, welfare services and all charge in connection therewith; except those for which a separate BOQ item is provided;
- (11) Working in the dry except where otherwise permitted by the specification;
- (12) Maintaining access roads;
- (13) The supply, inspection, sampling and testing of materials and of the Works under construction, including the provision and use of equipment;
- (14) Except where separate items are provided for bringing plant to the site and removing on completion, for providing, transporting to site, setting to work operating (including all fuel and consumable stores), maintaining and removing from the site upon completion all construction plant and equipment necessary for the execution of the work, including the cost of all tests and other requirements in respect to such plant and equipment;
- (15) The recruitment, bringing to and from the site, accommodating and feeding and all incidental costs and expenses involved in the provision of all necessary skilled and unskilled labour and supervision, except for whom a separate BOQ item is provided;
- (16) All statutory taxes and levy, surcharges etc. including stamp duty payable on the contract, which will have to be borne by the Contractor.

Value Added Tax (VAT) shall not be included in the rates of prices to be quoted. A provision shall be made for VAT in the summary sheet of the Bill of Quantities (BOQ). VAT shall not be considered in the evaluation of Bids.

The contractor shall be guided by the Central Environmental Authority, Terms and Conditions, also issued when granting approval for working on any particular road. He shall ensure compliance with these Terms and Conditions for which no additional payment will be made.

No claim will be considered for further payment in respect of any work or method of execution, which may be described in the Contract or is inherent in the construction of the work and detailed on the drawings on account of

- (1) Any omission from the wording of the items or from a clause in the Preamble or
- (2) No mention of such work or method of execution having been in the Preamble.

Items against which no rates or sum is entered by the Contractor, whether quantities are stated or not, will not be paid for when executed, but will be regarded as covered by other rates in the Bills of Quantities.

The whole cost of complying with the provisions of contract shall be included in the items provided in the priced bill of quantities, and where no items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related items of work.

The quantities set out in the Bills of Quantities are the estimated quantities of the work and they shall not be taken as the actual and correct quantities of the works to be executed by the contractor in fulfilment of his obligation under the contract.

The Contractor shall be deemed to have taken into account all recognized holidays, festivals, religious and other customs in his Bid Prices and his Construction Programs.

6. Rates and Sums to Bear Proper Relation to work Described

The rates and sums entered by the Contractor against all items in the Bills of Quantities must bear a proper relationship to the cost of carrying out the work described in the Contract; all on costs and similar charges which are applicable to the Contract as a whole are to be spread over all the rates in the Bills of Quantities, whilst those which are applicable only to particular sections of the Contract are only to be spread over items to which these sections refer.

However, the Contractor shall ascertain the exact nature and extent of work to be performed by reference to the Drawings, Specifications and Conditions of Contract as the case may be.

7. Provisional Sum Items

Provisional Sums will be dealt with as provided for in the Conditions of Contract.

Provisional Sums are represented by the words "Provisional Sum" or "PS" entered under the description.

8. Provisional Quantity Items

Certain items in the Bills of Quantities are designated "Provisional Quantity" in the description column to indicate that the quantities for the work covered by such items are the best possible estimates that can be made in advance of the execution of the work, or that the provision of such facilities as are described in the items may not in the event be required under the contract. All items so designated will be used only at the direction and discretion of the Engineer, and if not used either wholly or in part shall, as to the amount not used, be deducted from the Contract Price. Where such items consist of a sum, the Contractor shall enter a lump sum, which shall be the price for the work if executed, as distinct from a "Provisional Quantity" as defined herein.

No claim will be entertained in respect of overhead charges and profits or any other costs, which may allegedly result from the omission of all, or part of the work covered by such "Provisional Quantity" Items.

9. Payment of Items in a Monthly Basis

Payment under items, which are measured on a monthly basis, will not be commenced until the full facilities described in the items and the specifications have been provided to the satisfaction of the Engineer. Payment will continue until such time as the Engineer shall signify that facilities are no longer required.

Certain manpower inputs by the Contractor for certain specific positions will be paid under the BOQ items provided for this purpose. Any other manpower inputs by the Contractor will not be paid under these items.

10. Payment of Lump Sums for General Items

Lump Sum items stipulated in Bill No. 1 and where the Bidder includes additional items for complying with the general conditions etc. will be paid on the basis of a proportion of respective lump sum in the same ratio as the value of the work completed bears to the total value of the Contract.

Lump Sum items stipulated in Bill No-1 which are related to a specific work will be paid on the basis of the proportion of actual work done to the total work of that specific item as assessed by the Engineer.

Items with quantities and units will be paid against number of units used and/or incorporated in the works.

11. Protection of Work and Cleaning up on Completion

The Contractor shall allow, in his rates, for protecting completed work from subsequent operations, making good all damage to complete work, for clearing away all rubbish as it accumulates, and leaving the site in a tidy condition to the satisfaction of the Engineer.

12. Demolition

The rates and prices for demolition shall include for;

- (1) The activities prior to the demolition, including further surveys, investigations.
- (2) Providing adequate supports to the adjacent structures and the structure to be demolished, including the shoring, propping needling etc.
- (3) Removal of all debris as directed, and recover the salvaged material.
- (4) Making good of all works disturbed or damaged.
- (5) Diverting or disconnecting any existing service lines which could be affected.

13. Site Clearance

Rates for site clearance shall include (if not separately allowed) for the removal of all trees, shrubs, boulders or other debris from the area of the site and disposal of same in an approved location, spreading at least 100mm of topsoil over the site upon completion.

14. Earthworks

(1) Excavation in all Material except Rock

The rates and prices for excavations shall be for all types of material encountered except rock including ground conditions above or below water level. The Contractor must make due allowance for the possibility of permission not being granted to the use of explosives for blasting and other operations.

- (a) For structures, volume of material excavated measured as the product of the horizontal area of the base of permanent work to be constructed and the mean depth below ground level, or measured as the volume to be occupied by permanent work below ground level, whichever is the greater.

In no case shall any of the following quantities be included in the measurement for payment.

- (1) Quantity outside the vertical planes of neat outline of foundation structures unless shown otherwise on the drawings.
 - (2) Quantity of excavation and/or backfill for water supply pipe lines, sewer pipelines, and storm drainage except as allowed for in pipeline construction as specified.
 - (3) Quantity of any excavation performed prior to the taking of measurements of the undisturbed natural ground.
 - (4) Quantity of any material re-handled, except where the drawings indicate or the Engineer directs the excavation after embankment has been placed.
 - (5) Removal of slides, cave-ins, silting or filling due to the action of the elements or weather and/or carelessness of the Contractor.
- (b) For unsuitable material, volume of excavated material shall be measured as volume of material (below base of the permanent works) directed to be removed by the Engineer. However, this does not include removal of material rendered unsuitable due to contractor's method of excavation.

No allowance is made for bulking or for any extra transport required due to bulking. The rates shall include, if separate items are not provided but not by way of limitation, for:

- (1) excavation to the correct depth and preserving the bottoms of excavations in a state suitable for the reception of concrete or other foundation work, and no payment will be made for any concrete or any bedding required for filling over-excavated volumes or disturbed areas to the net dimensions as indicated on the Drawings,

- (2) any additional excavation required for shuttering, working space, temporary or permanent shoring, and subsequent refilling and ramming and disposal of surplus and back fills behind structures,
- (3) provision of storage areas for the temporary storage of any material required for back filling which cannot be stored alongside the excavation for any reason, together with the cost of transporting, loading including disposal of surplus and unloading such material and all other charges incurred in this respect,
- (4) trimming the bottoms of excavations including bottoming to falls and trimming to sloping surfaces where required or indicated on the Drawings,
- (5) taking all precautions by supporting faces of excavation to ensure the safety of the workmen and to prevent damage to adjacent walls, building and all other structures and services, including permanent and/or temporary shoring of trenches,
- (6) keeping the site and trenches and all other excavations free from water from whatever cause arising,
- (7) for clearing any scrub or other vegetable growth including all trees and for disposing of the whole of the cleared material to tip provided by the Contractor,
- (8) all temporary and permanent measures required to protect and support all existing pipes, cables and services, including all chambers, gullies and foundations thereto, or repair or replace them should they become damaged due to the Contractor's activities,
- (9) all barriers, lighting, warning signs and any other measures necessary to ensure complete safety around the area of the works,
- (10) reinstatement except where separate items are included.

(2) Excavation in Rock

Excavation in rock, which shall, in all cases, be measured extra over measurement under 1(a) or 1(b) above by volume from the level at which rock is encountered. For work described under 1(a) and 1(b), measurement shall be as specified therein.

(3) Fill

Fill shall be measured as the net volume above ground level of the permanent earthwork to the dimensions shown on the Drawings or ordered by the Engineer, irrespective of source of material. The rate shall include for selection, handling, placing, compaction of excavated or imported material and cost of control and material selecting tests (field and laboratory). Costs incurred in connection with the remedial work ordered by the Engineer consequent to the results of control tests falling below the minimum specified shall be borne by the Contractor.

15. Asphalt Concrete

Asphalt Concrete wearing course

The rate for asphalt concrete wearing course should allow for all wastage and/or loss during transport, laying and compaction at the joints, outside the defined pavement edge etc.

Asphalt Concrete Binder/regulating course

The rate for Asphalt Concrete binder/regulating course should allow for all wastage and/or loss during transport, laying and compaction at the joints, outside the defined area etc.

16. Concrete

The rates for concrete are to include for

- (1) all costs incurred in determining the mixes to satisfy the Specification (including any admixtures);
- (2) supplying all material (including any admixtures), storing, mixing, transporting, placing and compaction (whether by hand or vibration);
- (3) excavation as required below previously filled levels and back filling (except where separate items are provided);
- (4) roughening the surface of previously executed work as required in order to provide the necessary bond with new concrete;
- (5) achieving specified tolerance;
- (6) forming sloping, falls and the like;
- (7) forming holes or boxing out for pipes, bolts, frames for covers and other steel work;
- (8) building in cable conduit, pipes, junction boxes etc.;
- (9) forming 25mm chamfers on all external arises to exposed concrete;
- (10) forming all construction joints, keys, stop ends, temporary stops and shuttering of other than permanently exposed faces (except where separate items are provided);
- (11) Provision of a layer of gauge 1000 polythene on ground or sides when concrete is in contact with ground.
- (12) curing the concrete and all measures to protect freshly poured concrete from direct sunlight and wave action;
- (13) troweling, rubbing down etc. and making good the concrete surfaces to provide the specified finishes;
- (14) the cost of control testing throughout the period of concreting and for the testing of concrete and remedial work ordered by the Engineer consequent to the results of control tests falling below the minimum specified;
- (15) overtime working to maintain continuity of casting;
- (16) a daily return to the Engineer showing the quantities of cement and the volume of concrete placed and compacted in position, of each class of concrete in each section of the works and temporary works.

17. Form Work

Rates and prices for the formwork shall include for

- (1) general formwork, working in narrow spaces and small quantities, for setting up, strutting and supporting at any height, together with any necessary strutting and supporting through lower floors, applying mould oil, use of polythene, easing, striking and removing, cleaning preparing for reuse, and removal , including all props, stays, struts, wedges, bolts etc.;
- (2) all fillets to form grooves, rebates, throats, splays or chamfers, raking, circular cutting, cutting around all pipes, sleeves, conduits etc.;
- (3) Providing samples to the Engineer for approval.

18. Steel Reinforcement

The rates for steel bar and steel fabric reinforcement shall include for supplying, transporting, storing, cleaning, cutting bending, all labour in working, distribution to the various parts of the works, fixing in position and supporting and for the use of binding wire and for welding where indicated.

The unit of measurement for steel reinforcement is the Metric Ton and the weight of steel has been calculated net with no allowance made for wastage or laps and the cost of these will be deemed to be covered in the rates.

The weight of steel supports, spacer bars and ties used to locate and hold the reinforcement in place is not included in the quantity and the cost of these will be deemed to be covered in the rates.

19. Timber

The rates for timber shall include for all handling, labour and waste, for all chamfers and nosing and for protective treatment except where otherwise provided. The rates for timber for permanent works are to allow for the use of new properly seasoned timber.

20. Brickwork

The basis of measurement for brickwork walls shall be the overall area of the walls measured in plane elevation, no allowance being made for setbacks, recesses and nibs.

Rates for brickwork shall include for bricks of the thickness stated bounded in cement mortar, damp proof course, finishing around all openings vertical expansion joints as required, building in electrical conduit and small pipes and tubes, galvanized wire ties to steel work and concrete.

21. Hand Railing

Rates and prices for hand railing shall be for handrail materials and forged standards as specified including all bends, removable sections, wall hooks, fixings and painting.

22. Painting and Protective Coatings

The rate for painting and protective coatings, whether measured separately or included in other items, is to include for all temporary staging ladders and the like, covering the adjacent works to prevent splashing providing adequate protection to the work being painted or coated against dust, spray and other foreign matter, for all preparation and priming, carrying out the work in materials and colours to the requirements of the Engineer, curling in edges, washing off stains, and leaving the whole of the work perfect on completion. The rates for painting are to allow the applying of the final coat of paint immediately prior to handing over any section of the work.

23. Fences and Boundary Walls

Rates for fences and boundary walls shall include but not limited to, excavation, refilling and ramming, disposal of surplus, materials for construction of fences and boundary walls, and all painting.

24. Unit of Measurement

Metric units are used throughout the Bill of Quantities for measurement purposes unless otherwise indicated. The following abbreviations are used in this Contract.

Unit	Abbreviation
Millimetre	mm
Linear Metre	lm / m / Lm
Square metre	sq.m / m ²
Cubic metre	cu.m / m ³
Kilometre	km
Kilo gram	kg
Metric ton	T / Mt
Litre	ltr
Number	nr / nos
Provisional Sum	PS
Lump Sum	LS
Hour	H / hr
Week	Wk / week
Month	Mon / mth
Labour day	L day
Sri Lanka Rupees	LKR / Rs.
Cents.	Cts.
Kilometre month	Km-mth / km.mth

25. Pay Items

The pay items in the Bill of Quantities refer to the particular item in the Standard Specifications /Particular Specifications under which they are payable.

26. Daywork Schedule

General

Reference should be made to Clause 13.6 of the Conditions of Contract. Work shall not be executed on a day work basis except by written order of the Engineer. Contractors shall enter rates for day work items in schedules, which rates shall apply to any quantity of day work ordered by the Engineer.

The Contractors shall price all items in the day work schedule for Labour, Constructional Plant and Material.

Labour

The contractor is to enter hereunder the individual rates for labour for skilled and unskilled workers and gangers employed on dayworks solely on the direction of the Engineer. The quantities given below are all provisional and these rates shall include to cover all costs of the Contractor including the amount of wages paid to such labour, transportation time, overtime, subsistence allowance, and any sums paid to or on behalf of such labour for social benefits in accordance with law of the country, as well as Contractor's profit, overheads, superintendence, liabilities and insurance and allowance to labour, timekeeping and clerical and office work, the use of consumable stores, water, lighting and power, use and repair of staging, scaffolding, workshops and stores, portable power tools, manual plant and tools, supervision by the Contractor's staff, foremen and other supervisory personnel, and charges incidental to the foregoing.

Constructional Plant

The Contractor shall be entitled to payments in respect of Constructional Plant already on Site and employed on daywork at the rental rates entered by him in the "Schedule of Daywork Rates:

The rates shall be deemed to include due and complete allowance for depreciation, interest, indemnity and insurance, repairs, maintenance, supplies, fuel, lubricants, and other consumable, and all overhead profit and administrative costs related to the use of such plant. The cost of drivers, operators and assistants will be paid for separately as described under the section on Daywork.

In calculating the payment due to the Contractor for Constructional Plant employed on daywork, only the actual number of working hours will be eligible for payment, except that where applicable and agreed with the Engineer, the travelling time from the part of the site where the Constructional Plant was located when ordered by the Engineer to be employed on daywork and the time for return journey thereto shall be included for payment.

Materials

The contractor shall be entitled to payments in respect of materials used for daywork at the rates entered by him in the "Schedule of Daywork Rates: Materials.

(a) the rates for materials shall include the invoiced price, freight, insurance, handling expenses, damages, losses, overhead and profit etc., and shall provide for delivery to store for stock piling at the Site as directed by the Engineer.

(b) the cost of hauling materials for use on work ordered to be carried out as daywork from the store or stockpile on the Site to the place where it is to be used will be paid in accordance with the terms for Labour and Constructional Plant.

27. Performance Based Maintenance

Bill No.10 of the Bill of Quantities is the basis for payment of maintenance services that are to be provided on a lump sum per km basis for maintaining the roads covered under the contract, at the Service Levels defined in the Specifications. The rates given by the bidder shall, except insofar as is otherwise provided under the Contract, include all plant, equipment, labour, management and supervision, materials, erection, maintenance, profit, and duties, together with all general risks, any price fluctuations expected, liabilities and obligations set out or implied in the Contract.

Payment shall be made in accordance with the actual performance of the Contractor and compliance with the Service Level criteria given in the Specifications for each road/package. Failure to meet the Service Levels will result in payment reductions in accordance with Sub-Clause 8.7 of the Particular Conditions and the Specifications for Performance Based Maintenance.

The method of measurement of completed work for payment shall be in accordance with the measurement and payment provisions of the relevant section in the Specifications for Performance Based Maintenance.

Maintenance Services will not be measured in volume; however its payment will be affected by compliance with the Performance Standards pursuant to Maintenance Services shall be billed in fixed monthly amounts as per the Bill of Quantities Lump-Sum amount for Maintenance Services, beginning from the Start Date. Payments will be made with Reductions if the Performance Standards are not achieved, as defined in the Specifications. The Reductions for non-compliance with the Performance Standards will be applied on a daily basis for the period under which the Road does not achieve the Performance Standards, in accordance with the methodology specified in the Specifications.

B. Table of Bills of Quantities

The Bill of Quantities contains the following Bills, which have been grouped according to the nature of the work:

- Bill No. 1: Preliminary and General Items
- Bill No. 2: Site Clearing
- Bill No. 3: Earth Works
- Bill No. 4: Road Pavement
- Bill No. 5: Drainage
- Bill No. 6: Culverts, retaining structures and bus bays
- Bill No. 7: Bridge
- Bill No. 8: Incidental Construction
- Bill No. 9: Schedule of Dayworks Rates
 - 9.1: Labour Dayworks
 - 9.2: Material Dayworks
 - 9.3: Contractor's Equipment Dayworks
- Bill No. 10: Performance Based Maintenance
- Bill No. 11: Provisional Sum

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ROAD DEVELOPMENT AUTHORITY
SECOND INTEGRATED ROAD INVESTMENT PROGRAM
REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &
BORELLA-RAJAGIRIYA ROAD (B062) FROM 0+000 KM TO 1+380 KM
BILL OF QUANTITIES
SUMMARY SHEET

DISTRICT : COLOMBO

PACKAGE: NR-08

No.	Description	Amount (Rs.)
1	Preliminary and General (Bill No. 1A & 1B)	
2	Site Clearing	
3	Earthworks	
4	Road Pavement	
5	Drainage	
6	Culverts, Retaining Structures & Bus Bays	
7	Bridges	
8	Incidental Construction	
9	Day Works	
Total of Measured Works (a)		
10	Total of Performance Based Maintenance Works (b)	
11	Total of Provisional Sums (c)	107,500,000.00
Total of (a) + (b) + (c)		
Physical and Price Contingencies (d) {20% of [(a)+(b)+(c)]}		
Bid Price [(a)+(b)+(c)+(d)] to be mentioned in the Letter of Bid		
In words		

Value Added Tax (8% of the Bid Price)	
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Signature of the Bidder
.....
.....

Witness
.....
.....

ROAD DEVELOPMENT AUTHORITY

**SECOND INTEGRATED ROAD INVESTMENT PROGRAM
REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &
BORELLA-RAJAGIRIYA ROAD (B062) FROM 0+000 KM TO 1+380 KM
Bill of Quantities**

BILL No.1 A : PRELIMINARY AND GENERAL ITEMS						
ITEM		DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Rs)
Bill	Pay					
1.1		MAINTENANCE OF EXISTING ROADS				
1	103.2(2)	Routine maintenance of existing roads	Km-Mth	86		
1.2		CONTRACTOR'S SITE ESTABLISHMENT				
1	108.4 (2)	Provide Furniture and Laboratory equipment for main Laboratory	LS	1		
1.3		SETTING OUT, CROSS SECTION SURVEYS AND DRAWINGS				
1	117(1)	Surveying and Setting out of Centre Line	km	7		
2	117(2)	Preparation of Longitudinal sections (LS) and Cross Sections (CSs) with all associated costs for Design works (pavement and Geometrical) of road works other than bridge and retaining wall structures including submission of as-built drawing	km	7.0		
3	117(3)	Investigation, Hydraulic survey, Survey and design works and preparation of drawings for structures as described in spcification and submission of asbuilt drawings	LS	item		
1.4		PROJECT SIGN BOARDS				
1	118(1)	Provide Project Name boards (2mx1.5m) as directed by the Engineer	Nr	6		
1.5		INSURANCE				
1	119.1(1)	Provide Insurance for works, contractor's equipmnt, third party persons and properties	LS	1		
2	119.1(2)	Provide Workmen's compensation insurance	LS	1		
3	119.1(3)	Provide Professional Indemnity Insurance for Contractor's Design	LS	1		
1.6		SURVEY EQUIPMENT				
1	120.7(1)	Provide survey Equipment for exclusive use of the Employer/Engineer	LS	item		
Bill No.1 Carried to Summary						

ROAD DEVELOPMENT AUTHORITY

SECOND INTEGRATED ROAD INVESTMENT PROGRAM

**REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &
BORELLA-RAJAGIRIYA ROAD (B062) FROM 0+000 KM TO 1+380 KM**

Bill of Quantities

BILL No.1B : PRELIMINARY AND GENERAL ITEMS						
ITEM		DESCRIPTION	UNIT	QTY	RATE	AMOUNT (Rs)
Bill	Pay					
1.1		TRAFFIC SAFETY CONTROL				
1	103(1)	Traffic safety and control	Mth	12		
1.2		CONTRACTOR'S SITE ESTABLISHMENT				
1	108.1(1)	Establishment and Maintenance of Contractor's Facilities and Plants and Equipment	mth	12		
2	108.1(2)	Provide adequate environmental protection and safety precautions during construction and implement EMP and prepare monthly monitoring report	mth	12		
3	108.4(3)	Provide and Maintain Main Laboratory (rented or pre fabricated)	mth	12		
1.3		MONTHLY PROGRESS REPORT				
1	108.2(1)	Monthly Progress Report including progress photographs and electronic copy	Mth	12		
1.4		OFFICE FOR THE EMPLOYER/ ENGINEER				
1	120.4 (2)	Provide and Maintain fully furnished office Type 2 (Rented)	Mth	12		
1.5		VEHICLES FOR THE EMPLOYER				
1	120.6 (2)	Supply and Maintain Vehicle Type 2 (2 Nos.)	Vehicle month	15		
2	120.6 (4)	Supply and Maintain Vehicle Type 4 (2 Nos.)	Vehicle month	30		
3	120.6 (5)	Supply and Maintain Vehicle Type 5	Vehicle month	15		
1.6		OPERATIVES FOR THE ENGINEER'S STAFF				
1	120.8(1)	Survey Assistant	Mth	12		
2	120.8(2)	Laboratory Technician	Mth	12		
3	120.8(3)	CAD Operator	Mth	15		
4	120.8(9)	Assistant quantiyy surveyor	Mth	15		
Bill No.1 Carried to Summary						

ROAD DEVELOPMENT AUTHORITY

**SECOND INTEGRATED ROAD INVESTMENT PROGRAM
REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &
BORELLA-RAJAGIRIYA ROAD (B062) FROM 0+000 KM TO 1+380 KM
Bill of Quantities**

BILL No.2 : SITE CLEARING						
ITEM		DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (Rs)
Bill	Pay					
2.1		CLEARING AND GRUBBING				
1	201(1) a	Clearing and grabbing inclusive of removing top soil to an average depth of 0.15m and backfilling/trenches caused by removal of stumps	Sq.m	450		
2.2		REMOVAL OF EXISTING STRUCTURES				
1	202(1) a	Dismantle & remove pipe culverts up to 900mm diameter	lm	250		
2	202(1) b	Dismantle & remove pipe culverts above 900mm diameter	lm	150		
3	202(2)	Dismantle & remove concrete structures	Cu.m	700		
4	202(2) a	Dismantle & remove random rubble masonry structures	Cu.m	110		
5	202(2) b	Dismantle & remove existing brick /block structures	Cu.m	140		
6	202(2) c	Dismantle & remove dressed stone and handover to the client	Cu.m	15		
Bill No.2 Carried to Summary						

ROAD DEVELOPMENT AUTHORITY

SECOND INTEGRATED ROAD INVESTMENT PROGRAM

REHABILITATION, IMPROVEMENT AND MAINTENANCE OF

PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &

PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &

Bill of Quantities

BILL No.3 : EARTH WORKS						
ITEM		DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (Rs)
Bill	Pay					
3.1		ROADWAY EXCAVATION				
1	301(11)	Roadway excavation, unsuitable soil	Cu.m	1,295		
2	301(12)	Roadway excavation- sub grade replacement	Cu.m	50		
3	301(13)	Road pavement excavation	Cu.m	755		
4	301(16)	Preparation of sub grade in cut areas	Sq.m	2,820		
3.2		CHANNEL EXCAVATION				
1	301A(5)	Channel excavation, unsuitable soil	Cu.m	300		
3.3		EXCAVATION AND BACKFILL OF STRUCTURES				
1	302(1)	Excavation for structures, soil suitable for backfill	Cu.m	150		
2	302(2)	Excavation for structures, soft rock	Cu.m	20		
3	302(4)	Excavation for structures, hard rock	Cu.m	10		
4	302(5)	Excavation for structures, unsuitable soil	Cu.m	2,030		
5	302(8)	Backfill with granular material	Cu.m	235		
6	302(8)	Backfill with quarry-muck	cum	160		
3.4		EMBANKMENT CONSTRUCTION				
1	304(2) a	Embankment construction using borrow material, Type I	Cu.m	1,360		
2	304(3)	Trimming, leveling and compaction of original ground	Sq.m	660		
3	304(4)	providing and place geofabric	Sq.m	410		
4	304(6)	Embankment construction using rockfill	Cu.m	450		
5	304(6)a	Embankment construction using boulders below ground level	Cu.m	50		
Bill No.3 Carried to Summary :						

ROAD DEVELOPMENT AUTHORITY

SECOND INTEGRATED ROAD INVESTMENT PROGRAM

**REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &
BORELLA-RAJAGIRIYA ROAD (B062) FROM 0+000 KM TO 1+380 KM**

Bill of Quantities

BILL No.4 : ROAD PAVEMENT						
ITEM		DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (Rs)
Bill	Pay					
4.1		SUB BASES, CAPPING LAYERS AND BASES				
1	401(1) a	Sub base as compacted in position(upper Subbase)	Cu.m	675		
2	408(2)	Scarification of existing base	Sq.m	1,120		
3	405(1)	Dense graded aggregate base (Nominal size of aggregate 37.5 mm)	Cu.m	3,100		
4	405(2)	Puncturing holes of minimum dia.20mm on asphalt Concrete surface at 500 mm centres to underlying base on a grid across surface, filling sand and tamping as directed by Engineer.	km	1		
4.2		PRIME COAT AND TACK COAT				
1	501(5) a	Bituminous prime coat using MC 30 at rate of 1.0 ltr per sq.m	Sq.m	2,170		
2	501 (5) c	Blotting Material applied at the rate of 1 cum per 250 Sq.m.	Sq.m	2,170		
3	502(2)	Tack coat using CRS 1 at rate of 0.25 - 0.55 ltr per sq.m	Sq.m	181,500		
4.3		ASPHALTIC CONCRETE SURFACING				
1	506(1)	Asphalt concrete in wearing course 50mm thick	Sq.m	84,750		
2	506(2) a	Asphalt concrete regulating course	Mt	10,830		
Bill No. 4 Carried to Summary						

ROAD DEVELOPMENT AUTHORITY

SECOND INTEGRATED ROAD INVESTMENT PROGRAM

**REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &**

Bill of Quantities

BILL No.5 : DRAINAGE						
ITEM		DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (Rs)
Bill	Pay					
5.1		ROAD SIDE AND LEADAWAY DRAINS				
1	701(1)	Lining of Drains with pre-cast units (d=300mm , Drawing No DS-01)	lm	100		
2	701(2) a	Lining of drains with Concrete: Grade 15 (20)	Cu.m	225		
3	701(2) b	Lining of drains with Concrete: Grade 20 (20)	Cu.m	120		
4	701(2) c	Lining of drains with Concrete: Grade 25 (20)	Cu.m	870		
5	701(6) a	100 mm thick Precast concrete cover slab including reinforcement & formwork	Sq.m	630		
6	701(6) b	125mm thick Precast concrete cover slab including reinforcement & formwork	Sq.m	750		
7	701(6) c	150mm thick Precast concrete cover slab including reinforcement & formwork	Sq.m	3,960		
8	705(2) d	Filter medium	Cu.m	65		
9	706(1) d	Weep hole, PVC pipe (Type 600) - 75mm diameter	lm	880		
10	1002(1)	Tor steel reinforcement	Mt	140		
11	1008(1)	Formwork smooth finish	Sq.m	5,930		
12	1008(2)	Formwork rough finish	Sq.m	7,125		
5.2		CLEANING, DESILTING AND REPAIRING OF CULVERTS				
1	1303(1) a	Clearing and repairing pipe culverts	nr	10		
2	1303(1) b	Clearing and repairing other culvert types	nr	16		
5.3		RETAINING WALL AND COVER SLABS FOR CANAL IMPROVEMENT				
1	1001(1)	Concrete: Grade 15 (20)	Cu.m	5		
2	1001(3)	Concrete: Grade 25(20)	Cu.m	120		
3	1001(4)	Concrete: Grade 30 (20)	Cu.m	85		
4	1002(1)	Tor steel reinforcement	Mt	10		
5	1008(1)	Formwork smooth finish	Sq.m	500		
6	1008(2)	Formwork rough finish	Sq.m	300		
7	705(2) d	Filter medium	Cu.m	5		
8	706(1) d	Weep hole, PVC pipe (Type 600) - 75mm diameter	lm	120		
Bill No. 5 Carried to Summary						

ROAD DEVELOPMENT AUTHORITY

SECOND INTEGRATED ROAD INVESTMENT PROGRAM

**REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &
BORELLA-RAJAGIRIYA ROAD (B062) FROM 0+000 KM TO 1+380 KM**

Bill of Quantities

BILL No.6 : CULVERTS,RETAINING STRUCTURES & BUS BAYS						
ITEM		DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (Rs)
Bill	Pay					
6.1		CULVERTS				
1	705(1)	Aggregate backfill	Cu.m	190		
2	705(2)	Filter medium	Cu.m	30		
3	705(3)	Impervious layer	Sq.m	175		
4	706(1)	Weep hole, PVC pipe (Type 600) - 75mm diameter	lm	150		
5	808(5) c	Guard stone	nr	35		
6	1001(1)	Concrete: Grade 15	Cu.m	40		
7	1001(2)	Concrete: Grade 20	Cu.m	55		
8	1001(3)	Concrete: Grade 25	Cu.m	130		
9	1001(4)	Concrete: Grade 30	Cu.m	560		
10	1002(1)k	Tor steel reinforcement	Mt	70		
11	1002(1)k	Mild steel reinforcement	Mt	1		
12	1006(1)	Random rubble masonry	Cu.m	25		
13	1008(1)k	Formwork smooth finish	Sq.m	1,590		
14	1008(2)k	Formwork rough finish	Sq.m	1,110		
15	103(2)a	Provision and maintenance of temporary diversion of roads, if any	LS	item		
Bill No. 6 Carried to Summary :						

ROAD DEVELOPMENT AUTHORITY
SECOND INTEGRATED ROAD INVESTMENT PROGRAM
REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &
BILL OF QUANTITIES

BILL No.7 BRIDGES(WIDENING OF BRIDGE NO.3/2)						
ITEM		DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
Bill	Pay					
		<u>A.REMOVAL OF EXISTING STRUCTURES</u>				
A.1	202(1b)	Removal and disposal of parts of existing bridge as and when necessary for the constructions of the widening section inclusive of necessary repairs to existing bridge in order to maintain free flow of traffic.	P.S	Item		
A.2	202(1b)	Removal and disposal of existing bridge foundation in the area under new foundation.	P.S	Item		
		<u>B. FOUNDATION & SUBSTRUCTURE</u>				
		<u>Abutment & Wingwall</u>				
B.1	201(1)	Clearing & Grubbing	Sq.m.	150.00		
		<u>Excavation & Backfill</u>				
B.2	302(1)	Excavation in unclassified soil and backfill for abutments, and wingwalls.	Cu.m.	350.00		
		<u>Pilling</u>				
B.5	1004(1a)	Provide 355 x 355mm. Precast reinforced concrete piles in class A Grade 30(20) concrete as per drawing No.T/B/118	L.m	575.00		
B.6	1004(2a)	Drive 355 x 355mm reinforced concrete piles for foundations of abutments and wingwalls as per drawing.	L.m	550.00		
		<u>Concrete For Structures</u>				
B.7	1001(3a)	Class C Concrete nominal mix 1:3:6(20) as screed under pile cappings of abutments & wingwalls.	Cu.m.	5.00		
B.8	1001(1d)	Class A concrete of Grade 30(19) in pile cappings of abutments, wingwalls.	Cu.m.	50.00		
B.9	1001(2a)	Class B concrete nominal mix 1:3:6(40) in abutments & wingwalls.	Cu.m.	115.00		
B.10	1001(1c)	Class A concrete of Grade 25(20) in capping beams, ballast walls, curtain walls, bearing pads & approach slabs.	Cu.m.	20.00		
		<u>Formwork</u>				
B.11	1008(2)	Rough finish formwork for pile cappings of abutments & wingwalls	Sq.m.	50.00		
B.12	1008(1a)	Smooth finish formwork for abutments & wingwalls	Sq.m.	205.00		
B.13	1008(1b)	Smooth finish formwork for abutment capping beams, ballast walls, curtain walls, bearing pads & approach slabs.	Sq.m.	70.00		
		<u>Reinforcement</u>				
B.14	1002(1a)	Cold worked deformed high yield steel bars of Grade 460 in pile cappings of abutments & wingwalls.	M.T.	5.00		
B.15	1002(1a)	Cold worked deformed high yield steel bars of Grade 460 in abutments & wingwall junctions.	M.T.	1.00		
B.16	1002(1b)	Hot rolled mild steel bars of Grade 250 in bearing pads and approach slabs.	M.T.	1.00		
B.17	1002(1a)	Cold worked deformed high yield steel bars of Grade 460 in abutment capping beams, curtain walls,ballast walls,bearing pads and approach slabs	M.T.	2.00		
						Bill 7 NR/08

		<u>Weep Holes</u>				
B.18	706(1)	Forming weep holes in abutments & wingwalls using 110mm dia. P.V.C. pipes and finished smooth with dripledge and surround complete as per drawing.	L.m.	40.00		
		<u>Drainage Backfill Material</u>				
B.19	705(1)	50-200mm. dry stone lining behind abutment & wingwalls as per drawing.	Cu.m.	40.00		
B.20	705(2)	75mm. thick 40mm. stone filter layer behind dry stone lining as per drawing.	Cu.m.	7.00		
B.21	705(3)	Clay puddled & laid behind abutments & wingwalls to form the impervious layer as per drawing.	Sq.m.	25.00		
		<u>Miscellaneous</u>				
B.22	1011A(1)	16mm. Dia. 900mm long hot rolled mild steel dowels supplied driven into existing substructure at joint as per drawing.	Nos	25.00		
		<u>C. SUPER STRUCTURE</u>				
		<u>Concrete For Structures</u>				
C.1	1001(1a)	Infiller concrete of class A Grade 40(20) between beams in bridge deck inclusive of end make up, screed and camber.	Cu.m.	20.00		
C.2	1001(1c)	Class A concrete of Grade 25(20) in footwalks and footwalk ramps.	Cu.m.	20.00		
		<u>Formwork</u>				
C.3	1008(1b)	Smooth finish formwork on sides for deck & foot walk concreting.	Sq.m.	25.00		
		<u>Reinforcement</u>				
C.4	1002(1b)	Hot rolled mild steel bars of Grade 250 in deck, tie rods of deck & foot walks.	M.T.	1.00		
C.5	1002(1a)	Cold worked deformed high yield steel bars Grade 460 in deck and foot walks.	M.T.	2.00		
		<u>Prestressed Concrete</u>				
C.6	1003(1)	Specially cast pre-tensioned precast concrete beams of cast length 7.306m supplied as per drawing No.T/B/507.	Nos.	18.00		
C.7	1003(2)	Pre-tensioned precast concrete beams launched into position as per drawing.	Nos.	18.00		
		<u>Railings</u>				
C.8	1018(1)	Precast reinforced concrete railing & uprights in Class A Grade 25(20) concrete inclusive of light reinforcement & mould as per drawing No. T/B/102 A & B.	L.m.	30.00		
C.9	1019(1)	End pillasters in Class A concrete of Grade 25(20) with foundation type II as per drawing No. T/B/513	Nos.	4.00		
		<u>Concrete Kerbs</u>				
C.10	807(1)	Precast kerb in Class B Grade 25(20) concrete with light reinforcement & mould as per drawing No. T/B/512	L.m.	45.00		
C.11	807(1)	Lower kerbs in Class B Grade 20(14) concrete cast insitu as per drawing.	L.m.	17.00		
		<u>Expansion joints</u>				
C.12	1009(1)	Supplying and fixing of mild steel angle iron & hard rubber expansion joint as per drawing No. T/B/107-Rev.1.	L.m.	40.00		

		<u>Bridge Bearings</u>				
C.13	1010(2)	75x 12mm hard rubber bearing pads supplied & laid over capping beam as per drawing.	L.m.	32.00		
		<u>Miscellaneous</u>				
C.14	1012(1)	20mm Dia. 200mm long stainless steel dowels supplied fixed and grouted at fixed ends as per drawing.	Nos.	16.00		
C.15	1011(1)	25mm Dia. 200mm long hot rolled mild steel dowels supplied fixed and grouted for the approach slab as per drawing.	Nos.	28.00		
C.16	1013(1)	Bituminous sealing felt under beams at ends to prevent grout leak on to capping beam as per drawing.	L.m.	20.00		
C.17	1014(1)	Bituminous sealing felt under approach slabs at capping beam ends to prevent bitumen running on capping beam as per drawing.	L.m.	12.00		
C.18	1016(1d)	Service duct of size 350x200mm formed in deck as per drawings.	L.m.	88.00		
C.19	1017(1a)	500x450x75mm. thick cover slabs for service ducts in class B Grade 25(20) concrete inclusive of light reinforcement and smooth shuttering provided as per drawings.	Nos.	195.00		
C.20	806(4)	450 X 450 X 50 mm. thick paving slabs in class B Grade 25(20) concrete inclusive of light reinforcement & smooth shuttering provided as per drawing.	Sq.m.	24.00		
C.21	1020(1a)	110mm. dia. P.V.C. rain water outlets supplied and fixed through deck as per drawing.	Nos.	8.00		
C.22	1020(1c)	50mm. dia. P.V.C. drain pipes supplied and fixed through deck as per drawing.	Nos.	8.00		
C.23	812(2)	12m high steel lamp post with double arm bracket , supplied & fixed at the centre median as per drawing (Drg. No T/0041/A). This includes installation of electric cables, fixing of lamps and other necessary appliances.	Nos.	2.00		
C.24	1403(7)	Supply & application of weather seal enamel paint on sides of bridge deck, end pilasters, uprights & railing ect. as specified by the Engineer.	Sq.m.	75.00		
		<u>D. MISCELLANEOUS STRUCTURES</u>				
D.1		Construction of 2Nos. Reinforced concrete staircase to access underneath of the bridge.	P.S.	Item		
Bill No. 7 Carried to Summary :						

ROAD DEVELOPMENT AUTHORITY
SECOND INTEGRATED ROAD INVESTMENT PROGRAM
REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &
Bill of Quantities

BILL No.8 : INCIDENTAL CONSTRUCTION						
ITEM		DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (Rs)
Bill	Pay					
8.1		TOP SOILING AND GRASSING				
1	801(1)	Topsoil furnished, transported, spread levelled and tamped.	Sq.m	120		
2	802(1)	Grassing / Turfing	Sq.m	120		
8.2		RIP RAP PROTECTION FOR EMBANKMENT SLOPES				
1	804(1)	Rip rap protection (Grouted rip rap)	Cu.m	190		
8.3		GUARD RAILS, PEDESTRIAN FENCING, GUARD WALLS, GUARD STONES				
1	808(5)	Guard stone	nr	48		
2	808(8)	Bollards (SPS 3sixty)	nr	26		
3	809 (3)	Pedestrian Guard Fence	lm	1,900		
8.4		ROAD MARKINGS				
1	810(1)	Thermoplastic Road Markings (any color)	Sq.m	5,120		
2	810(3)	Retro Reflecting road studs (Spherical Glass type)	nr	1,300		
8.5		TRAFFIC SIGNS				
1	811(1)	Single pole, sign area up to 0.5m ²	nr	206		
2	811(2)a	Single pole, sign area up to 2.0m ²	nr	8		
3	811(2)b	Single pole, Sign Area up to 4.5m ²	nr	5		
4	811(2)c	Single Pole, Sign Area up to 7m ²	nr	4		
5	811(2)d	Single or Double Pole, Sign Area upto 10m ²	nr	7		
6	811 (3)	Chervon warning sign	nr	45		
7	1501 (10)	Repairing, painting and reinstate existing traffic signs	nr	115		
8.6		KILOMETRE POSTS AND BOUNDARY MARKERS				
1	819(1)	Provide ,install and paint new kilometre post	nr	9		
2	819. (5)	Provide, install and paint new precast right of way boundary markers	nr	890		

8.7		PEDESTRIAN FOOTWALKS, PRECAST CONCRETE KERBS, INCLUDING BUS BAYS AND PARKING BAYS				
1	703 (1)	Manholes	nr	140		
2	703 (2)	Catch Pit	nr	315		
3	703 (3)	Grated Inlets	nr	315		
4	806 (6)	Rectangular (typical Length-220, Width-110) Precast interlocking block paving, approved type thickness and Color including suitable bedding materials.	Sq.m	10,270		
5	806 (7)	150 mm UPVC type 600 pipes for footwalk drains as per typical drawings.	lm	285		
6	806 (9)	600 mm dia Concrete Pipe for footwalk drains as per typical drawings.	lm	1,765		
7	806 (10)	900 mm dia Concrete Pipe for footwalk drains as per typical drawings.	lm	250		
8	807 (1)	Kerb Type A – Kerb & Gutter ('Pre-Cast' or 'Slipform-Cast-in-situ')	lm	4,070		
9	807 (2)	Kerb Type B – Barrier Kerb ('Pre-Cast' or 'Slipform-Cast-in-situ')	lm	3,260		
10	807 (3)	Kerb Type C – Edge Kerb ('Pre-Cast' or 'Slipform-Cast-in-situ')	lm	7,940		
11	807 (4)	Kerb Type D – Kerb at Gully (Pre-Cast)	lm	260		
12	807 (5)	Kerb Type E – Circular Barrier Kerb (Pre-Cast)	lm	345		
13	807 (6)	Kerb Type F – Dropper Kerb ('Pre-Cast' or 'Slipform-Cast-in-situ')	lm	615		
14	807 (7)	Kerb Type G – Dropped Kerb('Pre-Cast' or 'Slipform-Cast-in-situ')	lm	1,745		
15	807 (8)	Pre-Cast Dish Drain (for parking/bus bays)	lm	1,250		
16	807 (11)	Repair and Reset any type of existing Kerb	lm	400		
8.8		PAINTING PARAPETS OF BRIDGE AND CULVERTS, GUARD STONE, KERBS AND KM POSTS				
1	1303(4)	Painting of culverts, Gurd stones, Kerbs (Two coats of emulsion paint)	Sq.m	135		
2	1303(3)	Stenciling & numbering on parapets / guard walls	nr	65		
8.9		PASSENGER SHELTERS				
1	818 (1)	Bus shelters - Single unit	nr	15		
2	818 (2)	Bus shelters – Double unit	nr	10		
8.10	8.1	GRATINGS				
1	820 (1)	Provide Gratings as per Typical Drawings	Sq.m	595		
Bill No. 8 Carried to Summary						

ROAD DEVELOPMENT AUTHORITY
SECOND INTEGRATED ROAD INVESTMENT PROGRAM
REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &
Bill of Quantities

BILL No.9 : DAY WORK SUMMARY		AMOUNT (Rs)
ITEM	Description	
1	Total Daywork: Labor	
2	Total Daywork: Contractor's Equipment	
3	Total Daywork: Materials	
Bill No. 9 Dayworks Carried to Summary :		

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ROAD DEVELOPMENT AUTHORITY

**SECOND INTEGRATED ROAD INVESTMENT PROGRAM
REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
BILL OF QUANTITIES**

BILL No.9 : SCHEDULE OF DAY WORK RATES					
9.1 : LABOR					
All Quantities are Provisional					
ITEM	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (Rs)
1	Surveyor	Hr	150		
2	Survey Assistant (skilled)	Hr	150		
3	Welder	Hr	150		
4	Electrician	Hr	150		
5	Carpenter	Hr	150		
6	Mason	Hr	300		
7	Labour (skilled)	Hr	450		
8	Semi-skilled workman	Hr	600		
9	Unskilled workman (labourer)	Hr	900		
Labour Day works Carried to Daywork Summary					

**ROAD DEVELOPMENT AUTHORITY
SECOND INTEGRATED ROAD INVESTMENT PROGRAM
REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
BILL OF QUANTITIES**

BILL No.9: SCHEDULE OF DAY WORK RATES					
9.2 : CONTRACTOR'S EQUIPMENT					
All Quantities are Provisional				RATE	AMOUNT (Rs)
ITEM	DESCRIPTION	UNIT	QUANTITY		
1	Lorry, 3 to 5 tonnes	Hr	150		
2	Lorry, 5 to 10 tonnes	Hr	150		
3	Low-loader, 20 to 40 tonnes	Hr	150		
4	Site dumper, over 1.0 m ³	Hr	300		
5	Tipper truck, up to 5 tonnes	Hr	150		
6	Bowser, water, up to 6,000 litres with Spray Bar	Hr	150		
7	Farm Tractor & Broom over 2m width	Hr	150		
8	Farm tractor, with trailer minimum 3 tonne	Hr	150		
9	Backhoe, wheeled, 50 - 100 HP	Hr	150		
10	Backhoe, tracked, 50 - 100 HP	Hr	150		
11	Motor grader, up to 100 HP	Hr	150		
12	Steel-wheeled roller, static, 8 to 12 tonnes	Hr	150		
13	Steel-wheeled roller, vibratory, 4 to 8 tonnes	Hr	150		
14	Pneumatic-tyred roller, 8 to 12 tonnes	Hr	150		
15	Hand roller, vibratory, 1/2 - 1 tonne	Hr	150		
16	Plate compactor, vibratory, over 90 kg	Hr	150		
17	Rammer, mechanical, over 60 kg	Hr	150		
18	Air compressor with hoses and tools, 250 to 600 cfm	Hr	150		
19	Water pump with hoses, 50 to 100 mm outlet	Hr	150		
20	Concrete mixer, 0.25 to 0.50 cu.m.	Hr	150		
21	Generator, 10 to 50 KVA	Hr	150		
22	Welding set, electric, 300 - 400 amp	Hr	150		
23	Poker Vibrator, petrol driven	Hr	150		
Equipment Day works Carried to Daywork Summary					

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PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &
BORELLA-RAJAGIRIYA ROAD (B062) FROM 0+000 KM TO 1+380 KM
BILL OF QUANTITIES

BILL No.9 : SCHEDULE OF DAY WORK RATES					
9.3 : MATERIALS					
All Quantities are Provisional				RATE	AMOUNT (Rs)
ITEM	DESCRIPTION	UNIT	QTY		
1	Aggregate base, dense graded (37.5 mm)	Cu.m	150		
2	Aggregate (20mm)	Cu.m	150		
3	Asphalt concrete, cold mix	tonne	30		
4	Bitumen emulsions, (CRS 1, CRS 2, CSS 1)	ltr	300		
5	Bitumen prime coat, cutback MC 30	ltr	300		
6	Bitumen, straight run, 60/70 penetration	ltr	300		
7	Bitumen, straight run, 80/100 penetration	ltr	300		
8	Block, cement, 400 x 200 x 100 mm	nr	1500		
9	Brick, hand-cut	nr	1500		
10	Cement, ordinary Portland	tonne	7.5		
11	Concrete pipe, reinforced 600 mm diameter	lm	15		
12	Concrete pipe, reinforced 900 mm diameter	lm	15		
13	Concrete pipe, reinforced 1200 mm diameter	lm	15		
14	Concrete, Grade 15	Cu.m	9		
15	Concrete, Grade 20	Cu.m	9		
16	Concrete, Grade 25	Cu.m	9		
17	Concrete, Grade 30	Cu.m	9		
18	Formwork, timber (smooth)	Sq.m	150		
19	Pipe, PVC, 160 mm diameter (Type 600)	lm	150		
20	Reinforcement, high-yield steel, Grade 460/425	kg	300		

**ROAD DEVELOPMENT AUTHORITY
SECOND INTEGRATED ROAD INVESTMENT PROGRAM
REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &
BORELLA-RAJAGIRIYA ROAD (B062) FROM 0+000 KM TO 1+380 KM
BILL OF QUANTITIES**

BILL No.9 : SCHEDULE OF DAY WORK RATES					
9.3 : MATERIALS					
All Quantities are Provisional				RATE	AMOUNT (Rs)
ITEM	DESCRIPTION	UNIT	QTY		
21	Reinforcement, mild steel, Grade 250	kg	300		
22	Rubble, 100 - 150 mm	Cu.m	150		
23	Rubble, 150 - 225 mm	Cu.m	150		
24	River Sand	Cu.m	30		
25	Timber, Class 2, Sri Lanka Timber Corporation	Cu.m	15		
26	Precast concrete paving slabs 450x450x50 mm	Nos	600		
27	Paint, emulsion	ltr	300		
28	Paint, enamel	ltr	300		
29	Auto diesel	ltr	300		
30	Petrol	ltr	300		
31	kerosene Oil	ltr	300		
	Material Sub Total				
	Percentage mark up applicable to materials 20%				
Materials Day works Carried to Daywork Summary					

ROAD DEVELOPMENT AUTHORITY
SECOND INTEGRATED ROAD INVESTMENT PROGRAM
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PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
PITAKOTTE – THALAWATHUGODA ROAD (B368) FROM 0+000 KM TO 4+230 KM &
BORFELLA – RAJAGIRIYA ROAD (B062) FROM 0+000 KM TO 1+380 KM
Bill of Quantities

BILL No.10 : PERFORMANCE BASED MAINTENANCE						
ITEM		DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT (Rs)
Bill	Pay					
1	122(1)	Maintenance of road during year one	km.mon	86		
2	122(2)	Maintenance of road during year two	km.mon	86		
3	122(3)	Maintenance of road during year three	km.mon	86		
4	122(4)	Maintenance of road during year four	km.mon	86		
5	122(5)	Maintenance of road during year five	km.mon	86		
Bill No.10 Carried to Summary						

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ROAD DEVELOPMENT AUTHORITY
SECOND INTEGRATED ROAD INVESTMENT PROGRAM
REHABILITATION, IMPROVEMENT AND MAINTENANCE OF
PAGODA – PITAKOTTE ROAD (B345) FROM 0+000 KM TO 1+530 KM &
Bill of Quantities

BILL No.11 : PROVISIONAL SUMS				
ITEM		DESCRIPTION*	UNIT	AMOUNT**
Bill	Pay			
1	108.3(1)	Preparation and Implementation of HIV-AIDS prevention And Health Programme (10% Overhead and Profit)	PS	500,000.00
2	123(1)	Payment to Dispute Board -only for Employer's portion(10% Overhead and Profit)	PS	2,000,000.00
3	103.2(1)	Initial maintenance of existing road(20% Overhead and Profit)	PS	4,500,000.00
4	112.1(1)	Repairs to damages of existing services (20% Overhead and Profit)	PS	5,000,000.00
5	112.1(2)	Demolition / Rebuilding of property(20% Overhead and Profit)	PS	3,000,000.00
6	112.1(3)	Allow for the construction of house Accesses(20% Overhead and Profit)	PS	3,000,000.00
7	112.1(4)	Diversion, protection or removal of electrical services(10% Overhead and Profit)	PS	5,500,000.00
8	112.1(5)	Diversion, protection or removal of water services (20% Overhead and Profit)	PS	5,000,000.00
9	112.1(6)	Diversion, protection or removal of telecommunication services(10% Overhead and Profit)	PS	4,000,000.00
10	703(5)	Grade adjustment of existing manholes(20% Overhead and Profit)	PS	4,000,000.00
11		Conducting Public Stakeholders Awareness & Social Safeguard ralated activities(10% Overhead and Profit)	PS	1,000,000.00
12		To attend Emergency works during Performanse Based Maintenanse Period (20% Overhead and Profit)	PS	2,000,000.00
13	813 (7)	Pelican Signals as per Typical Drawings at locations Instructed by the Engineer. (10% Overhead and Profit)	PS	7,000,000.00
14		Street lighting & town improvement(20% Overhead and Profit)	PS	9,500,000.00
15		Provision of steel pedestrian footpath cantelevered to bridges	PS	2,500,000.00
16		Milling of existing surface	PS	25,000,000.00
17		Signalizing at junctions	PS	24,000,000.00
Bill No. 11 Carried to Summary				107,500,000.00

* Applicable Overhead and Profit for each PS item is indicated in the brackets.

** The PS Amount given is including the Overhead and Profit Percentage indicated in the corresponding description column.

Section 5 - Eligible Countries

Afghanistan	Micronesia, Federated States of
Armenia	Mongolia
Austria	Myanmar
Australia	Nauru
Azerbaijan	Nepal
Bangladesh	Netherlands
Belgium	New Zealand
Bhutan	Niue
Brunei Darussalam	Norway
Cambodia	Pakistan
Canada	Palau
China, People's Republic of	Papua New Guinea
Cook Islands	Philippines
Denmark	Portugal
Fiji	Samoa
Georgia	Singapore
Finland	Solomon Islands
France	Spain
Germany	Sri Lanka
Hong Kong, China	Sweden
India	Switzerland
Indonesia	Taipei, China
Ireland	Tajikistan
Italy	Thailand
Japan	Timor-Leste
Kazakhstan	Tonga
Kiribati	Turkmenistan
Korea, Republic of	Turkey
Kyrgyz Republic	Tuvalu
Lao People's Democratic Republic	United Kingdom
Luxembourg	United States
Malaysia	Uzbekistan
Maldives	Vanuatu
Marshall Islands	Viet Nam

Part II

Section 6 - Employer's Requirements

This Volume contains the Standard Specifications and Particular Specifications, Supplementary Information, Traffic Control and Safety during Construction, Environmental Management Plan and Environmental Monitoring Plan and Performance Based Maintenance Service Levels and Performance Indicators that describes the Works to be procured.

Table of Contents

Section 6.1	Standard Specifications
Section 6.2	Particular Specifications
Section 6.3	Conceptual Drawings
Section 6.4	Supplementary Information
Section 6.5	Traffic Control and Safety during Construction
Section 6.6	Initial Environmental Examination Report and Due Diligence Report
Section 6.7	Specification for Performance Based Maintenance Contract

Part II Employer's Requirements

Section 6.1 Standard Specifications

Refer to Standard Specifications for Construction and Maintenance of Roads and Bridges, Second Edition June 2009, published by the Institute of Construction Training and Development (ICTAD) [Now CIDA]

If Bidders do not already possess a copy, may purchase from the Institute for Construction Training and Development (ICTAD): ICTAD Publication No. ICTAD/SCA/5.

and

Refer to

Road Maintenance Manual of RDA

Bridge Maintenance Manual of RDA

Highway Design Manual of RDA

Bridge Design Manual of RDA

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Part II Employer's Requirements

Section 6.2 Particular Specifications

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PREAMBLE

The Particular Specifications are an amplification of the Standard Specifications for Construction and Maintenance of Roads and Bridges, Second Edition June 2009, published by the Institute of Construction Training and Development (ICTAD) and contain provisions in respect of items of work not covered by or at variance with the Standard Specifications.

Where there is any ambiguity or discrepancy between the Particular Specifications and the Standard Specifications, the requirements of Particular Specifications shall prevail.

Where BS tests are stipulated in the Specifications, the equivalent ASTM or AASHTO test method may be substituted with the approval of the Engineer.

Only additional clauses and clauses which have been deleted, modified or substituted in the Standard Specifications have been detailed in the Particular Specifications. Any reference to Sections/tables if not detailed in Particular Specifications refers to the relevant section or table in standard specifications.

Clause numbers herein correspond with the numbers of related articles, if any, in the Standard Specifications.

The abbreviations AASHTO, ASTM, BS and SLS shall be considered to have the following meaning:

AASHTO	American Association of State Highway and Transportation Officials
ASTM	American Society of Testing and Materials
BS	British Standard
SLS	Sri Lanka Standard

SERIES 100 – GENERAL**102 DEFINITIONS AND EXPLANATIONS****Utility Services**

Delete text and substitute.

Overhead or underground services such as electric and telecommunication poles, cables and appurtenances, water pipelines, sewage lines etc. which are mostly maintained by different agencies.

Windrow

Delete text and substitute.

A continuous long line of soil left on the carriageway, shoulders or to the edge of a road usually by the operation of a motor grader/dozer.

103 ARRANGEMENTS FOR TRAFFIC WITH SAFETY PRECAUTIONS DURING REHABILITATION OR CROSSING OF EXISTING ROADS**103.1 General**

Append the following to paragraph 1 of this clause:

The Contractor shall, after consultation with the Engineer and Police prepare a scheme of traffic management for carrying out the Works. Such proposals shall be submitted to the Engineer for his approval, together with written approval / no objection certificates from the concerned authorities, not less than 30 days before the planned implementation of each proposal.

The Contractor shall not commence any works affecting any public highway until all approved traffic safety measures conforming to the Engineer's prior approval have been fully implemented to the satisfaction of the Engineer.

The Contractor shall take necessary measures for the safety of traffic and third parties by providing, erecting and maintaining all signs, lamps, barriers, traffic control signals, road markings, etc. in a clean and legible condition, and shall position, re-position, cover or remove them as required with the consent of the Engineer. The barriers shall be strong. Red lanterns or warning lights shall be mounted on the barriers at nights and shall be kept lit until sunrise. If the Contractor fails to comply with these requirements, the Engineer shall order a third party to rectify the shortcomings and shall recover the cost of such works from the Contractor.

103.2 Using Part of the Road

Add new sub clauses at the end:

103.2.1 Initial Maintenance of existing Roads

During tendering period, the Contractor shall inspect and assess the condition of all the roads included in the contract package giving consideration to the following.

- 1) Repair of all potholes and other road pavement damages in roads that are already metalled and tarred or paved with asphalt concrete, with approved Aggregate Base Course material and appropriate road surfacing material, compacted in position to the specifications and to the satisfaction of the Engineer.

- 2) Clearing of roadside drains to enable the water to flow without any obstructions.

The Contractor shall within 21 days of handing over the roads for construction works, submit, a proposal for making the roads that are already Metaled and Tarred or paved with asphalt concrete to a satisfactory condition for the approval of the Engineer. This approved work shall then be carried out as a priority work by the Contractor as directed by the Engineer and shall be completed within one month's period from the date of possession of site.

103.2.2 Routine Maintenance of Existing Roads included in the Contract.

The Contractor shall commence the routine maintenance works of sections of existing roads that are already tarred or paved with asphalt concrete and maintain those roads in good motorable condition until existing surface is covered with the immediate pavement layer.

The Contractor shall maintain to the satisfaction of the Engineer, the existing carriageway of all roads included in the Contract in a reasonably good condition with all potholes and pavement damages filled with approved Aggregate Base Course materials and surfacing to minimize the inconvenience to the public using the road during the entire contract period.

The Contractor shall maintain the existing carriageway to the following service level:

- the maximum number of potholes less 50-100mm diameter shall be 05 numbers in one KM section.
- the maximum number of potholes more than 100mm diameter shall be 02 numbers in one km section.

If potholes are not repaired within 7 days of pothole formation, the Employer will deduct Rs. 100,000 per km of each road section from the amount due to the Contractor not regarding the rate quoted by the Contractor.

Roads used as diversion routes for traffic due to works, shall be considered as part of the works for the purpose of maintenance. The contractor shall ensure the flow of traffic on all roads and bridges and all culvert locations as per the "traffic management plan" submitted by the Contractor.

Unless otherwise provided in the Contract, culverts, and bridge sites, while undergoing improvement shall at all times be kept open to public traffic.

103.3 Temporary Diversions

Delete this sub-section and substitute the following:

The Contractor shall construct temporary diversion wherever construction of the Works will interrupt existing public or private roads or Right of Ways. Diversions must be constructed in advance of any interference with the existing Right of Ways, and the subsequent traffic management, safety and control shall be in accordance with the paragraphs of this Clause 103 and / or as directed by the Engineer.

When undertaking culvert/bridge widening or reconstruction, the Contractor shall at all times ensure that the traffic on the road section is uninterrupted. If the widening or reconstruction is on the existing alignment of the road, the new construction may require the provision of temporary bypasses for traffic. In the event of the requirement for temporary bypasses, the Contractor shall provide for such by-pass construction in his design.

Where traffic management schemes are shown in the Contract Drawings they are for guidance and bidding purposes only. It is solely the responsibility of the Contractor to plan and design the necessary traffic diversions in the most efficient way possible in order to enable him to complete the Works within the Contract Period, with the minimum disruption of normal traffic flow, and absolute minimum impact on the Works, third parties, and environment.

The standard of construction and lighting of diversions shall be suitable in all respects for the volume, size and speed of traffic using the existing way. The level of lighting shall be as indicated on the Drawings or as directed by the Engineer, and must satisfy the requirements of the concerned local authorities prior to being approved by the Engineer. The width and number of lanes shall be sufficient to maintain an acceptable traffic flow commensurate with existing conditions. In any case, the minimum width of traffic lane shall be 3.0 meters. It is the responsibility of the Contractor to obtain prior permission of the relevant Local Authority to open detours and the use of local authority roads.

Permanent roads used as temporary detour roads shall be signed and marked in compliance with detour road requirements whilst under detour road status. Should this road marking and signing be of a temporary nature the Contractor shall ensure that its removal will not impair the quality of the permanent Works.

Under no circumstances will the Contractor be allowed to open any new carriageway for detour traffic with permanent road markings that are not in compliance with the accepted detour markings.

The Contractor will remain responsible for the maintenance of the diversion road in a satisfactory condition for as long as the diversion is required.

In urban areas, the traffic diversions shall be illuminated with suitable lighting. In rural or other areas, where no street lighting exists, all signage shall be reflectorized and all changes in direction shall be floodlit at night to an intensity approved by the Engineer.

Temporary bypass constructed shall be removed and site restored to its former state after completion of permanent works.

103.4 Measurement and Payment

(a) Measurement

Replace the (i) with following,

- (i) All costs related to the implementation and execution of the traffic safety and management work shall be measured in monthly. Provision and maintenance of temporary diversion of roads, if any shall be measured for payments as a Lump Sum.

(b) Payment

Replace the item (B) as follows,

(B) Provision and maintenance of temporary diversion of roads, if any. Payments shall be made as per a Lump Sum.

Add new item C after B

C. Maintenance of existing roads included in Contract.

The rate quoted for routine maintenance shall be inclusive of all labour, materials equipment and plant together with all necessary traffic safety and control measures.

The rate per km-mth shall be the rate for providing maintenance in keeping the existing roads in reasonable good motorable condition of road for the particular month.

If repair of existing potholes at the time of the taking over of the road are to be attended as initial maintenance, cost of initial maintenance shall be included in available rates.

If the existing road is not maintained in a reasonably good motorable condition and traffic management is unsatisfactory and not as specified, the payment to the contractor at the unit rate specified in the BOQ for the total length of road, will not be made for such sections in proportion to the road length.

The Employer reserves the right to undertake this work when the Contractor fail to carry out necessary work after due notice had been given. In the event, Employer shall undertake this work, then the full cost of doing so will be deducted from the monies owed to the Contractor.

Add new Pay Items 103.2(2) and replace the Pay item 103(2) with 103(2)a

Pay Item	Description	Pay Unit
103.2(2)	Routine Maintenance of Existing Roads	Kilometre month
103(2)a	Provision and maintenance of temporary diversion of roads, if any	LS

106 GENERAL RULES FOR MEASUREMENT AND PAYMENT

106.1 Lead for Materials

Delete the text entirely and substitute the following:

No transport distances shall be measured for payment. The cost of transport of materials is deemed included in the bid rates for items of work in the Bill of Quantities, which involves supply of materials.

108 NOT USED

Add the following clauses:

108 OBLIGATIONS OF THE CONTRACTOR AND GENERAL REQUIREMENTS

108.1 Establishment and Maintenance of Contractor's Facilities and Plants/Equipment

The Contractor shall make provision for erection, operation and removal after the completion of works, of his temporary installation and facilities, including offices, accommodation, workshops, quarries, borrow pits, batching and blending plants and restoring of temporary land for borrow pits and quarries, etc. And he shall provide and maintain sanitary facilities on site, first aid firefighting equipment, drinking water facilities, electricity and telephone for the duration of the Contract.

The contractor shall be responsible for the management and security of the Site and safety of public and adjoining property and shall be liable for any claims arising from loss or damage suffered. He shall employ suitable security personnel and establish a security system for this purpose.

All temporary accommodation shall be kept well maintained during the contract period and shall be available for inspection by the Engineer and/or Government Medical Officer of Health. The Contractor must comply immediately with any instruction given by the Engineer and/or Medical Officer for cleaning, disinfecting and maintenance of any building to return it to a hygienic and sanitary condition.

The Contractor shall confine his apparatus, the storage of materials and the operations of his workmen to the limits indicated by law, ordinance, permits, or direction of the Engineer. The Contractor shall erect temporary fences as required by the Engineer. The Site boundary lines shall be to the approval of the Engineer.

The Contractor shall implement his Environmental Management Action Plan accepted by the Engineer in compliance with the Environmental Management Plan given in Appendix A.1 of Section 6.6 of Part II and submit a monthly Monitoring Report. The contractor shall implement measuring of selected environmental parameters as given in the Environmental Monitoring Plan (EMOP) attached as Appendix A.2 of Section 6.6 of Part II.

Contractor should take all precautionary actions for health safety of the staff, workers and visitors of the site and offices against all communicable diseases, including COVID, Dengue, Malaria etc.

a. Measurement

Site Establishment, Maintenance and Demobilization shall be measured as monthly basis. Maintenance of Site Establishment and Provision of Environmental protection in compliance with EMP and safety procedures shall be measured in months. The tests specified in the EMOP or requested by the Engineer shall be measured and paid separately under a Provisional Sum.

b. Payment

The Contractor will be paid for the mobilization as identified in the Schedule of Personnel and Key Equipment as specified in the Contract, or substitute acceptable to the Engineer. Payment will become effective when Personnel listed under Section 6.4 of the Bidding Document are fully mobilized and appropriate mobilization of Key Equipment which is satisfactory to the Engineer. The last month payment of the item shall be released once the Contractor fully de-mobilized the facilities.

Payment for Establishment, Maintenance and De-mobilization of Contractor's facilities shall include for provision of the necessary site management. Payment will be made at the BOQ rate based on monthly physical progress achieved against target progress subject to the following criteria or if the cumulative physical progress is ahead the target progress.

a)	Progress between 75%-100%	Full payment of monthly rate
b)	Progress between 50%-75%	75% of monthly rate
c)	Progress between 25%-50%	50% of monthly rate
d)	Progress less than 25%	no payment

The amount deducted will be final for the particular month and not reimbursable at any stage. The Contractor shall also provide necessary safety arrangements for protection of the site and environment and implement the Environmental Management Plan. The estimated costs given in EMOP are only for guidance to the contractor. The contractor shall prepare his own estimate for measuring environmental parameters.

All Works shall be carried out according to the Contractor's Environmental Action Plan and the Environmental Management Plan. The contractor shall comply with all applicable national, provincial, and local environmental laws and regulations.

The Contractor shall also comply with the environmental and social safeguard compliance policies of donor agencies, if any, during the construction activities in addition to regulations of the Central Environmental Authority.

Contractor shall monitor implementation of Environmental Management Action Plan (EMAP) through Environmental Monitoring Plan (EMOP) as given in Section 6.6 of Part II under periodical monitoring. In addition, Contractor should undertake complain based and activity based monitoring as required.

Health safety precautionary actions shall be implemented all over the worksites and offices and monitoring reports should include all measures.

Results of periodical monitoring should be included to monthly reports compared with baseline data and previous monitoring results.

The major effects and their ratings are categorized as follows and the monthly payment will be calculated in accordance with the percentages of the completed components.

Disposal of debris and unsuitable soil	15%
Blockage of drainage paths	15%
Soil erosion and top soil	15%
Generation of dust	15%
Air, noise and vibration	10%
Management of borrow pits	10%
Stagnation of water	5%
Contamination of fuel and lubricants	5%
Material transportation on roads	5%
Impact on flora and fauna	5%

If any of above defects are not remedied by the Contractor, the Engineer shall deduct the relevant component from the quoted rate. The remedial actions shall be acceptable to the Engineer and in accordance with the EMAP and methodology proposed by the Bidder. The assessment of mitigation measures shall be conducted weekly and the Engineers satisfaction shall be ensured weekly.

The Engineer will impose a penalty in the following manner if the Contractor fails to keep the environment free of hazards.

If the Contractor fails to take any action within a fortnight, the penalty shall be increased by 10% (ten percent) of the relevant component. Further, if the Contractor fails to comply within one month, all remedial measures shall be arranged by a third party and the cost shall be recovered from the Contractor.

If the arrangements are unsatisfactory, no payment will be made for the respective month/s.

Pay Item	Description	Pay Unit
108.1(1)	Establishment and Maintenance of Contractor's Facilities and Plants/Equipment	Month
108.1(2)	Provide adequate Environmental protection and Health & safety precautions during construction and implement the Environmental Management Plan and prepare monthly monitoring reports.	Month
108.1(3)	Provide for carrying out tests for Air Quality, Water Quality, Noise, Flora and Fauna as specified in the Environmental Monitoring Plan and other tests and activities as directed by the Engineer	Provisional Sum

108.2 Progress Photographs

A minimum of Eighteen photographs shall be taken by the Contractor each month to record the progress of the Works to be submitted with his Monthly Progress Report.

Photographs shall be 200 mm x 150 mm, in colour, and shall be marked with date of exposure, and location.

One sets of high resolution digital photographic prints (minimum 10 Megapixel) shall be submitted together with an electronic copy on CD/DVD.

a. Measurement

Progress photographs shall be measured by the number of months or part thereof.

The rate shall be inclusive of:

- taking the photographs;
- printing;
- referencing, annotating and binding;
- delivery of the specified number of prints to the Engineer / Employer;
- Delivery of softcopy to the Engineer by means of CD/DVD.
- Preparation of Progress Report

b. Payment

Pay items shall be:

<u>Item No.</u>	<u>Description</u>	<u>Pay Unit</u>
108.2 (1)	Monthly Progress Report including Progress Photographs and softcopy	Month

108.3 HIV-AIDS Prevention**Description:**

The Contractor shall conduct HIV-AIDS awareness programmes and conduct Information, Education and Consultation Communication (IEC) campaigns to all the Site staff and labour and to the immediate local communities via an approved service provider, in accordance with the requirements given in sub-clause 6.7 of Conditions of Contract.

The Contractor is expected to address the following aspects, in his alleviation program for the site staff and labour and their families and immediate local communities in respect of the HIV-AIDS prevention, to include but not limited to:

- An effective community planning process
- Epidemiological and behavioural surveillance; compilation of other health and demographic data relevant to HIV risks
- Health education and risk reduction activities, including individual-, group-, and community-level interventions.
- Accessible diagnosis and treatment of other Sexually Transmitted Diseases
- Public information and education programs
- Comprehensive health programs for the immediate local communities
- HIV prevention capacity-building activities
- An HIV prevention technical assistance assessment and plan
- Evaluation of major program activities, interventions, and services

The Contractor, in his program, shall indicate the activities that will be implemented during the period of contract, when and how regularly the campaigns are scheduled and other relevant details for the approval of the Engineer.

a. Measurement

Preparation and Implementation of activities of this program shall be measured based on a provisional sum.

b. Payment

Payment shall be based on the rates and sums assessed and agreed by the Engineer for the completed works to the satisfaction of the Engineer, which shall include full compensation for providing all materials, labour, tools, equipment and incidentals necessary to carry out the works in accordance with Sub-Clause 108.3.

Payment to the Contractor for preparation and implementation of this program shall not exceed the Provisional Sum indicated for this purpose.

Pay Item	Description	Pay Unit
108.3(1)	Preparation and Implementation of HIV-AIDS prevention And Health Programmes.	Provisional Sum

108.4 Laboratory

The Contractor shall make provisions for establishment and operation of Main Laboratory furnish and maintained with all the equipment, apparatus and supplies necessary to permit proper execution of all standard tests required by the Specifications and accordance with the Quality Assurance System. The laboratory buildings and equipment shall be removed at the completion of the works.

The laboratory facilities should be provided as soon as is practical and not later than 60 days after the date of commencement of the work. All the equipment shall be mobilized on site and made operational as soon as is practical after the Engineer's order to provide so that it can be checked and approved by the Engineer well in advance of the commencement of construction work so that the testing of materials sources can be commenced as soon as possible

The Laboratory equipment and furnishing to be provided for the Main Laboratory is described in Appendix 5. The Main Laboratory, which shall include a lockable storeroom of minimum floor area 10sq.m, shall have a floor of concrete painted with a sealant. The Laboratory, if so authorized by the Engineer, is required to test soils and materials from an adjacent roads improvement project. The equipment and furnishings of the Main Laboratory shall revert to the Contractor, at the date of issuing of the Taking over Certificate for the whole of the works, or at such other date instructed by the Engineer.

a. Measurement

Providing furniture and equipment for the Main Laboratory or the field laboratory as described in Appendix 5 shall be measured as a Lump Sum.

Provide building or acceptable space for main or field laboratory and maintaining the Main or field laboratory in the acceptable condition and maintaining the furniture and equipment for the Main Laboratory or the field laboratory shall be measured in monthly basis.

b. Payment

Payment for laboratories shall Include for:

- i) provision of the site/space for the laboratory,
- ii) preparation of the site; make access to the location
- iii) provision of the buildings and fixtures, their maintenance and payment of rentals for the required period, if rented.
- iv) water, sanitation, heating, power and lighting services, including standby electricity generation;
- v) hard standings, access roads, footways, perimeter fencing, security lighting, ancillary works;
- vi) furnishing, fittings and protective clothing as described in Appendix 5.

- vii) all consumables required for both laboratory and site testing;
- viii) delivery of all soil and materials samples from pits, quarries, suppliers or the completed works by the Contractor and at no additional cost to the Employer;
- ix) land line telephone connection(s) and extensions where described in Appendix 5;;
- x) mobile telephones, where described in Appendix 5;
- xi) wireless telephones and extensions, where described in Appendix 5;;
- xii) cabling for computer networks(s);
- xiii) The provision of temporary accommodation until the permanent laboratory is available.
- xiv) Provision of adequate security on a 24 hour basis.
- xv) Unrestricted access to the Employer, Engineer, personals having permissions from Employer and Engineer , and provision of the facility, assistance, labour and all other requirements to carry out any tests he deems necessary.

The cost of carrying out calibration of all testing instruments and all tests necessary for proper completion of the Works, in accordance with the various specified or implied testing requirements in the Contract Documents shall be borne by the Contractor and all such costs shall be deemed to be already included in the relevant Unit Prices for the materials concerned, except as provided below.

If any test not intended, nor specified, nor implied to be necessary, nor otherwise provided for in the Contract Documents is ordered by the Engineer, or if the Engineer orders any test to be carried out by a third party or at any place other than the site of the Works or the place of manufacture or fabrication of the materials to be tested, then the cost of these unforeseen tests shall be borne by the Employer unless the test results show the workmanship or materials not to be in accordance with the provisions of the Contract Documents, in which case the cost of the test shall be borne by the Contractor.

Payment for laboratory shall be made upon completion, fully equipping and furnishing and upon occupation by the Contractor's staff to the extent that they can properly perform their duties.

The laboratory shall be used for several projects of the Employer at the same area.

Pay Item	Description	Pay Unit
Main Laboratory		
108.4(2)	Provide furniture and laboratory equipment for main laboratory	LS
108.4(3)	Provide and maintain Main Laboratory (rented or pre-fabricated)	month

108.6 Record Drawings

The Contractor shall prepare all record drawings (as-built). These drawings shall show the works executed, complete with existing and finished levels (top, invert, formation levels, plans, cross sections, locations of junctions, monuments, man holes, inlets, extent of concrete bed of structures and all things necessary to form a complete pictorial record of finished work). Also to be shown are the exact locations with dimensions of existing and new utility ducts, cables, pipes etc. Drawings so prepared by the Contractor shall be dated and signed by both the Engineer and the Contractor. Record drawings together with maintenance manuals, if any, shall be submitted to the Employer in the form;

- a) Hard copies in A3 size - 1 Set
- b) Soft copy in AutoCAD format in CD - 1 Set

109 WORKMANSHIP AND QUALITY CONTROL

Delete sub clause 109.2 in its entirety and substitute;

109.2 Payment

No separate payment shall be made for compliance with this section. Payment shall be deemed to have been included in the Contractor's rates.

111 NOT USED

Add the following clause:

111 WORK EXECUTED BY THE EMPLOYER OR OTHER CONTRACTORS

The Employer reserves the right to execute on Site work not included in the Contract and to employ for this purpose either his own employees or other contractors.

The Contractor shall ensure that neither his own operations nor the actions of his employees shall interfere with the operations of the Employer or his contractors on such works, and the same obligations shall be imposed on the Employer or contractors in respect of work being executed under the Contract.

The Contractor shall provide unhindered access to all parts of the Site to the Employer and authorized representatives of the Employer and of public bodies and corporations and to contractors employed by the Employer and he shall make available to such authorized persons the use of all temporary access tracks in or about the Site.

112 SERVICES

Delete the text and substitute as follows;

In the execution of works by the Contractor, if any services, public or private may be damaged shall be undertaken by the Contractor for reinstatement or repair.

112.1 Existing Services

The Contractor may be ordered to carry out certain works for and on behalf of various statutory service authorities and he shall provide with a prior approval of the Engineer, such assistance to the various bodies as, may be authorized by the Engineer.

No removal of or alterations to any public utility shall be carried out unless ordered by the Engineer. The Contractor shall take all reasonable precautions to protect, and shall provide temporary support to, existing services during construction and during reinstatement or repair of damaged services.

Whenever reinstatement or repair is encountered, that interferes with the execution of the works and requires moving or relocation, the Contractor shall advise the Engineer who will determine the extent of the work involved.

Any pipe, cable, conduit or other known service of any nature whatsoever, which has been damaged as a result of the Contractor's operations shall be repaired and reinstated forthwith by the Contractor or by the authority concerned, at all the expense of the Contractor for the authority and to the satisfaction of the Engineer.

The Employer will not be held liable or responsible for any delay in completion of the Works under this Contract, which may occur due to any damage occurring to such services in consequence of the Contractor's operations.

112.2 Existing Utilities and Utility Diversions

Description

The positions of all public and privately owned utilities must be regarded as approximate. The Contractor must verify this information and satisfy itself as to the exact nature and position of all such apparatus. The Engineer does not guarantee the accuracy of the information given on the Drawings and no Warranty is given or implied.

It is the intention of the Employer that all the utilities interfering with the Work are shifted by the respective agencies prior to the commencement of the Work by the Contractor. However, it is the responsibility of the Contractor to initiate the process of getting any of the remaining utilities at Site shifted during construction in accordance with this specification.

The Contractor shall take in to account the current laws regarding the safety of lines, together with any amendment or additions thereto. The utility authority shall include in this cost estimate for anything in these laws considered to have monetary value/implication.

The Contractor shall take any and all measures reasonably required by any public or concerned authority for the support and full protection of all mains, pipes, cables and other apparatus during the progress of the work and shall construct and provide to the satisfaction of the Engineer, all works necessary for the prevention of damage to utilities or interruption of services.

If any underground utility line is encountered unexpectedly, excavation shall cease, and the Engineer shall be notified immediately. Emergency work, as necessary, shall be put in hand without delay and without prejudice to the indemnity to the Employer.

If in the execution of the works, by reason of any subsidence caused by any act of neglect, or default of the Contractor, any damage to any apparatus, or any interruption of, or delay to the provision of any service is caused, the Contractor shall report it to the Engineer immediately.

The Contractor shall familiarize himself and all his employees with the dangers of working near live sewers and at sewage treatment works, in particular to the risks of physical injury from the explosion of dangerous gases and/ or bacterial infection from contact with sewage and of exposure to poisonous gases, which may be given off by the sewage. Hydrogen sulphide and methane are prevalent in the sewers and can exist in excavations where septic sewage from collection tanks is allowed to seep into groundwater. In the context of this clause, the term sewer includes irrigation mains and drains carrying ground water and/ or storm water.

The Contractor shall at all times during the progress of the works allow road facilities to properly accredited utility agencies to access all or any of their apparatus situated in or under the Site, as may be necessary for inspecting, reporting, maintaining, removing renewing or altering such apparatus in connection with the construction of the Works or any other purpose whatsoever.

The Contractor will be fully responsible for ensuring observance of the above regulations by his sub-contractors, if any.

Where any utility or service works are to be constructed under a separate contract by the Employer within the Site, concurrent with the execution of the Works, the Contractor shall cooperate with the other Contractor and be responsible to fully coordinate construction operations so as to avoid interference with either Contractor's operations.

Any public or private service for water, electricity, drainage, etc affected by the Works shall not be interrupted without the written permission of the Engineer. Such permission will be withheld until suitable approved permanent or temporary alternative services have been provided by the owner of utility or his agents.

Before any temporary traffic diversions, detours or road closures as may be required for the construction of road crossings are constructed in full liaison with all the concerned local authorities and

Police Department and their written approval/ no objection certificates for same must be submitted to the Engineer prior to work commencing.

Due allowance shall be given by the Contractor, when preparing the Program of Works, to compliance with this Clause 112.

112.3 Measurement and payment

a. Measurement

The work of temporary supporting and protecting public utility services during execution of the Works shall be deemed to be included in the Contractor's rates and prices and no extra payment shall be made for the same.

The amount of work involved in reinstatement or repair to damages of existing services shall be determined on Site and as instructed by the Engineer.

The Engineer may instruct the Contractor to assist in the demolition and/or rebuilding of property within or outside the Right of Way. The amount of work involved shall be determined on Site and as instructed by the Engineer.

b. Payment

replace 1st paragraph with the following,

The work of temporary supporting and protecting public utility services during execution of the works shall not be paid separately. Contractors rates for particular Work item shall include this activity.

Add the following,

Payment for repair to damages of existing services shall be made under a Provisional Sum. Payment for demolition and/or rebuilding of property within or outside the Right of Way shall be made under a Provisional Sum.

Payment shall be based on the rates and sums assessed and agreed by the Engineer for the completed works to the satisfaction of the Engineer, which shall include full compensation for providing all materials, labour, tools, equipment and incidentals necessary to carry out the works as specified above.

Delete the entire pay items and replace with following,

Pay Item	Description	Pay Unit
112.1(1)	Repairs to Damages of Existing Services	Provisional Sum
112.1(2)	Demolition/Rebuilding of Property	Provisional Sum
112.1(3)	Allow for the widening / repair of Existing House Accesses	Provisional Sum
112.1(4)	Diversion or Removal of Electrical services	Provisional Sum
112.1(5)	Diversion or Removal of Water services	Provisional Sum
112.1(6)	Diversion or Removal of Telecommunication services	Provisional Sum

113. NOT USED

Add the following clauses

113 Maintenance of existing roads outside the contract used by the contractor**113.1 General Obligations**

The Contractor shall take all reasonable steps to minimize nuisance during the construction of the works (see Clause 4.18 of General Conditions of Contract).

All existing highways and roads used by vehicles of the Contractor or any of his subcontractors or suppliers of materials or plant, and similarly any new roads which are part of the Works and which are being used by traffic, shall be kept clean and clear of all dust / mud / extraneous materials dropped by the said vehicles or their tyres. Similarly, all dust / mud / extraneous materials from the Works spreading on these highways shall be immediately cleared by the Contractor.

Clearance shall be affected immediately by manual sweeping and removal of debris, or, if directed by the Engineer, by mechanical sweeping and clearing equipment, and all dust, mud and other debris shall be removed entirely from the road surface. Additionally, if so directed by the Engineer, the road surface shall be hosed or watered using suitable equipment. The road surface shall be maintained in a better or similar condition at all times.

Any structural damage caused to the existing roads by the Contractor's construction plant or equipment shall be made good at Contractor's expense.

113.2 Measurement and Payment

No separate payment shall be made for compliance with this section. Payment shall be deemed included in the contractor's rates.

117 SETTING OUT, CROSS SECTIONS, SURVEYS AND DRAWINGS

Delete the title and whole Sub Sections, substitute as follows.

117 SURVEY, DESIGN, AND DRAWINGS**117.1 General**

The drawings issued by the Employer at the bidding stage are conceptual design drawings which comprise only typical and outline construction details and have not been based on detailed topographical surveys. The Contractor shall be responsible for conducting all topographical and other necessary surveys and design activities to establish and execute the final design of the project as required under the Contract.

The design of Bridges, Structures and Pavement shall be carried out by qualified personnel with adequate experience in such works and submitted for the approval of the Engineer. The Contractor is responsible for the pavement design after carrying out further testing to suit the actual site conditions.

The Contractor shall employ on the works a qualified surveyor. The Surveyor shall be fully equipped with modern survey equipment and instruments, which must be approved by the Engineer. Competent chainmen shall be employed to assist the Surveyor.

The Contractor shall deploy sufficient and qualified survey, design and drafting staff to enable the survey results and the subsequent design process to be completed and the Engineer's approval to be obtained as described hereunder, in advance of the construction activities as indicated on his programme. Drafting staff shall include computer operators experienced in using Auto CAD.

All survey and design activities shall comply with the prescriptions detailed in Appendix 7 -Survey and Design Specifications.

117.2 Bench Marks and Reference Monuments

The Contractor shall establish and fully reference all survey control points, monuments and working bench marks soon after taking possession of the site. Working benchmarks shall be tied into available Sri Lanka Survey Department benchmarks in the area, if any, and established at the rate of four per km and also at locations where work is required to be carried out on structures such as bridges and culverts. The Contractor shall be solely responsible for safeguarding all survey monuments, benchmarks, beacons, etc.

Survey data pertaining to these control points / bench marks shall be submitted to the Engineer for verification. Checks shall be made on these benchmarks once every month and adjustments, if any, shall be agreed with the Engineer and recorded. An up-to-date record of all benchmarks including approved adjustments, if any shall be maintained by the Contractor and also a copy supplied to the Engineer for his record. A "Survey File" containing the necessary data shall be made available by the Contractor for this purpose.

117.3 Survey Requirements.

The Contractor shall carry out a survey of the existing road and produce the required information as indicated in following paragraphs.

Timing

Within four (4) weeks following receipt of the Letter of Acceptance, the Contractor shall commence survey works to establish the vertical and horizontal profiles of the existing road, details of the existing drainage and structures, boundaries and topographical features within the road corridor. The survey drawings recording all such existing features and alignment shall be prepared and submitted to the Engineer in tranches of 5km (maximum), or other length acceptable to the Engineer, for his review and acceptance. The first survey drawing will be returned by the Engineer to the Contractor within 10 days of receipt marked as either 'Accepted' or 'For Correction' as appropriate. Survey drawings submitted thereafter will be returned appropriately marked within 10 days of the return of the previous drawing.

Centre-line

The existing centre-line must be accurately surveyed and referenced and a schedule of reference dimensions shall be prepared and supplied by the Contractor to the Engineer.

No reference peg or marker shall be moved or withdrawn without the approval of the Engineer and no earthworks, concrete or structural work shall commence until the centre line has been referenced and approved by the Engineer.

Centre-line reference marks shall be maintained until the works reach finished formation level and are accepted by the Engineer. On reaching formation level stage, the centre line shall again be set out by the Contractor and when approved by the Engineer, shall be accurately referenced to marked pegs set at the outer limits of the formation in a manner satisfactory to the Engineer.

Cross-sections

The Contractor shall, after or in connection with, the staking out of the centre line, survey the terrain along the existing road centre line and shall submit to the Engineer for his approval, the longitudinal profile along the road centre line and cross-sections at 10 metre intervals for curves & 20 metre intervals for other road sections.

The cross sections shall extend 5 metres beyond the existing right-of-way on either side. The vertical and horizontal scales of the cross section drawing shall be 1:20 and 1:50 respectively or as otherwise instructed by the Engineer. The vertical and horizontal scales of the longitudinal profile drawing shall be 1:200 and 1:1000 respectively or as otherwise instructed by the Engineer.

117.4 Working Drawings for Road works

Preparation

Having prepared the acceptable survey drawings, the Contractor shall superimpose the appropriate typical cross-sections on the cross-sections of the existing roadway to form the designed profile of the pavement and construction drawings for setting out. The Contractor shall adjust the elevation of the designed cross-section to minimise profile correction course requirements whilst also providing smooth transitions between cross-section types and minor changes in vertical profile.

In the event that localised adjustments or realignments to either the vertical or the horizontal profile are required by the Engineer, the Contractor shall conduct the necessary surveys and establish the vertical and horizontal designs and working drawings for the approval of the Engineer.

Working drawings shall show all necessary details needed for construction including all cross-drainage details; width of carriageway, shoulders, verges and side drains; levels to be maintained at centre line, edges and drain inverts and shall be in accordance with RDA design standards.

Working drawings for culverts are included under road works and no separate payment will be made for their preparation.

Submission and Timing

Working drawings shall not be submitted to the Engineer for approval until the survey and drawings for the particular tranche length are complete and have been accepted by the Engineer.

Designs and working drawings shall be prepared by the Contractor and submitted to the Engineer for his review in tranches of 5 km (maximum) or other length acceptable to the Engineer and will be returned to the Contractor within 28 days marked "Approved for Construction" or "For Correction" as appropriate.

Drawings marked "For Correction" shall be revised re-submitted according to the preceding schedule.

Unless otherwise agreed by the Engineer, no working drawings shall be submitted for approval until any preceding tranche has been reviewed and approved by the Engineer.

Work may commence only after the approval of the setting out by the Engineer.

The working drawings thus produced shall be the basis for proceeding with the construction works and the basis for measurement and making payment.

117.5 Working Drawings for Bridge Works

Outline bridge drawings and Standard Design Details together with summaries of the works required for each bridge are included in the Bid Drawings and are intended as indicative only.

The Contractor shall prepare working drawings for each structure based on the outline drawings and works required and in relation to site conditions. This activity shall be performed by a qualified Professional Engineer experienced in bridge design and approved by the Engineer.

Payment for the work will be made for each structure and in accordance with pay item identified in Section 1000 – Bridges and Other Structures.

Proposed changes to Standard Details and acceptance of all final working drawings will be subject to the approval of the Engineer.

117.6 Measurements and Payment

a. Measurement

The quantity to be measured for setting out the centre line shall be the length in kilometres corrected to two decimal places checked and accepted by the engineer. For Longitudinal and cross sections, it shall be the lane length along the centreline of the road section, checked and approved by the Engineer. Preparation of working drawings for bridges, and all other structures and works for which drawings have been produced, checked and accepted by the Engineer shall be measured for payment.

For structures, the measurement will be on a Lump Sum basis.

b. Payment

Payment for items measured as above shall be made at the unit rates quoted. This shall be the full compensation for all the items including survey, design, structural, as built and other drawings, setting out etc. and all expenses with respect to items stipulated under clause 106.3 (scope for rates for different items of work)

The pay items shall be:

Pay Item	Description	Pay Unit
117(1)	Surveying and Setting out of Centre Line	Kilo meter
117(2)	Preparation of longitudinal (LS) and Cross section (CSs) with all associated costs for Design works (pavement and Geometrical) of road works other than bridge and Culverts and retaining wall structures including submission of as built drawing	kilometer
117(3)	Investigation, Hydraulic survey, Survey and Design works and preparation of drawings for Bridges, Culverts, Drainage structures and retaining Structures as described in Employer's requirements including submission of as-built drawing	LS
117(4)	Carry out survey works for bridges, design and prepare working drawings for bridges and all other structures and works including submission of as built drawing	Provisional sum

118 PROJECT SIGN BOARDS

118.1 Description

In line 4 delete "or 25 mm thick marine plywood"

119 PROVISIONS OF INSURANCE, BONDS AND SECURITIES

Delete this text entirely and substitute the following:

119.1 Insurances

The Contractor shall provide all insurances for the performance of the Work as required in the Bid documents, Conditions of Contract and this Specification.

The Contractor shall take all necessary measures such as photographic and other records of the third party properties adjacent to the work that, in his opinion, may be affected during construction activities.

Insurance policies shall be maintained and valid through the period of performance of the Contract and shall be extended when and as necessary.

a. Measurement

Insurance shall be measured as a Lump Sum item for the cost of providing all the insurances of required duration for the period of performance of the Contract.

b. Payment

Payment shall be made as a Lump Sum and shall be payable when the Contractor has provided all acceptable and satisfactory insurances valid for the period of performance of the Contract.

The Contractor shall not be entitled to any additional compensation for extending the validity of insurance policies, unless the relevant period is subject of award of extension of time in accordance with Sub-Clause 8.4 of the General Conditions of Contract.

Pay Item	Description	Pay Unit
119.1 (1)	Providing Insurance for the Works, contractor's equipment, third party persons and properties	Lump Sum
119.1 (2)	Providing Workmen's Compensation Insurance	Lump Sum
119.1 (3)	Provide Professional Indemnity Insurance for Contractor's Design	Lump Sum

120 FACILITIES FOR THE ENGINEER AND HIS STAFF AND EMPLOYER

The following new clauses are appended.

120.1 General

The following facilities and services for the Engineer / Employer shall be provided by the Contractor: -

- i) Offices (Type 1 and 2) shall be air conditioned and complete with telecommunications equipment and furniture;
- ii) Accommodation/ Houses (Type 1, 2 and 3) shall be air conditioned with equipment and furniture.
- iii) Surveying Equipment;
- iv) Vehicles (including drivers) and motorcycles;
- v) Project sign boards and plaques;
- vi) Removal of facilities and equipment upon completion of the contract as directed by the Engineer.

Requirements in respect of the above facilities and services which shall generally apply are detailed below.

1. Locations of offices and housing shall be in reasonable place which is near to sites.
2. All matters in respect of facilities or services shall be subject to the Engineer's formal approval and as per contract. The Contractor shall submit details of all proposals prior to placing orders or making any arrangements. All fixtures and fittings shall be of reputed make and to the approval of the Engineer.
3. All facilities shall be new or as new condition except where expressly provided otherwise.
4. Temporary Buildings may be prefabricated or of conventional construction acceptable to the Engineer. Rented accommodation to the same standard and in suitable locations shall be acceptable where temporary buildings are required.
5. All facilities and services shall be for the exclusive use of the Engineer/Employer and their staff during the period of the Contract and as further required to finalize measurement, payment etc., and shall revert to the Employer or Contractor on completion of the contract as specified.
6. The Contractor shall provide the Office facilities and services as soon as is practical and (except for permanent buildings) not later than 60 days after the commencement date of the work. During the period prior to completion of construction or provision of the regular office accommodation the Contractor shall provide fully functional office accommodation at a suitable location mutually agreed with the Engineer within 28 days after the commencement date of the work.
7. The Engineer and staff shall have unrestricted access to the laboratory facilities and services provided under 108.4 whenever required by him.
8. The Contractor shall provide the survey equipment within 14 days of the date of the Engineer's order to purchase.
9. The Contractor shall supply all the vehicles as soon as is practical and not later than 60 days after the commencement date of the work. Prior to the provision of the vehicles, the Contractor shall hire and make immediately available to the Engineer / Employer similar vehicles to the approval of the Engineer.
10. The Contractor shall be responsible for ensuring that the facilities provided for the Engineer / Employer are secure at all times and shall erect fencing and employ day and night watchmen / security guards.
11. The Contractor shall provide replacement services or facilities whenever any item becomes unavailable or unusable from any cause.
12. The facilities will include the provision of land, site grading, all weather access roads, hard standing covered parking facilities for vehicles with water supply, hose and vehicle wash down facilities, construction of all necessary appurtenance such as drainage systems, fencing, utilities, landscaping, area development etc.
13. Where the Contractor leases land for construction of the facilities or leases premises for the provision of the facilities, the Contractor shall ensure that the terms of the lease allow the use of the land/premises for as long as they are required and shall take into account possible extension or overrun of the Contract period and use of the facilities after the issue of the Taking Over Certificate for whole of the Works. The terms of the lease shall incorporate provisions whereby the Contractor may assign his interests to the Employer.
14. The Contractor shall maintain all facilities for the duration of the Contract, or such period as required by the Engineer. The maintenance shall include but not be limited to:-

- Keeping buildings in good repair and decorative order, and free from pests, insects etc.;
- cleaning offices and laboratory daily;
- maintaining the grounds around buildings;
- supplying kitchen-ware and crockery and cleaning materials;
- supplying toilet and cleaning equipment and materials;
- providing power, piped water, bottled water, drainage, telephone services and e-mail facilities;
- servicing and repairing all fittings and equipment installed, e.g.: air-conditioners, fans, cookers etc.;
- provision LP gas for cooker

15. Provide adequate security for Offices, Housing and Laboratory.

120.2 Building Construction

All buildings shall comply with National / Local Authority regulations and legislation.

Temporary Buildings shall comply with the following requirements:

- (a) all windows shall be mosquito proofed;
- (b) individual office rooms shall be provided with a floor/ceiling fan;
- (c) kitchens, pantry and the bathrooms shall be provided with an extractor fan and their floors and walls ceramic tiled.
- (d) all rooms shall be lockable; external doors shall have double mortise locks of approved quality;
- (e) walls of temporary buildings, if not rented, may be half brick or cement block-work and plastered, with cement rendered floors, asbestos/tiled roof and asbestos ceiling.
- (f) emergency fire exits shall be provided and shall be clearly marked;
- (g) each office shall be provided with a store room;
- (h) offices shall be provided with a pantry area, and separate toilets for men and women

120.3 Utilities

All buildings shall be provided with a 220/240-volt electricity supply. Back up provisions shall be provided to all buildings in the form of a standby electricity generator with automatic changeover switch in the event of systematic failure of the main supply. The standby electricity generator shall be of sufficient power to supply the entire peak electricity demand (including air conditioning) of each building. Power points shall be supplied in numbers and at locations to the satisfaction of the Engineer. The power supply shall be fully earthed and shall be subject to power peak protection and voltage regulation.

Buildings shall have a continuous water supply with hot and cold water in the laboratories and in all toilets and kitchens. There shall be a continuous supply of potable water, which may be provided separately through rechargeable dispensers or bottled supply. Buildings shall be supplied with bottled gas or other fuel as appropriate for the cooking equipment provided.

The Contractor shall provide a broadband wireless internet connection to each office as indicated in the Contract, throughout the period of occupancy of each office. The internet connections shall be independent of any internet connections installed by the Contractor for its own use.

The Contractor shall be responsible for providing suitable hygienic methods for the treatment and disposal of waterborne sewage, wastewater and refuse from all buildings.

The offices shall be wired for a computer Local Area Network as detailed in the Schedule of Office Equipment.

120.4 Offices and Services

The offices, furniture, and services to be provided are described in Appendix 2. Permanent buildings constructed on land provided by the Employer shall revert to the Employer while all other buildings and provided facilities shall revert to the Contractor at the date of issuing the Taking over Certificate for the whole of the works, or at such other date instructed by the Engineer.

120.4.1 Maintenance of Office of the Engineer/Employer

Description

The Contractor shall maintain in good decorative and working order all the buildings and the contents thereof supplied under the Contract. The Contractor shall be responsible for supplying all power, water, telephone services, stationery and all other consumables to the facilities and shall meet all costs for these services as further detailed in Appendix 2 and settlement of all bills for these services.

The Contractor shall maintain all office facilities for the duration of the Contract or as long as they are required. Such maintenance shall include but not be limited to:

- Keeping buildings in good repair and decorative order, and free from pests, insects etc.;
- Cleaning offices daily;
- Maintaining the grounds around buildings, cutting grass and attending to garden plants
- Supplying crockery and cleaning materials;
- Supplying toilet and cleaning equipment and materials;
- Providing power, piped water, bottled water, drainage, telephone services, fax and e-mail facilities, stationery and all other consumables and payment of all bills in connection with these for as long as they are required by the Engineer.
- Servicing and repairing all fittings equipment and furniture installed,
- Provide adequate security for offices on a 24 hour basis for as long as required.

Measurement and Payment

a. Measurement

Provide temporary (rented) fully furnished offices and houses and maintain those facilities shall be measured as the number of months for each type of offices and houses.

b. Payment

Payment for each type of office shall include for:

- provision of the site for the offices, if purchased or leased;
- preparation of the site;
- provision of the buildings, furniture, fixtures, and payment of rentals for the required period, if rented, including drawings for permanent buildings and obtaining approvals from relevant authorities.
- supply of piped water, bottled water, sanitation, heating, power and lighting services, including standby electricity generation;
- hard standings, covered parking facilities, access roads, footways, perimeter fencing, security lighting, ancillary works;
- land line telephone connection(s) and extensions where described in Appendix 2;
- mobile telephones, where described in Appendix 2;
- wireless telephones and extensions, where described in Appendix 2;
- cabling for computer networks(s);
- the provision of temporary accommodation until the regular offices are available.
- maintenance of office facilities for the duration of Contract or as long as they are required.
- Supply of Stationaries for the Employer and the Engineer

Payment for temporary offices shall be made monthly on provision of all services and upon occupation by the Engineer's / Employers staff to the extent that they can properly perform their duties.

Pay Item	Description	Pay Unit
120.4 (1)	Provide and Maintain fully furnished office Type 1 (rented)	Month
120.4 (2)	Provide and Maintain fully furnished office Type 2 (rented)	Month

120.5 Housing for the Employer and Engineer

Description

The housing to be provided for the Engineer and Employer's use is described in Appendix 3. Houses which may be rented and provided shall be available and ready for use within 28 days after the Commencement Date, unless otherwise agreed by the Engineer.

This includes temporary accommodation to be provided until permanent housing (where so prescribed) is completed.

If the Engineer and Employer's housing is not provided within the prescribed period or is not to the satisfaction of the Engineer, all costs associated with the provision, operation and maintenance of the housing, after the expiration of the period will be recovered from the Contractor.

The fittings, furnishing and equipment to be provided in the houses are described in Appendix 3, and will revert to the Employer if constructed permanently on land provided by the Employer. All the property shall be reverted back to the Contractor on completion of the Works.

120.5.1 Maintenance of Housing for the Employer and Engineer

Description

The Contractor shall maintain in good decorative and working order all the buildings and the contents thereof supplied under the Contract. The Contractor shall be responsible for supplying all power, water and telephone services to all the facilities and shall meet all costs for these services as further detailed in Appendix 3 as long as they are required by the Engineer.

The Maintenance of the Houses of the Engineer/Employer shall include routine cleaning to the satisfaction of the Employer/Engineer and provision of toilet materials and also maintenance of the gardens and buildings and disposal of rubbish.

The Contractor shall maintain in good condition, service daily and repair or replace as required, all items of furniture, fittings and equipment installed in the houses.

The Contractor shall provide adequate security to guard and secure the facilities on a 24 hours per day basis for houses of the Engineer/Employer.

Measurement and Payment

a. Measurement

Provide temporary (rented) fully furnished offices and houses and maintain those facilities shall be measured as the number of months for each type of offices and houses.

b. Payment

Payment for houses shall include for;

- Payments of rentals for the required period, if rented.
- Connection and subsequent disconnection of electrical, telephone and water services or alternative provision of same.
- Provision of drainage systems for both sewerage and surface waters.
- Preparation of drawings for permanent buildings and obtaining approvals from relevant authorities.
- Maintenance of furnished houses for the duration of the Contract or as long as they are required by the Engineer.

Payment for houses shall be made monthly upon satisfactory provision of furnished houses and upon occupation by the Engineer or his staff or the Employer.

Pay Item	Description	Pay Unit
120.5 (1)	Provide and Maintain fully Furnished House, Type 1 (rented)	Month
120.5 (2)	Provide and Maintain fully Furnished House, Type 2 (rented)	Month
120.5 (3)	Provide and Maintain fully Furnished House, Type 3 (rented)	Month

120.6 Vehicles for the Engineer and Employer**Description**

The Contractor shall supply and maintain vehicles for the Engineer and Employer as described in Appendix 4. Prior to supply of vehicles, he shall obtain the Engineer's approval to ensure that Agents for service and spares are available within reasonable distance of the project.

All the vehicles except motorcycles supplied, shall be of good quality, year of manufacture shall be after 2015 and subject to approval of the Engineer. All the motorcycles supplied, shall be manufactured after 2017 with a maximum total kilometerage of 20,000. All the vehicles shall be supplied within two weeks from the date commencement and shall be the property of the Contractor at the end of the Contract.

The vehicles are for the exclusive use of the Engineer, his staff and the Employer and shall be licensed and fully insured for use on the public highway with comprehensive insurance cover for any qualified driver authorized by the Engineer, together with insurance cover for all authorized passengers and for the carriage of goods or samples.

The Contractor shall provide a competent, qualified driver for each vehicle (except motorcycles). The drivers shall hold a valid driving license and shall be subject to the approval of the Engineer at commencement of their duties and throughout their employment.

Vehicles supplied under the Contract may be required by the Engineer or the Employer to travel outside of the contract limits. The total travel distance shall be limited to a maximum of 3,000 km per month per vehicle. The Contractor shall provide all fuel and oil for such journeys and shall pay the drivers an appropriate and adequate accommodation and meal allowance when such journeys involve with an overnight stay.

Alternative arrangements shall be made in case of absence of driver or vehicle.

120.6.1 Maintenance of Vehicles

The Contractor shall provide fuel, oil and maintenance in conformity with the manufacturer's recommendations and shall clean the vehicles inside and outside, and fuel and oil the vehicles on a daily basis all to the approval to the Engineer.

A suitable replacement vehicle shall be provided for any vehicle that is out of service for whatever reason for longer than 24 hours.

Vehicles shall be maintained for as long as they are required by the Engineer's staff or Employer in connection with the Contract,

Maintenance shall include the following;

- (a) Equipment repair / replacement in case of loss or damage;
- (b) Road taxes for use on public highways as appropriate; toll charges for the use on Expressways;
- (c) Comprehensive insurance covering the Engineer / Employer and their authorized staff and any driver authorized by the Engineer and for the carriage of goods and samples;
- (d) Provision of a suitable replacement vehicle when a regular vehicle is unavailable or unserviceable for more than 24 hours;
- (e) Depreciation;
- (f) Maintenance in a roadworthy condition and in conformity with the vehicle manufacturer's recommendations;
- (g) Fuel, oil, lubricants and other consumables;
- (h) Cleaning inside and out on a daily basis;
- (i) Provision of a full time driver including all overtime payments and any accommodation payments including overnight accommodation allowance when away from the duty station;
- (j) Security.

Measurement and Payment

a. Measurement

Supply and maintenance of vehicles Type 1, 2,3,4 and 5 shall be measured as the number of months.

b. Payment

Payment for supply and maintenance vehicles shall be at the unit price for each type of vehicle as contained in the Bill of Quantities.

The rate for supplying and maintenance of Vehicle type 1, 2, 3,4 and 5 shall include for:

- (a) Supply and delivery to the Engineer's/Employer's site offices of the vehicle(s) and ancillary equipment including lockable luggage box and two crash helmets for each motorcycle;
- (b) All necessary registration, licensing documents and comprehensive insurance for immediate road use;
- (c) all services;

The rate for supply and maintenance of vehicles shall include for all labour, materials, periodic services, repairs etc. required for satisfactory maintenance of the vehicles as specified.

Pay Item	Description		Pay Unit
120.6(1)	Supply and Maintain Vehicle	Type 1	Month
120.6(2)	Supply and Maintain Vehicle	Type 2	Month
120.6(3)	Supply and Maintain Vehicle	Type 3	Month
120.6(4)	Supply and Maintain Vehicle	Type 4	Month
120.6(5)	Supply and Maintain Vehicle	Type 5	Month

120.7 Survey Equipment

Description

The Contractor shall supply the survey equipment described in Appendix 6 for the exclusive use of the Engineer. The Contractor shall be fully responsible for the equipment, which responsibility shall include:

- maintenance, calibration and servicing as required;
- repairing all defects, including accidental damage, as required;
- replacing any lost or stolen items;
- Effecting insurance of the equipment against damage or loss.

The equipment shall be supplied and maintained for as long as it is required including the period after Completion of Construction for final measurement purposes. At the end of the contract, the survey equipment and consumables shall revert to the Contractor.

Measurement and Payment

a. Measurement

Survey Equipment shall be measured as Lump sum for the set of instruments and items detailed in Appendix 6 satisfactorily provided as and when ordered by the Engineer.

b. Payment

Payment for Survey Equipment shall be made out of the Lump Sum provided and shall be payable when all the items as directed by the Engineer are provided. This payment shall represent full and final payment to the Contractor for the Contract item for the complete period of use and the Contractor shall not be entitled to further compensation irrespective of any increases in the Contract period for whatever reason.

In the event the Contractor fails to maintain, repair or replace any equipment item, the Engineer shall effect such maintenance, repairs or replacement and shall deduct the cost from payments due to the Contractor.

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
120.7(1)	Provide survey Equipment for exclusive use of the Employer/Engineer	Lump sum

120.8 Operatives for the Engineer's Staff

Description

The Contractor shall provide the following operatives for the Engineer's staff: Survey Assistant, Laboratory Technician, CAD Operator, Secretary, Administration Manager, Office Aide, House Keeper, Labourer, Assistant Quantity Surveyor, Environmental Officer and Social Officer.

Measurement and Payment

a. Measurement

Measurement for Operatives for the Engineer's Staff shall be provided in the number of month.

b. Payment

Payment shall be for the number of months provided by each operative.

Pay Item	Description	Pay Unit
120.8(1)	Survey Assistant	Month
120.8(2)	Laboratory Technician	Month
120.8(3)	CAD Operator	Month
120.8(4)	Secretary	Month
120.8(5)	Administration Manager	Month
120.8(6)	Office Aide	Month
120.8(7)	House Keeper	Month
120.8(8)	Labourer	Month
120.8(9)	Assistant Quantity Surveyor	Month
120.8(10)	Environmental Officer	Month
120.8(11)	Social Officer	Month
120.8(12)	Clerk	Month

ADD NEW SECTION

121 ALLOW FOR CONTRACTOR'S OVERHEAD AND PROFIT FOR PROVISIONAL SUMS

121.1 Description

The overhead and profit percentage allowed for Provisional Sums are deemed to include contractor's site and head office overheads, profits, any attendance and liaison required, and any other relevant expenses by the Contractor to implement works under such provisional sums.

ADD NEW SECTION

122 Performance Based Road Maintenance – Maintenance for a Specified Period

122.1 Description

Notwithstanding the Contractor's responsibilities during the Defects Notification Period, the Contractor shall maintain identified components of the works, in accordance with service levels specified in Section 6.7, for a continuous period of sixty (60) months from the date of issue of the Taking Over Certificate. The Contractor shall be paid separately for maintaining the prescribed service levels of the works, in accordance with the appropriate Pay Item detailed below.

Formal Inspections of Service Levels

Formal inspections of the works, scheduled on monthly basis, should cover whole road, included in the Contract and shall be performed jointly by the Engineer and the Contractor.

The Engineer shall inform the Contractor of his intention to conduct a formal inspection at least 48 hours in advance, indicating the exact date, hour and location where the formal inspection is to begin. The Contractor shall be present at the date, time and location specified and shall provide all logistical means and support required for the inspection as detailed in Section 6.7.

Inspections shall be conducted, regardless of whether or not all the parties are present, unless alternative arrangements are mutually agreed prior to the notified date of the inspection.

Formal inspections shall normally be scheduled and carried out on monthly basis as detailed section 6.7.

During the formal inspections, the Engineer shall prepare a brief Monthly Maintenance Report describing:

- the general circumstances of the site visit, including date, road sections visited, persons present, etc;
- all non-compliance issues which may have been noted and the time granted for the Contractor to remedy the noted maintenance deficiencies.

Formal follow-up inspections shall also be scheduled to verify that the non-compliance issues have been satisfactorily addressed within the stipulated time specified in the Monthly Maintenance Report.

Informal Inspections of Service Levels

The Engineer may carry out informal inspections of Service Levels of the works on his own initiative and using his own resources. Deficiencies noted in Service Levels shall be brought to the attention of the Contractor in writing within 24 hours, to enable the Contractor to take appropriate remedial action. The results of informal inspections shall not be used by the Engineer for purposes of evaluating the Contractor's Monthly Statements or applying reductions except for cases in which the criteria for Road Usability has not been met or dangerous defects are detected.

122.2 Standard of workmanship and Quality Control

Standard of workmanship and quality control shall be in accordance with Standards for Construction and Maintenance Specifications of Roads and Bridges, second edition June 2009 published by ICTAD, Sections 504, 1100, 1200, 1300, 1400, 1500 and 1600 or as otherwise instructed by the Engineer.

122.3 Measurement and payment

a. Measurement

Measurement shall be by the Month for the entire length of the road maintained to the satisfaction of the Engineer and complying with the specified Performance Indicators. Non-compliance of Service Level shall be determined by formal inspections based on multiple test sections of preferably one (1) km length as prescribed in Section 6.7, and payment reductions applied accordingly.

b. Payment

Payment shall be made each month for maintenance operations carried out during the previous month based on the rates quoted for each year and shall be full compensation for all labour, materials, equipment, tools, and all other incidentals necessary to complete the work according to specifications.

If the Contractor fails to remedy any maintenance deficiencies within the stipulated date notified after the joint inspection reductions shall be applied to the monthly payment as prescribed in Section 6.7. Any failure on the part of the Engineer or the Employer to carry out the inspections shall not deprive the Contractor from receiving payment.

Pay Item	Description	Pay Unit
122(1)	Maintenance of roads during PBM year one	Km/Month
122(2)	Maintenance of roads during PBM year two	Km/Month
122(3)	Maintenance of roads during PBM year three	Km/Month
122(4)	Maintenance of roads during PBM year four	Km/Month
122(5)	Maintenance of roads during PBM year five	Km/Month

ADD NEW SECTION

123 Payments to the Dispute Board

Employer's portion of the payments to the Dispute Board shall be measured as a Provisional Sum.

Pay Item	Description	Pay Unit
123(1)	Payments to the Dispute Board (only for the Employer's portion)	Provisional Sum

201 CLEARING AND GRUBBING**201.3 Construction Requirements****(b) Clearing and Grabbing**

Delete the first paragraph and add the following;

In areas of embankments, where fills are to be constructed, all top soil shall be removed to an average depth of 0.15m, where required, and with the prior approval of the Engineer. All surface objects, trees, including stumps and roots of previously felled trees, over hanging branches, except those trees and objects the Engineer directs to be left undisturbed, shall be grubbed and cleared subject to following provisions:

201.6 Measurement and Payment**(a) Measurement**

At the end of first paragraph add the following new paragraph:

In areas of embankments, where fills are to be constructed, the top soil removed to an average depth of 0.15m will not be measured separately and the payment is deemed to be included in the rate for Clearing and Grubbing and payment of filling of the void formed by the top soil removal to an average depth of 0.15m is deemed to be included in the rate for Clearing and Grubbing.

In paragraph 4 and 5 delete "300 mm" and substitute "600 mm"

In paragraph 5 delete item (i)

(b) Payment

Delete pay item 201(1) and substitute with following new pay item

Pay Item	Description	Pay Unit
201(1)a	Clearing and grabbing inclusive of removing top soil to an average depth of 0.15m and backfilling/trenches caused by removal of stumps	Sq.m

Pay item 201(2) and 201(6) not applicable as included under Pay item 201(1)

Pay item 204(7) shall be corrected to read as 201(7)

Delete Pay item 201(10) and substitute following Pay items.

Pay Item	Description	Pay Unit
201(10) a	Removal of overhanging branches – girth 300 - 600 mm	Number
201(10) b	Removal of overhanging branches – girth 600 - 1200 mm	Number
201(10) c	Removal of overhanging branches – girth over 1200 mm	Number

202 REMOVAL OF EXISTING STRUCTURES**202.1 Description**

In second line of first Paragraph after “existing”, add “bridges,”

202.2 Dismantling of Structures

In first line of second and third paragraphs after “culverts” add “and bridges”

202.7 Measurement and Payment**a. Measurement**

Replace the second sentence of the first paragraph with “Removal of culvert pipes shall be measured in Linear Metres.”

b. Payment

Delete the words “of the lump sum” in the 1st line.

Delete Pay Item 202(1), 202(3) and 202(4).

Substitute the following;

Pay Item	Description	Pay Unit
202(1) a	Dismantle & remove pipe culverts up to 900mm diameter	Linear meter
202(1) b	Dismantle & remove pipe culverts above 900mm diameter	Linear meter
202 (2)a	Dismantle & remove random rubble masonry structures	Cubic meter
202 (2)b	Dismantle & remove existing brick/block structures	Cubic meter
202 (2)c	Dismantle and remove dressed stone and handover to the Employer	Cubic meter
202 (3)a	Removal of fencing and like other	Linear meter

302 EXCAVATION AND BACKFILL OF STRUCTURES**‘(b) Payment**

Delete 4th paragraph and replace with the following,

Payment for the following items shall be made under the Lumpsum.

1. Preparation of base of foundation
2. Construction of necessary cofferdams, crib sheeting, shoring and bracing and subsequent removal(20% Overhead and Profit)
3. Dewatering and diverting of steams

Delete pay item 302(9) and 302(10) replace with followings

Pay Item	Description	Pay Unit
302(9) a	Preparation of base of foundation	LS
302(10) a	Construction of necessary cofferdams, crib sheeting, shoring and bracing and subsequent removal (20% Overhead and Profit)	LS

304 EMBANKMENT CONSTRUCTION**304.3 Construction Requirements****(j) Embankment Construction under Special Conditions****(v) Embankment Construction over Soft and Marshy Ground**

Add new text as paragraph (iii) under (V)

(iii) Construction of Boulder Fill above the Rock Fill and on embankment slope.

This shall consist of placing and packing boulders of size ranging from 0.5 to 1 tonne on the embankment slope by suitable mechanical means according to lines and levels given in the Drawings.

304.4 Measurement and Payment**(a) Measurement**

Delete paragraph 1 and replace with;

Embankment Construction shall be measured as compacted in cu.m. The volume of fill material shall be computed by the average end area method on cross sections given in the drawings or on actual cross section taken at site before (the original ground which is not disturbed) and after the construction of the embankment. The cross section area arising from benching slopes of existing embankments and hill sides will not be measured additionally and the pay line shall be the cross section taken at site before the construction of embankment (the original ground which is not disturbed).

All embankment construction using boulders shall be measured in Cu m supplied and placed.

Add the following with 4th Paragraph;

Trimming, levelling and compaction of original ground shall not be measured for benching locations.

b. Payment

Replace (ii) as follows;

- (ii) Scarifying and benching (excavation and filling) slopes of existing embankment and hill sides.

Delete pay item 304(2) and substitute with the following new pay items.

Pay Item	Description	Pay Unit
304(2)a	Embankment construction using type I Embankment material compacted in position	Cubic metre
304(2)b	Embankment construction using type II Embankment material compacted in position	Cubic metre

Add the following new pay items.

Pay Item	Description	Pay Unit
304(6)a	Embankment construction using boulders below ground level	Cubic metre
304(6)b	Embankment construction using boulders above ground level	Cubic metre

400 SUB BASES, BASES AND SHOULDER**401.4 Construction Requirements****(a) Preliminaries** (add at the end of this sub section)

Where a sub base is to be laid over an existing pavement, the existing pavement shall be fully scarified to enable the existing bituminous layer and aggregate greater than 100mm in size to be removed. In removing the bituminous layer the Contractor shall ensure that as much of the adhering existing aggregate as possible is dislodged and left remaining to be mixed with the sub base to be added.

Where instructed by the Engineer, existing material considered of poor quality shall be removed and disposed. Extra sub base material shall then be added to the existing pavement material and thoroughly mixed either in place or alongside the area to be strengthened. Compaction and surface finish shall be carried out as specified in Section 401 herein.

401.5 Measurement and Payment**b. Payment**

Delete pay item 401(1) and substitute the following new pay items.

Pay Item	Description	Pay Unit
401(1) a	Sub base as compacted in position – (Upper Sub base)	Cubic metre

405 DENSE GRADED AGGREGATE BASES**405.3 Construction Requirements****a. Preparation of Existing Surface**

Delete second para and substitute the following;

Where the Base Course is laid over an existing bituminous pavement, the surface shall be lightly scarified and the bituminous crust shall be completely removed along groves of width of about 50mm at 1 m intervals. The groves shall be cut by roller tines or any other method approved by the Engineer. The exposed surface shall be suitable compacted with material used for bases prior to laying the base course. Where the Base Course is laid over an existing asphalt pavement, the surface shall be punctured with holes of not less than 20mm diameter at 500mm centres on a grid across the area being prepared in order to permit drainage through the surface, where, in the opinion of the Engineer, the surface shape is not adequately crowned, and cleaned of any scarified material before laying the Base Course. The holes shall be filled with coarse sand and suitably tamped as approved by the Engineer. During this operation, the Contractor shall not damage the underlying pavement layer. Any damage to the existing underlying layer because of careless scarification shall be rectified forthwith by the Contractor to the approval of the Engineer at the Contractor's own cost.

405.4 Measurement and Payment**b. Payment**

Add new Pay Item 405(2).

Pay Item	Description	Pay Unit
405(2)	Puncturing holes of minimum dia.20mm on asphalt Concrete surface at 500 mm centres to underlying base	Km

on a grid across surface, filling sand and tamping
as directed by Engineer

500 SURFACE APPLICATIONS, SURFACE DRESSINGS AND SURFACINGS

501 PRIME COAT

501.3 Construction Requirement

Leave original Description

(e) Quality Control

Delete the paragraph and substitute the following;

Samples of the bituminous material that the Contractor proposes to use, together with a statement as to its source and character shall be submitted and approved before use of such material. The Contractor shall require the manufacturer or producer of the material to furnish material subject to this and all other pertinent requirements. Only satisfactory materials, so demonstrated by service tests, shall be acceptable.

The Contractor shall furnish vendor's certified test reports for each consignment of bituminous material supplied. The reports shall be delivered to the Engineer before permission is granted for use of the material. The furnishing of the vendor's reports shall not be interpreted as basis for final acceptance. All such test reports shall be subject to verification by testing samples of materials received.

Control of the quality of materials and work shall be exercised in accordance with Section 1602 herein.

501.4 Measurement and Payment

b. Payment

Delete pay item 501(5) and substitute new pay items.

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
501 (5) a	Bituminous Prime Coat using MC 30 at rate of one litre per Sq.m	Square metre
501 (5) c	Blotting Material applied at the rate of 1 cum per 250 Sq.m	Square metre

506 ASPHALTIC CONCRETE SURFACING

506.1 Description

Delete paragraph 1 and 2 and substitute:

This work shall consist of furnishing materials, mixing at a central mixing plant, and spreading and compacting asphaltic concrete wearing, binder course on an approved base course as and where shown on the Drawings and as instructed by the Engineer. The wearing course minimum thickness shall be 50 mm.

506.2 Materials

Delete the text and substitute,

Materials used shall conform to the following requirements unless otherwise specified:

- (a) The bitumen binder shall be a 60-70 penetration grade bitumen in accordance with Section 1702.1 herein.
- (b) The coarse aggregate shall be of nominal maximum size 20 mm and shall conform to the general requirements of Section 1701.3 herein.
- (c) The fine aggregate shall conform to the general requirements of Section 1701.3 herein.
- (d) Filler, where separately used in the mix, shall be cement, hydrated lime, crusher fines or

other inert non-plastic material in accordance with Section 1706 of Standard Specification.

When the coarse and fine aggregate are combined, along with filler where required, the combined grading requirements shall be as given in Section 506.3 herein as applicable to Wearing Course Mix, Type 1, 2 & 3.

The Contractor shall control the production of coarse aggregate, fine aggregate and filler for asphaltic concrete at the crushing and screening plant such that the grading of aggregates in stockpiles shall be uniform and consistent throughout the period of asphalt production and paving operations. Regular sampling of stockpiles by the Contractor shall be carried out to demonstrate the uniformity and consistency of grading of the aggregate production to the satisfaction of the Engineer. If significant changes occur to the aggregate grading during crushing and screening this will immediately effect the grading of the asphaltic concrete mix produced by the asphalt plant rendering it out of compliance with the approved job mix formula. Therefore, the Contractor shall take immediate steps to rectify the irregularity in aggregate production and, if such occurs, submit a new job mix formula based on the changed aggregate gradings for the approval of the Engineer.

506.3 Mix Requirements

(a) Combined Grading of Aggregate and Binder Content

Delete the text under this item and substitute.

The grading requirements for the combined aggregate and the binder content shall be as given in Table 506.1(a) Type 1 for Binder Course and Types 1, 2, 3 and 4 of Table 506.1(b) for the Wearing Courses. The Contractor may select the most suitable mix according to the site conditions and layer thickness required for his constructions with the approval of the Engineer. The selection of the optimum mix and trial mixes shall be subject to the approval of the Engineer and carried out in his presence.

The sieve sizes used herein are of ASTM designation. However, equivalent BS sizes as given in Table 107-1 of Section 107 herein may be used with the prior approval of the Engineer.

Table 506.1(a): Aggregate Grading, Binder Content and Thickness Requirements for Binder Courses

Mix Classification	Binder Course Type 1
Compacted Thickness mm Max. Min.	75 35
Sieve Size (mm) (μm):	
28.0	100
20.0	90 – 100
14.0	-
10.0	56 – 82
5.00	36 – 58
2.36	21 – 38
1.18	15 – 32
600	10 – 26
300	06 – 20
150	03 – 13
75	01 – 07
Percentage binder content by Total weight of mix	3.5 – 5.5

Table 506.1(b): Aggregate Grading, Binder Content and Thickness Requirements for Wearing Courses

MIX CLASSIFICATION		WEARING COURSE		TYPE	
		Type 1	Type 2	Type 3	Type 4
Layer Thickness (mm)	Max	75	75	75	75
	Min	35	35	40	40
Sieve Size (mm)	(μ m):				
28.0		100		100	100
20.0		85-100	100	93 - 100	95 - 100
14.0			82 - 92		-
10		66 - 94	61 - 81	59 - 94	58 - 84
5		46 - 74	41 - 66	38 - 69	36 - 66
2.36		35 - 58	27 - 48	25 - 48	23 - 49
1.18		26 - 48	20 - 40	20 - 40	-
600		18 - 38	15 - 35	15 - 32	-
300		11 - 28	10 - 25	10 - 23	5 - 19
150		7 - 20	7 - 17	4 - 15	-
75		3 - 12	5 - 9	3 - 12	2 - 8
Percentage binder content by total weight of mix		4.0 - 6.5	4.0 - 6.0	4.0 - 6.5	4.0 - 6.0

506.6 Measurement and Payment

- (i) For uniform thickness.

Delete paragraph 6,7, 8 and Table 506-5 and replace with;

When the measurement of core from any paved section is deficient by more than 5mm but not more than 15mm, 2 additional cores spaced at not less than 5m and decided by the Engineer shall be taken and used together with first core to determine the average thickness of such section

When the measurement of the core from any paved section is less than the specified thickness by more than 15 mm, the average thickness of such section shall be determined by taking additional cores at not less than 5 metre intervals parallel to the centreline in each direction from the affected location until, in each direction, a core is taken which is not deficient by more than 15 mm. Exploratory cores for deficient thickness will not be used in average thickness determinations.

Any deficiencies in the total thickness of wearing courses shall be subject of a proportional reduction in the area of Wearing Course measured for payment. Alternatively, the Contractor shall construct all at his own expense, a Wearing Course overlay, if practicable in the judgment of the Engineer. Any such overlay shall be a minimum of 40 mm compacted thickness and to the specified standard of the course it is overlaying.

Where the average total thickness of Wearing Course is deficient by more than 5 mm but not more than 15 mm, adjustments shall be made in the area measurements as follows.

Table 506-5 Deficiencies in Thickness of Wearing Course

Deficiencies in Thickness as Determined by Cores (mm)	Proportion of Wearing Course Area Measured for Payment
0.0 to 5.0	100%
5.1 to 10.0	80%

10.1 to 15.0	60%
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700 DRAINAGE CONSTRUCTION**701 ROADSIDE AND LEAD AWAY SURFACE DRAINS****701.1 Description**

Delete text under this sub-section and substitute the following:

This work shall consist of:

- (i) The construction of roadside and lead-away surface drains, unlined or lined, and covered where required, to dimensions, grades and in positions shown on the Drawings or instructed by the Engineer.
- (ii) Provision of built-up access to premises as shown on the Drawings or as directed by the Engineer.

The construction of built-up access to premises shall be done within the least possible time without causing much inconvenience to the owners of premises and the road users. Contractor should inform the owners of the premises well in advance of his intention to cut open the entrances or demolish the existing structure to replace with a new entrance structure. The Contractor shall provide temporary crossings over the cut open drains or demolition of existing structures as a temporary measure for the use of owners of premises and their vehicles.

701.3 Construction Requirements**b. Lined Drains**

Delete paragraphs two, three and four and substitute the following:

Where the lining is of precast concrete sections they shall be in concrete Grade C 25, laid to line and level on a prepared bed of sand, dry mortar, approved soil, concrete or other material as indicated in the Drawings or instructed by the Engineer. Unless otherwise instructed, the joints shall be filled using 1:3 cement mortar.

In-situ construction with concrete Grade C 25 or C 20, random rubble masonry, brickwork or block work shall be carried out as shown in the Drawings or as instructed. Where specified, or where found necessary, they shall be surface lined with 1:3 cement mortar and smoothed as instructed. Bricks, blocks or other material used shall be subject to the approval of the Engineer.

Rubble paving with mortar jointing, where specified, shall be carried out using selected rubble, hammer dressed as necessary, to ensure proper embankment of the rubble and also to obtain a reasonable smoothness to the surface finish after the jointing with 1:3 cement mortar is completed.

c. Cover Slabs

In second line of this paragraph delete "class A or B of Grade 25/20" and substitute "Grade C 25".

701.4 Measurement and Payment**a. Measurement**

Delete last paragraph and substitute the following;

Precast reinforced concrete cover slabs shall be measured in Sq.m. Measurement for all precast reinforced concrete units shall include reinforcement and formwork which will not be measured separately.

b. Payment

Delete pay items 701(2) and 701(6) and substitute the following pay items:

Pay Item	Description	Pay Unit
701(2) a	Lining of Drains with Concrete Grade 15	Cubic metre
701(2) b	Lining of Drains with Concrete Grade 20	Cubic metre
701(2) c	Lining of Drains with Concrete Grade 25	Cubic metre
701(6) a	Precast Concrete Cover Slab 100 mm thick for drain including reinforcement and formwork	Square metre
701(6) b	Precast Concrete Cover Slab 125 mm thick for drain including reinforcement and formwork	Square metre
701(6) c	Precast Concrete Cover Slab 150 mm thick for drain including reinforcement and formwork	Square metre

702 SUB-SURFACE DRAINS (UNDERDRAINS)**702.2 Materials**

Delete paragraph two of part (a) and substitute the following:

Unless otherwise instructed, the perforated pipe to be installed shall be 150mm PVC (Type 600) pipe. The pipe shall be drilled with 4 rows of 8 mm diameter holes at 150 mm centres on the bottom half of the perimeter of the pipe.

702.3 Construction Requirements**a. Under drains**

Add the following after Para 5:

The permeable material shall be laid and lightly compacted in layers not exceeding 300 mm. Care shall be taken to prevent the contamination of permeable material during construction of the subsurface drains and all permeable material contaminated by soil or silt or other deleterious material shall be removed and replaced by the Contractor at his own expense.

702.4 Measurement and Payment**a. Measurement**

Add the following:

The rate for geotextile filter shall include full compensation for furnishing, procuring, cutting, overlap, jointing, placing and protecting the fabric as specified, as well as for wastage.

703 MANHOLES, CATCHPITS AND INLETS**703.2 Materials**

Delete the words "Class A or B and Grade 20/20" in the first paragraph and substitute "Grade C 25"

703.3 Construction Requirements

In paragraphs 3, 4 and 5 delete "Class A or B and of Grade 20/20" and substitute "Grade C 25"

703.4 Grade Adjustment of Existing Structures

Add the following at the end of second paragraph;

Due allowance shall be given by the Contractor in grade adjustment of existing manholes, when preparing the Program of Works to compliance with the Clause 703. The work on grade adjustment of existing manholes shall in no way interrupt the program of work on pavement construction. If the Contractor fails to adhere to this condition, the Engineer shall order a third party to carry out those works that have not been done by the Contractor and recover the cost of such works from the Contractor.

The Contractor shall at all times during the progress of the Works, afford facilities to properly accredited utility agencies to access all or any of their manholes/hand holes situated in or under the Site, as may be necessary for inspecting, reporting, repair, maintaining, removing renewing or altering such apparatus in connection with the construction of the Works or any other purpose whatsoever.

703.6 Measurement and Payment**b. Payment**

Add following pay item.

Pay Item	Description	Pay Unit
703(5)	Grade adjustment of existing manholes	Provision Sum

707 PIPE CULVERTS**707.8 Measurement and Payment****b. Payment**

Add following pay items.

Pay Item	Description	Pay Unit
707(6) a	Reinforced concrete pipe 450mm diameter	Linear meter
707(6) b	Reinforced concrete pipe 600mm diameter	Linear meter
707(6) c	Reinforced concrete pipe 900mm diameter	Linear meter
707(6) d	Reinforced concrete pipe 1200mm diameter	Linear meter

803 Tree Planting

Contractor shall plant trees which are suitable for that territory.

803.1 Measurement and Payment**a. Measurement**

Measurement shall be numbers of trees alive at the end of the Performance Based Maintenance contract period.

b. Payment

Payment should include supply, maintain and plant of trees.

Pay Item	Description	Pay Unit
803(1)	Plants of suitable species not less than 2.0m in height supplied,planted,nurtured and maintained during contract period	Number

805 GABION WALLS AND MATTRESSES USING WIRE BASKET**805.3 Construction Requirements**

Add the following at the end of the paragraph;

Mattresses, which are generally only used as single layer aprons in revetments or at the entrance or exit to culverts to prevent scour and minimize erosion, shall be sub-divided by diaphragms into cells having a width of 600 mm or 1.0 m as specified or instructed by the Engineer.

ADD NEW SECTIONS 805 A & 805 B.

805 A STEEL SHEET PILING**805 A.1 Description**

This work shall consist of furnishing, transporting and installing steel sheet piling in accordance with these specifications and in conformity with the requirements given in the Drawings.

805 A.2 Materials

Steel sheet piling shall conform to the requirements of ASTM Specifications A 328, Standard Specification for Steel Sheet Piling; A 572 Standard Specification for the High Strength Low Alloy Columbium-Vanadium Structural Steel; or A 857 Standard Specification for Steel Sheet Piling, Cold Formed, Light Gauge or equivalent British Standard BS EN 10248-1:1996.

Appurtenant Material (steel plates, structural shapes, bolts, nuts, rivets, anchor rods and blocks, and other fittings) shall conform to manufacturer's standards and to the requirements specified in the respective sheet piling.

Protective coatings shall be a coal tar polyamide epoxy paint suitable for use on structural steel and shall meet paint specification No.16, Type 1, class II of the Steel Structures Painting Council (SSPC) or a zinc (Hot Dip galvanized) coating conforming to the requirement of ASTM specification A123, standard specification for zinc (Hot Dip galvanized) coatings on iron and steel products or equivalent British Standard.

Site Preparation: All cleaning within the area to be occupied by the steel sheet piles shall be completed before the piling is installed.

805 A.3 Installation of Steel Sheet Piling.

Steel Sheet piling shall be installed as specified in the construction drawings by one or both of the following methods.

a. Driving Sheet Piles.

The contractor shall provide driving heads and other devices such as Hammers (steam, air, and diesel) drop or vibratory type to manufacturer's specifications. The piles shall be driven true to the lines and levels shown on the drawings. Piles which deviate excessively from the theoretical line shall be extracted and replaced if necessary and re driven by the contractor at his own cost. Suitable temporary guide structures shall be used during pile driving and they shall be removed after driving is completed.

b. Trench Embedment of Sheet Piles.

Steel Sheet Piling is embedded by excavating a trench and backfilling to the dimensions shown on the drawings with approved back fill materials and compacted to the density of the surrounding materials. Trenching may be carried out by auguring a series of holes suitably spaced along the line of the trench.

Defective Piles and Damaged Coatings.

Any sheet pile damaged during installation shall be extracted and replaced. Damaged coating shall be repaired in accordance with ASTM A780 Repair of Damaged and Uncoated areas of hot Dip Galvanized Coatings or repainted in accordance with the manufacturer's specification of the original coating.

Steel sheet piles shall be cut off at the specified elevations and the heads trimmed off after driving to refusal or to the point where additional penetration cannot be obtained subject to the approval of the Engineer.

Piles driven below the required top elevation shall be extended as required by splicing when so directed at no additional cost to the Employer.

805 A.4 Measurement and Payment.

a. Measurements.

The area of sheet piling installed will be measured for payment including portions cut off on the direction of the Engineer before reaching penetration depth shown in the Drawings.

The portion cut off will be measured as the difference between the maximum length of piling shown in the drawing for that location and the length of piling installed below the cut-off point.

b. Payment

Payment for sheet piling will be made at the contract unit price for the item and shall include as applicable full compensation for supplying, installing, splicing, cutting all materials including

appurtenant material and the cost of providing rigs, cranes for driving and boring and all labour, transport, etc. and other incidentals necessary to complete the work.

The pay item and pay units will be as follows.

Pay Item	Description	Pay Unit
805 A (1)	Steel sheet Piling, Supply and install	Square metre

805 B CONCRETE CAPPING ON SHEET PILING

805 B.1 Description

This work shall consist of providing reinforced cement concrete capping on the top of the completed steel sheet pile wall as shown in the drawings or as instructed by the Engineer.

805 B.2 Materials

Concrete capping shall conform to the requirement of section 1001 of these specifications. Steel reinforcement shall conform to the requirement of section 1002 of these specifications.

The grade of concrete shall be as indicated in the drawings. Formwork for casting shall be such that all exposed surfaces shall be smooth finished.

805 B.3 Construction Requirements

Capping provided on top of the steel sheet pile wall shall be cast in situ using concrete grade specified in the drawings. Forms used for concreting shall be of timber or material, free of warp and of sufficient strength to resist the pressure without displacement. All forms shall be cleaned

and coated with approved form oil before concrete is placed and compacted. Concrete shall be placed in accordance with the requirements of the grade of concrete specified. Compaction of the concrete shall be by vibration and forms shall be left in place for a period until the concrete has set sufficiently for their removal without injury to the concrete. Curing shall be carried out to the approval of the Engineer.

Reinforcement steel shall be cut, bent, tied and placed in position as shown in the drawings.

805 B.4 Measurements and Payment

a. Measurement

Concrete capping shall be measured by the length in meters of completed work to the dimensions shown in the Drawings including reinforcement and formwork.

b. Payment

The unit rate for payment shall be full compensation for all labour, materials, equipment, tools and incidentals necessary to complete the work including curing.

The pay item and pay units will be as follows.

Pay Item	Description	Pay Unit
805 B (1)	Reinforced Concrete Capping for Steel Sheet Piling	Linear metre

806 PAVED SIDE WALKS

806.4 Measurement and Payment

(a) Measurement

Delete second paragraph and replace with the following;
Bituminous surfacing, hand laid, shall be of 50 mm thick and measured in square meters.

(b) Payment

Delete pay item 806(5) and add following;

Pay Item	Description	Pay Unit
806 (5)a	50 mm thick Bituminous surfacing, hand laid	Square metre

807 PRECAST CONCRETE KERBS AND CHANNELS

807.2 Materials

In the first sentence delete "class A or B of Grade 20/20" and replace with "Grade C 25".

807.3 Construction Requirements

In line 3 of the third paragraph delete "20/20" and replace with "C 20".

807.4 Measurement and Payment

a. Measurement

Add the following at the end of the sub clause;

Reinforcement and formwork are included and will not be measured separately.

b. Payment

Delete pay items and substitute as follows.

Pay Item	Description	Pay Unit
807(1)	Standard kerb (Type K1) – precast/cast in situ	Linear Metre
807(2)	Flat/Edge kerb Type K2 – precast/cast in situ	Linear Metre
807(3)	Drop kerb Type K3 /K4 – precast/cast in situ	Linear Metre
807(4)	Bridge kerb – precast	Linear Metre
807(4)a	Bridge lower kerb – precast	Linear Metre
807(5)	Repair and reset any type of existing kerbs	Linear Metre

808 GUARD RAILS AND WALLS, GUARD STONES, AND GUIDE POSTS**808.2 Materials**

In the first sentence delete “A or B” and replace with “C 25” in the 1st paragraph.

809 SAFETY FENCING AND BARRIERS**809.1 Description**

In the first sentence delete the words “property fences” and substitute “property and pedestrian guard fences”.

809.2 Materials

Delete “Class A or B” and substitute “Grade C 25”.in the 1st paragraph.

In item (f) delete “1706” and substitute “1707”

Add (g) G.S pipes 37 and 20 mm dia. medium duty, and (h) Paints as specified in drawing.

809.4 Measurement and Payment**b. Payment**

Add new pay item

Pay Item	Description	Pay Unit
809(1) a	Pedestrian guard fence	Linear metre

810 ROAD MARKINGS**810.1 Description**

In the first line of first paragraph of this sub-section after “continuous” add “and intermittent”.

810.4 Measurement and Payment**b. Payment**

Delete pay item 810(1) and substitute as follows.

Pay Item	Description	Pay Unit
	Reflectorized Thermoplastic material with Ballotini spray	

810 (1) a	Centre line: Continuous	Square metre
810 (1) b	Centre line: Intermittent	Square metre
810 (1) c	Edge line: Continuous	Square metre
810 (1) d	Pedestrian crossing	Square metre

811 TRAFFIC SIGNS

811.1 Description

a. General

Add at the end of 1st paragraph “and the Manual of Traffic Control Devices of the Road Development Authority”.

ADD NEW SUB SECTION 816 A

816 A PASSENGER BUS SHELTER

816 A.1 Descriptions

This work shall consist of construction of bus shelters for passengers at locations of bus stop / halts as shown on the Drawings and as directed by the Engineer.

816 A.2 Materials

All materials used for this work shall be in accordance with the relevant sections of the Specifications and as directed by the Engineer.

816 A.3 Construction Requirements

The various items of work involved in construction of bus shelters shall be as shown on the Drawings and directed by the Engineer.

816 A.4 Measurements and Payment

a. Measurement

The quantities measured for payment shall be the number of bus shelters constructed.

b. Payment

The payment shall be based on the contract unit rate for the item which shall include full compensation for providing passenger bus shelters. The rate shall include the cost of all

materials, labour, equipment, tools and all other incidentals necessary to complete the works to these Specifications.

Pay Item	Description	Pay Unit
816 A (1)	Passenger bus shelter	Number

819 KILOMETRE POSTS AND BOUNDARY MARKERS

819.1 Description

Add new item (e)

(e) Precasting, transporting and fixing new right of way boundary markers. This work shall

consist of precasting, transporting and fixing new right of way boundary markers in accordance with the typical drawings complete with all necessary lettering and painting as specified at locations directed by the Engineer.

819.2 Materials

In first line of first paragraph after the word “posts” insert “and right of way boundary markers”

819.3 Construction Methods

In second line of first paragraph after the word “one” insert “and new right of way boundary markers”

819.4 Measurement and Payment**(b) Payment**

Add new pay item 819(5) as follows:

Pay Item	Description	Pay Unit
819 (5)	Provide, install and paint new precast right of way boundary markers	Number

900 RIGID PAVEMENTS**901.A3 Concrete Mix Requirements and Testing Quality**

- Mix Design for concrete**

In paragraph two delete “Table 1001-4 of section 1001.4 in second line and substitute “Table 1001-1 Concrete grades under section 1001.3 Classification and uses of Concrete and the tables under section 1001.3.1 Minimum cement content and water cement ratio of Particular Specification”

In the 4th line delete “Sub-section 1001.12” and substitute “1001.6 Trial Mixes and 1001.7 Sampling and Testing of Particular Specification”

901 B4 Construction Requirements**(e) Manufacture and Transport of Concrete**

In Second paragraph delete “Sub-section 1001.8” and substitute “Sub-section 1001.9 Equipment and Tools of Particular Specifications”

(h) Curing of Concrete

Delete “Sub-Section 1001.11” and Substitute “1001.11 Curing of Particular Specification”

1000 BRIDGES AND OTHER STRUCTURES**1001 CONCRETE FOR STRUCTURES****PAYMENT**

Pay Item	Description	Pay Unit
1001(1)a	Concrete: Grade 30 (19 mm)	Cu.m
1001(1)b	Concrete: Grade 40 (19 mm)	Cu.m
1001(2)a	Concrete: Grade 20 (19 mm)	Cu.m
1001(2)b	Concrete: Grade 25 (19 mm)	Cu.m
1001(2)b	Concrete: Grade 15(37.5 mm)	Cu.m
1003(1)a	Supplying of 3.95 m long P.S.C. Concrete Beams as per drawing	Nos
1003(1)b	Supplying of 5.18 m long P.S.C. Concrete Beams as per drawing	Nos
1003(1)c	Supplying of 6.25 m long P.S.C. Concrete Beams as per drawing	Nos
1003(1)d	Supplying of 7.8 m long P.S.C. Concrete Beams as per drawing	Nos
1003(1)e	Supplying of 8.23 m long P.S.C. Concrete Beams as per drawing	Nos
1003(1)f	Supplying of 9.5 m long P.S.C. Concrete Beams as per drawing	Nos
1003(1)g	Supplying of 11.5 m long P.S.C. Concrete Beams as per drawing	Nos

1003(1)h	Supplying of 13.4 m long P.S.C. Concrete Beams as per drawing	Nos
1003(1)i	Supplying of 14.5 m long P.S.C. Concrete Beams as per drawing	Nos
1003(1)j	Supplying of 6.09 m long P.S.C. Concrete Beams as per drawing	Nos

1003 PRESTRESSING FOR STRUCTURES

PAYMENT

Unit	Pay Item	Description	Pay
1003(1)a	Supplying of 3.95 m long P.S.C. Concrete Beams as per drawing		Nos
1003(1)b	Supplying of 5.18 m long P.S.C. Concrete Beams as per drawing		Nos
1003(1)c	Supplying of 6.25 m long P.S.C. Concrete Beams as per drawing		Nos
1003(1)d	Supplying of 7.8 m long P.S.C. Concrete Beams as per drawing		Nos
1003(1)e	Supplying of 8.23 m long P.S.C. Concrete Beams as per drawing		Nos
1003(1)f	Supplying of 9.5 m long P.S.C. Concrete Beams as per drawing		Nos
1003(1)g	Supplying of 11.5 m long P.S.C. Concrete Beams as per drawing		Nos
1003(1)h	Supplying of 13.4 m long P.S.C. Concrete Beams as per drawing		Nos
1003(1)i	Supplying of 14.5 m long P.S.C. Concrete Beams as per drawing		Nos
1003(1)j	Supplying of 6.09 m long P.S.C. Concrete Beams as per drawing		Nos
1003(2)a	Launching of 3.95 m long P.S.C. Concrete Beams		Nos
1003(2)b	Launching of 5.18 m long P.S.C. Concrete Beams		Nos
1003(2)c	Launching of 6.25 m long P.S.C. Concrete Beams		Nos
1003(2)d	Launching of 7.8 m long P.S.C. Concrete Beams	Nos	
1003(2)e	Launching of 8.23 m long P.S.C. Concrete Beams		Nos
1003(2)f	Launching of 9.5 m long P.S.C. Concrete Beams		Nos
1003(2)g	Launching of 11.5 m long P.S.C. Concrete Beams		Nos
1003(2)h	Launching of 13.4 m long P.S.C. Concrete Beams		Nos
1003(2)i	Launching of 14.5 m long P.S.C. Concrete Beams		Nos
1003(2)j	Launching of 6.09 m long P.S.C. Concrete Beams	Nos	

1022 CLEANING AND REPAIRING OF EXISTING BRIDGES

1022.1 Structural Concrete Repair Work

This work shall consist of repairs to all existing structural reinforced concrete members with exposed, rusted, delaminated steel reinforcement

1022.2 Materials

All materials used shall meet the following requirements unless otherwise specified.

- Cement concrete to section 1001
- Cement mortar to sub section 1703.2
- Reinforcement steel to section 1002
- Protective coatings as specified in Drawings

1022.3 Work requirements

Concrete repair guidelines are as follows.

- a) Remove all deteriorated or unsound concrete in a manner that allows placement of repair material in roughly uniform thickness.
Care should be exercised not to damage existing reinforcement during removal.

- b) Concrete removal shall extend to where bar is well bonded to surrounding sound concrete. Care shall be exercised not to damage the bar's bond to surrounding concrete. If bond between bar and concrete is broken, undercutting of the bar is required.
- c) Where undercutting is required, remove concrete around steel reinforcing to a distance of 15 -25mm around each bar. At edge locations chip or saw cut (to a depth of 10mm) edges to prevent feathered edge conditions. Do not damage or cut reinforcing steel.
- d) Clean concrete surface of all oil, paint, dirt, debris or foreign matter by sandblasting. Scarify sound concrete surface to 3mm profile by sand blasting surfaces. Remove loose and heavy rust by sandblasting steel bars.
- e) Remove all dust particles and loose material or residue from concrete and rebar surfaces by pressure washing or high pressure air. Check concrete surface to ensure that surface is free from additional loose aggregate or that additional delaminations are not present.
- f) After cleaning of heavily corroded reinforcing bars, assess the loss in bar diameter. In the case of significant loss of steel area, weld or lap additional bars under the direction of the Engineer.
- g) Brush a corrosion inhibiting primer on reinforcing bar and apply a bonding agent to concrete surfaces. Follow manufactures guidelines for application of primer and bonding agent.
- h) Form area to be patched to match existing profile of member and fill area flush with shrinkage controlled / shrinkage compensated cementitious repair mortar followed by a curing compound.
- i) Apply an anti-chloride and carbonation coating for concrete protection. (Follow manufacturer's guidelines for all applications.)

1022.4 Measurement and Payment

a. Measurement

Concrete repair work shall be measured as a lump sum.

b. Payment

Payment shall be on the provisional sum provided which shall include full compensation for all labour , materials, equipment, tools, plant, transport, and other incidental necessary to complete the work to the specifications.

Pay Item	Description	Pay Unit
1022 (1)	Cleaning and Repairing of existing bridges	Provisional sum

1303 CLEARING, DESILTING AND REPAIRING OF CULVERTS

1303.4 Measurement and Payment

Clearing of culverts and structures is measured as per the numbers of such structures cleaned.

Stencilling is measured in numbers of structures are stencilled.

b. Payment

Delete pay item 1303(1). Substitute following pay items.

Pay Item	Description	Pay Unit
1303(1) a	Clearing and repairing of pipe culverts	Number
1303(1) b	Clearing and repairing of other culverts	Number

1303(4)	Stenciling & Numbering on Parapets/guard rails	Nr
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1500 MAINTENANCE OF TRAFFIC SIGNS AND ROAD MARKINGS

1501 MAINTENANCE OF TRAFFIC SIGNS

1501.4 Measurement and Payment

b. Payment

Add.

Pay Item	Description	Pay Unit
1501 (10)	Repairing, painting and reinstate existing traffic signs	Number

1600 QUALITY CONTROL OF WORK

Add the following after Section 1600:

The details testing regimes and standards for the quality control of workmanship and materials are given in each item.

The Contractor shall carry out the tests detailed in the items in accordance with its Quality Control Plan under the Quality Assurance System and there shall be no extra payment for carrying out required quality control tests during the execution of the work.

1600.1 Quality Control Plan

The Contractor shall prepare a Quality Control Plan which shall detail quality control procedures such as to demonstrate that the requirements of Clause 4.9 of the Conditions of Contract in respect of quality are met. The Quality Control Plan shall provide a formal framework for the approval of the Works by the Engineer.

In particular the Quality Control Plan shall include:

- (a) Quality control procedures in respect of the selection and control of materials, distinguishing between approval testing and compliance testing;
- (b) Quality control procedures in respect of construction operations, identifying procedures for production control and procedures for survey control;
- (c) Procedures for the Contractor and Engineer to 'sign off' approved construction works.

In preparing the Quality Control Plan the Contractor shall take into consideration the requirements and obligations of the Engineer in respect of checking and inspection of the Works.

The Contractor shall appoint a Quality Control Manager who shall be responsible for ensuring that the quality control procedures set out in the Quality Control Plan are adhered to. The Quality Control Manager shall have independent control of all quality control activities.

APPENDIX 1

LIST OF STANDARDS

The Contractor shall provide for the use of the Engineer technical publications, standards and codes of practice, in the media stipulated by the Engineer. In all cases original publications of the edition currently in force are assumed. The type of publications requested may include:

- Sri Lankan Standards
- British Standards
- AASHTO publications
- ASTM publications
- FIDIC publications
- HMSO publications
- TRL publications

The publications shall become the property of the Employer upon completion of the Contract. All technical publications, standards and codes of practice will become the property of the Employer.

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APPENDIX 2

Offices for the Employer and Engineer

The offices shall be provided and maintained in accordance with the following schedules.

Office Type 1

DESCRIPTION	No.
Temporary / Rented Main Office (Type 1) with Three (3) fixed telephone lines and one (1) ADSL line or Internet Facility and a Fax Machine.	
Gross floor area 180 sq.m. minimum located close to the Works or as directed by the Engineer	1
Office rooms (Air conditioned)	1
Office room partially or fully covered (Air conditioned)	5
Conference rooms min 25 person capacity (Air conditioned)	1
Toilets – male	2
Toilets – female	1
Storeroom	1
Lunchroom/Pantry	1
Furniture	
Office desks, L shape, 150x75cm with 130x45 cm computer credenza and each having at least 3 drawers, one of which is lockable.	2
Office desks, each having at least 3 drawers, one of which is lockable.	12
Computer tables	5
Executive chairs, gas lift height adjustment	6
Chair office use	5
Visitor's Chairs plastic	6
Conference Table (For 12 Persons)	1
Dining Table and 6 Chairs	1
Steel Filing cabinet with 4 drawers	2
Bookshelves, 3 / 5 shelves	11
Storage cabinets	3
Conference Chairs	12
Bulletin board 0.9x0.6m.	1
White marker board 1.2mx0.8m.	1
Equipment (New or as new)	
Desk top Computer with Internet facility, Intel Core i7 processor, 8GB DDR3 RAM, 500Gb Hard Drive, DVD Writer, On-board Network Card, Mouse and Key Board, 6 x USB ports, On-board VGA card, 17" LCD monitor, with licensed MS Windows 7 Professional and MS Office Professional 2010	3

Section 6 - Employer's Requirements

Laptop with internet facility, Intel Core i7-4500U 1.8Ghz up to 2.6Ghz 4th Generation Processor, 8GB DDR3 upgradeable up to 16GB, 15.6" HD WLED screen, 1TB SATA 5400 rpm HD, Internal tray-load DVD+/-RW, 2-3 hour battery life, 6-cell Li-ion battery pack 65WHr, (2) USB 3.0 + (2) USB 2.0, RJ45 Ethernet, HDMI™ v1.4a, Combination headphone/microphone jack, Kensington Security Lock, Native HD 1.0MP webcam with digital microphone, Media Card Reader 8 in 1, Windows® 7 Professional OEM License, MS Office Professional 2010	1
Mobile phone including SIM card with map (navigation), Display, TFT capacitive touch screen, 16M colors, Sounds Vibration, MP3, WAV ringtones, Memory Internal 4 GB storage, 768 MB RAM, External memory supporting upto 64GB, Data GPRS, EDGE, 3G, Wi-Fi 802.11 b/g/n, Wi-Fi Direct, DLNA, Wi-Fi hotspot, Connectivity Bluetooth, USB, Camera 12 MP, 2592x1944 pixels, autofocus, LED flash	8
LAN (24 hub) wiring loops for desktop computers and printers	1
Broadband wireless internet connection linked to the office LAN with capacity to provide internet services to all computers on network.	1
A3/A4 Ink jet colour printer.	1
A4 laser jet printer with hub	1
Heavy duty photocopier with laser/digital technology, minimum 50 copies per minute, magnification of +25 to 400%, original print area A3 and paper size A3 to A6, resolution 600dpi minimum, continuous copying of 999 pages maximum, scan memory of 100MB minimum	1
Waste paper baskets	10
Window blinds/curtains to all windows.	1 set
Book binding equipment and accessories	1
Heavy duty stapler	1
Heavy duty puncher	1
Kitchen Equipment	
Kitchen equipment including electric kettle, 6 place tea set, cutlery, and kitchen disposal bin, kitchen table and work surfaces, sink unit with draining board, Refrigerator 8 cu.ft Capacity. 2 nos Hot and cold water dispensers.	1 set
Safety Equipment	
Safety shoes(pairs)	12
Safety helmets.	12
Water/ windproof jacket and over trousers.	12
Fire extinguishers (CO2 fire and Water fire)	6 sets
First aid box – stocked.	1

Note: All these facilities will be reverted to Contractor once the project completed or at the time decided by Employer/Engineer

Note 2: Toilets for Types 1 & 2 Offices

Each toilet shall be fitted with a commode, washbasin, bidet hose, wall mirror, toilet roll holder and towel rail.

Office Type 2

DESCRIPTION	No.
Temporary / Rented Office (Type 2) with Three (3) fixed telephone lines and one (1) ADSL line or Internet Facility and a Fax Machine.	
Gross floor area 150 sq.m. minimum located close to the Works or as directed by the Engineer	1
Office rooms (Air conditioned) partitioned or fully covered	4
Conference rooms (Air conditioned)	1
Toilets – male	1
Toilets – female	1
Store room	1
Lunch room/Pantry	1
Furniture	
Office desks, each having at least 3 drawers, one of which is lockable.	8
Office chairs	11
Visitor's Chairs plastic	6
Conference Table (For 8 Persons)	1
Dining Table and 4 Chairs	1
Steel Filing cabinet with 4 drawers	3
Bookshelves, 3 shelves / 5 shelves	14
Storage cabinets lockable	3
Conference Chairs	8
Bulletin board 0.9x0.6m.	1
White marker board 1.2mx0.8m.	1
Equipment	
Desk top Computer with Internet facility, Intel Core i7 processor, 8GB DDR3 RAM, 500Gb Hard Drive, DVD Writer, On-board Network Card, USB Mouse and Key Board, 6 x USB ports, On-board VGA card, 17" LCD monitor, with licensed MS Windows 7 Professional and MS Office Professional 2010	4
USB	2
LAN (24 hub) wiring loops for desktop computers and printers	1
Broadband wireless internet connection linked to the office LAN with capacity to provide internet services to all computers on network.	1
A4 laser jet printer with hub	1
Heavy duty photocopier with laser/digital technology, minimum 50 copies per minute, magnification of +25 to 400%, original print area A3 and paper size A3 to A6, resolution 600dpi minimum, continuous copying of 999 pages maximum, scan memory of 100MB minimum	1

Section 6 - Employer's Requirements

Wastepaper baskets	8
Window blinds/curtains to all windows.	1 set
Book binding equipment and accessories	1
Heavy duty stapler	1
Heavy duty puncher	1
Kitchen Equipment	
Kitchen equipment including electric kettle, 6 place tea set, cutlery, kitchen disposal bin, kitchen table and work surfaces, sink unit with draining board, Refrigerator 8 cu.ft Capacity, Hot and cold water dispenser.	1 set
Safety Equipment	
Safety helmets	10
Safety shoes (pairs)	10
Water/ windproof jacket and over trousers.	10
Fire extinguishers (CO2 fire and Water fire)	3 sets
First aid box – stocked.	1

Note 1: All these facilities will be reverted to Contractor once the project completed or at the time decided by Employer/Engineer.

Note 2: Toilets for Types 1 & 2 Offices

Each toilet shall be fitted with a commode, washbasin, bidet hose, wall mirror, toilet roll holder and towel rail.

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APPENDIX 3

HOUSING FOR THE EMPLOYER AND THE ENGINEER

The houses for the Employer and Engineer shall be provided, furnished and equipped in accordance with the following schedules:

House Type 1

Description	No.
House (Type 1) of gross floor area 180sq.m minimum . Temporary / Rented with telephone facility.	
Living/Dining Room	1
Bedroom (Air conditioned)	4
Attached Toilets/Bathroom	2
Common Toilets/Bathroom	1
Kitchen	1
Servant's room	1
Servant's Toilet	1
FURNISHING	Nos.
Living/Dining Room	
Lounge Suite, 1 No. 3 Seater, 2 No. 1 Seater, 1 No. coffee table	1
Dining Table, 2.0 m x 1.2 m	1
Dining Room Chairs Cushioned	4
Bookcase, 1.0m x 2.9 m x 0.35 x 3 shelves	1
40" colour TV of a reputed make with table/stand	1
Bedrooms with air conditioning	
Beds, Double with mattress	4
Bedside stool	4
Wardrobe with mirror	4
Bed Sheets (Double) Cotton	8
Pillow with Cases	8
Mosquito Nets double	4
Wastepaper basket	4
Writing table and chair	4
Table lamp	4
Pantry	
Store shelves	As reqd.
Electric Iron and ironing board	1 Set
Washing Machine 5 kg or more	1
Pantry Cupboards	Set
Refrigerator 8 cu.ft Capacity	1
Hot and cold-water dispenser	1
Sink Unit with draining board, with cold water taps and wastewater outlet	1
Kitchen	
Kitchen Cupboards	Set
Kitchen Table	1
Chairs	2
Stainless steel Sink Unit with draining board with cold water taps and wastewater outlet	1

Section 6 - Employer's Requirements

Gas Cooker with 3- heater rings, grill and Oven complete (with two gas cylinders).	1
Electric Kettle 2 – litre capacity	1
Cooking utensils complete set for 6 persons (Stainless steel)	Set
Crockery complete set for 6 persons	Set
Cutlery complete set for 6 - Persons (Stainless steel)	Set
Tea Service complete set for 6 - Persons	Set
Plate Rack	1
Servant Accommodation	
Beds single with mattress and two pillows	1
Wardrobe with mirror	1
Table and Chair	1
Bed Sheets (single)	2
Pillowcases	4
Mosquito Net	1
General	
Rugs complete Set	1
Doormats complete Set	1
Curtains complete Set	1
Cleaning Equipment complete Set	1
Toilet	
Cleaning Equipment complete Set	1
Kitchen	
Cleaning Equipment complete Set	1

Note 1: All these facilities will be reverted to Contractor once the project completed or at the time decided by Employer/Engineer.

House Type 2

HOUSE (TYPE 2) OF GROSS FLOOR AREA 150SQM MINIMUM TEMPORARY / RENTED WITH TELEPHONE FACILITY	
House (Type 2) of gross floor area 150sqm minimum Temporary / Rented with telephone facility	
Living/Dining Room	1
Bed Room - Air Conditioned	3
Attached Toilets/Bathroom	1
Common Toilets/Bathroom	1
Kitchen	1
Servant's room	1
Servant's Toilet	1
FURNISHING	
Living/Dining Room	
Veranda chairs four number with one tea pot	1
Dining Table 6 person capacity	1
Dining Room Chairs Cushioned	6
Book case, 3 shelves	1
Writing Desk with chair	1
Colour TV	1
Bedrooms with air conditioning	
Beds, with mattress and two pillows	3
Bedside stool	3
Wardrobe with mirror	3
Bed Sheets	6
Pillow Cases	12
Mosquito Nets	3
Waste paper basket	3
Pantry	
Store shelves	As reqd.
Electric Iron and ironing board	1 Set
Washing Machine 5 kg or more	1
Pantry Cupboards	Set
Refrigerator 8 cu.ft Capacity (reputed make)	1
Hot and cold water dispenser	1
Kitchen	
Kitchen Cupboards	Set
Kitchen Table	1
Chairs	2
Stainless steel Sink Unit with draining board with cold water taps and waste water outlet	1
Gas Cooker with 3- heater rings, grill and Oven complete (with two gas cylinders).	1
Electric Kettle 2 – litre capacity	1
Cooking utensils complete set for 6 persons (Stainless steel)	Set
Crockery complete set for 6 persons	Set
Cutlery complete set for 6 – Persons (Stainless steel)	Set

Section 6 - Employer's Requirements

Tea Service complete set for 6 - Persons	Set
Plate Rack	1
Servant Accommodation	
Beds single with mattress and two pillows	1
Wardrobe with mirror	1
Table and Chairs	1
Bed Sheets (Cotton)	2
Pillow Cases	4
Mosquito Nets	1
General	
Rugs complete Set	1
Doormats complete Set	1
Curtains complete Set	1
Cleaning Equipment complete Set	1
Toilet	
Cleaning Equipment complete Set	1
Kitchen	
Cleaning Equipment complete Set	1

Note 1: All these facilities will be reverted to Contractor once the project completed or at the time decided by Employer/Engineer.

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House Type 3

HOUSE (TYPE 3) OF GROSS FLOOR AREA 150SQM MINIMUM TEMPORARY / RENTED WITH TELEPHONE FACILITY	
House (Type 3) of gross floor area 150 sqm minimum Temporary / Rented with telephone facility	
Living room	1
Bedroom - Air Conditioned	3
Attached Toilets/Bathroom	1
Common Toilets/Bathroom	1
Kitchen	1
Servant's Accommodation	1
Servant's Toilet	1
FURNISHING	
Living/Dining Room	
Lounge Suite, 1 No. 2 Seater, 2 No. 1 Seater, 1 No. coffee table	1
Dining Table, 2.0 m x 1.2 m	1
Dining Room Chairs Cushioned	4
Bookcase, 3 shelves	1
Writing Desk, 1.5m x 0.75 m	1
Colour TV (reputed make)	1
Visitors Chairs (Plastic)	6
Bedrooms with air conditioning	
Beds, single with mattress and two pillows	3
Bedside Cabinet	3
Dressing Table with mirror and stool	1
Wardrobe with fittings 2m high, 1.0m wide, 0.35 deep, with shelves and two doors	3
Bed Sheets (Single) Cotton	6
Pillowcases	8
Mosquito Nets Single	3
Wastepaper basket	3
Pantry	
Store shelves	As reqd.
Electric Iron and ironing board	1 Set
Washing Machine 5 kg (reputed make)	1
Pantry Cupboards	Set
Glass Cabinet	1
Refrigerator 8 cu.ft Capacity (reputed make)	1
Hot and cold-water dispenser	1
Kitchen	
Kitchen Cupboards	Set
Kitchen Table	1
Chairs	2
Stainless steel Sink Unit with draining board with cold water taps and waste water outlet	1
Gas Cooker with 3- heater rings, grill and Oven complete (with two gas cylinders).	1
Electric Kettle 2 – litre capacity	1
Cooking utensils complete set for 6 persons (Stainless steel)	Set
Crockery complete set for 6 persons	Set

Section 6 - Employer's Requirements

Cutlery complete set for 6 - Persons (Stainless steel)	Set
Tea Service complete set for 6 - Persons	Set
Plate Rack	1
Supply of bottled water for the dispenser	As reqd.
Servant Accommodation	
Beds single with mattress and two pillows	1
Wardrobe with fittings 2m high, 1.0m wide, 0.35m deep, with shelves and two doors	1
Chairs	1
Occasional Table	1
Bed Sheets (Cotton) Single	2
Pillowcases	4
Mosquito Nets single	1
General	
Rugs complete Set	1
Doormats complete Set	1
Curtains complete Set	1
Cleaning Equipment complete Set	1
Toilet	
Cleaning Equipment complete Set	1
Kitchen	
Cleaning Equipment complete Set	1

Note 1: All these facilities will be reverted to Contractor once the project completed or at the time decided by Employer/Engineer.

Bathroom Fittings

Each Bathroom for all type of houses shall be fitted with the following fixtures of reputed make to the approval of Engineer.

- One Wall mirror
- One toothbrush holder
- One glass shelf
- One towel rail
- One toilet roll holder
- One commode
- One wash basin
- One shower
- One lavatory brush
- One bidet hose

The servant's bathroom shall be fitted with the following

- One pedestal toilet or commode
- One wall mirror
- One glass shelf
- One shower
- One towel rack
- One bidet hose

APPENDIX 4

VEHICLES FOR THE EMPLOYER AND THE ENGINEER

Vehicles shall be provided in accordance with the following schedule.

VEHICLE TYPE	BASIC SPECIFICATION
Type 1	2-wheel drive Sedan Car, 1500cc (minimum) Petrol engine, air conditioned, 4 seats, 5 speed automatic transmission, equipped with reverse camera and dual air bag.
Type 2	4-wheel drive double cab pickup, 1800cc (minimum) diesel engine, air-conditioned, 4 seats, 5-speed manual / automatic transmission with high/low ratio transfer gear, 4 door with step boards, cover to load platform, equipped with reverse camera with dual air bags.
Type 3	4-wheel drive Sport Utility Vehicle (SUV) 1800cc (minimum) diesel engine, air-conditioned, 5 seats, 5-speed automatic transmission with high/low ratio transfer gear, 5 door with step boards, cover to load platform, equipped with reverse camera with dual air bags.
Type 4	125cc four stroke petrol engine motorcycle with two crash helmets
Type 5	2 Wheel drive passenger Van 1800cc (Minimum) Diesel Engine, Air-conditioned, 6 seats, 4 Doors and manual / automatic transmission.

APPENDIX 5

LABORATORY

1. General

The Main Laboratory, as required by the Contract, shall be furnished and maintained with all equipment, apparatus and supplies necessary to permit proper execution of all standard tests required by the Specifications. Lists of specific laboratory equipment described in the Specifications are intended as an aid to the Contractor and should not be construed as a binding list or as a recommendation to purchase from a specific manufacturer. The Contractor shall supply the items of equipment, apparatus etc which are in good condition and approved by the Engineer.

The quality control of materials used in road construction projects requires specialized test equipment. The test equipment shall be calibrated in accordance with the requirements of standards and testing specifications and maintained in good working condition throughout the contract.

The laboratory, fittings and equipment shall be operated by the Contractor in accordance with the contract and carry out all quality control tests necessary under the Quality Assurance System. In addition, the Engineer may require additional tests to be carried out for audit checks on the Quality Assurance System and for this purpose he will be fully entitled to get these done in his presence as and when required by him. The representatives of the Engineer/Employer shall have free access to the laboratories, as and when required, for carrying out any tests, inspections, verifications, quality audits etc. during the period of the implementation of the project.

2. List of Laboratory Equipment

The following listing of test equipment is given as a check list of likely required items and is related to the construction control specified for the Project. The equipment required and the number of individual items will be as directed by the Engineer. Many of the items are easily broken or otherwise rendered unusable and replacement shall be readily available, so that the control testing of critical construction is not interrupted.

3. Asphalt Laboratory

The Specifications state that all asphalt delivered must have the supplier's test certificate giving the parameters of the asphalt. Failure to produce these certificates may mean that the Contractor has to test the asphalt at his own expense. This test could also be required on any disputed asphalt. The asphalt tests which may be required are as follows:

- a) Softening point
- b) Ductility
- c) Loss on heating
- d) Drop in penetration after heating
- e) Solubility in carbon disulphide
- f) Ash content
- g) Specific gravity
- h) Penetration

The laboratory equipment for testing of Asphaltic materials and mixtures shall be to the approval of the Engineer but given the limited properties of Asphalt involved in the project, appropriate external sources may be sought with prior approval of the engineer.

Asphalt Mix Design by the Marshall Method must be carried out in the laboratory prior to getting approval for the mix design. Re-checking the mix design several times would be necessary. Further new mix designs are called for where the quality of aggregate changes.

Section 6 - Employer's Requirements

Main Laboratory		
NOs.	Description	No
A. Laboratory		
1	Laboratory of gross floor area 125 sq.m. located with area divided into (a) office, (b) soils and materials lab, (c) bitumen lab, (d) and where required, (e) asphalt lab	1
2	Washroom/Toilet	1
3	Pantry	1
4	Storeroom	1
B. Furnishing and Equipment		
1	Office desks 120x7cm and each having at least 3 drawers, one of which is lockable	4
2	Computer desks	1
3	Typist chairs, gas lift height adjustment, arm rests	6
4	Bench Stools	6
5	Steel filing cabinets with four drawers	2
6	Book shelves 1m x 2m with 3 shelves and lockable cupboard at base	1
7	Storage cabinets 1mx2m, two doors, lockable	1
8	Laboratory benches sufficient for all testing equipment	As required
9	Laboratory sinks with cold tap(minimum)	2
10	Bulletin board 0.9x0.6m	1
11	White marker board 1.2mx0.8m	1
12	Desktop computer, Intel core i7 processor ,8GB DDR3 Ram,500GB Hard drive, DVD RW, Modem,101 Key English Key board, 6x USB Ports, On board VGA Card ,17" Flat screen monitor, Microsoft mouse with licensed MS Windows 7 Professional and MS office Professional and MS office Professional 2010	1
13	A4 laser jet printer with hub	1
C. Safety Equipment		
SE1	Safety Helmets	6
SE2	Water/wind proof jacket and over trousers	6
SE3	Fire extinguishers – one per room	7
SE4	First Aid box -Stocked	1
SE5	Safety Boots (pairs)	6
D. General Laboratory Equipment		
GLE2	Rubber mallet (100mm ϕ)	2
GLE3	Scoops (cast Aluminum), 80*130*50mm (round and flat 04 Nos. each)	2 sets
GLE4	Measuring flasks (Glass) <ul style="list-style-type: none"> • 1 Nos 100ml, • 1 Nos 250ml, • 1 Nos 500ml, • 1 Nos 1000ml Measuring Cylinders (Plastic) <ul style="list-style-type: none"> • 2 Nos 250ml, (Graduation 1ml), • 2 Nos 500ml, Graduation 5ml), • 2 Nos 1000ml, (Graduation 10ml) 	1 set
GLE 5	Digital Vernier Caliper 150mm	1
GLE 6	Steel ruler 300mm	3
GLE 8	Sample splitter 13mm, Nos. of slots 12 with three pans and one flat scoop (BS812 of 1989, part 102)	1
GLE 9	Sample splitter 50mm, Nos. of slots 08 with three pans and one flat scoop (BS 812 of 1989, part 102)	1
GLE 10	Galvanized steel trays 24*40cm	6
GLE 11	Electric forced draught oven-capacity 125 liters, 1500 w, 230 v, 50 Hz. 1-ph (with thermometer)	1
GLE 12	Electronic Field scale balance capacity -35kg accuracy 1gm (Rechargeable battery include)	2
GLE 13	Electronic balance of 5000gm capacity accurate to 0.1gm with a tare correction of not less than 100gm (Rechargeable battery include)	2

Section 6 - Employer's Requirements

GLE 14	Electronic balance of 1500gm capacity accurate to 0.01gm 230 v, AC, 50 Hz, 1-ph (Rechargeable battery include)	2
GLE 15	Flexible spatula 100mm	2
GLE 16	Glass plate - 400*600*6mm	2
GLE 18	175mm diameter porcelain bowl together with a rubber head pestle	1
GLE 19	Mixing bowl-dia. 225mm, height 100mm wall thickness not less than 0.75mm stainless steel	1
GLE 22	Neoprene gloves, 300mm , men's size	2
GLE 23	Rubber gloves , 300mm men's size	2
GLE 25	Metal Thermometer 0-250°C 50mm diameter dial and stainless steel stem of approx. 200mm length and 5mm diameter	2
GLE 26	Digital Thermometer 0-250°C liquid crystal display, complete with penetration probe , battery and case	2
GLE 27	Glass thermometer 0-110°C	2
GLE 28	Glass thermometer 0-250°C	2
GLE 29	Bulk density measure 30 litre capacity	1
GLE 30	Bulk density measure 07 litre capacity	1
GLE 31	Sand Absorption cone and tamping rod	1
GLE 35	Brass wire brush (for cleaning of coarse sieve)	2
GLE 36	Soft hair sieve brush 9for cleaning of fine sieves)	2
GLE37 7	Sample tray, 610*610*63mm shall be made of heavy duty galvanized steel plate	8
GLE 38	Sample tray 254*254*38mm shall be made of heavy duty galvanized steel plate	8
GL40	Desiccator,250ml	1
E Soil testing equipment		
ST 1	<p>California bearing test equipment (complying with BS 1377 of 1990 part 04) or AASHTO T193-99</p> <ul style="list-style-type: none"> • Multi speed compression tester 50kN capacity testing speed adjustable from 0.1 to 51mm/Min, 230V, 50-60 Hz , 1ph for CBR test, with accessories, Load ring 0-10 KN- 01 No., Load ring 0-50 KN -01 No., Penetration piston complete with dial gauge holders and dial gauge 30x0.01mm • CBR moulds body (plated steel) 1D 152mm x 127 mm high (Nos 12) • Tripod for swell measurements, with 25mm travel dial gauge readable and accurate to 0.01mm • Annular Surcharge weight (2Kg),-(Nos 6) • Split Surcharge weight (2kg) -(Nos 6) • Surcharge weight (1kg), Annular type (Nos 6) • Metal plugs with handle (150 mm Diameter x 50 mm high • Cutting collar • Base plate tool • C-spanners • Swell plate (perforated plate with adjustable stem) • Straight edge (3 x 30 x 300mm) • Extension collar 152mm ID x 50mm high • Perforated base plate • Solid base or top plate • Soaking Tank for at least 20 CBR moulds <p>One set of Parts Catalogue & Operation and Service Manual shall be provided Soil Testing Equipment</p>	1
ST 2	<p>Compaction Test (complying with BS 1377-1990 part 04 or AASHTO T180-01</p> <ul style="list-style-type: none"> • Automatic Proctor/CBR compactor- No Required • Modified compaction rammer BS 1377-1990 part 04 • Modified compaction moulds BS 1377-1990 part 04 • Sample extruder with capacity of extracting specimens 100mm to 150mm in diameter, complete with adopter and plates • Mixing trowels • Palette knife (20mm wide and 100mm long) • Aluminium moisture content cans with lids (75mm*25mm with lids) -75 nos • Aluminium scoop <p>One set of Parts Catalogue & Operation and Service Manual shall be provided</p>	2 sets

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ST 3	<p>Standard Compaction Test Set (complying with BS 1377)</p> <ul style="list-style-type: none"> • Standard compaction rammer • Standard compaction moulds + collar + base <p>One set of Parts Catalogue & Operation and Service Manual shall be provided</p>	1 set
ST 4	<p><u>Field Density test equipment BS1377-1990 part 9</u> (for fine and medium grained soil)</p> <ul style="list-style-type: none"> • Sand pouring cylinder, internal diameter, 150mm • Metal dibber tool for excavating hole • Pointed steel rod about 250mm long and 10mm in diameter and having a wooden handle • Scraper for leveling ground • calibrating container to match with the above pouring cylinder • Field density plate or metal tray square shape, 50mm deep, with a central hole exactly match with the above pouring cylinder • Density sampling spoon • Rubber headed mallet • Club hammer • Density chisel • 2" paint brush <p>One set of Parts Catalogue & Operation and Service Manual shall be provided</p>	2 sets
STE 5	<p>Washing sieve 200*200mm, brass or stainless steel wire cloth, aperture size 0.075mm</p> <ul style="list-style-type: none"> • Diameter : 200mm • Height : 200mm <p>Complying with BS 410</p> <p>One set of Parts Catalogue & Operation and Service Manual shall be provided</p>	1 set
STE 6	<p><u>Atterberg limit test equipment complying with (BS 1377-1990 part 02 or ASTM D 423 re-approved 1972</u></p> <ul style="list-style-type: none"> • Liquid limit device (hand operated type) • Palette knives 100mm long, 30mm wide • Casagrande grooving tool • ASTM Grooving Tool • gauge made of brass /stainless steel • Evaporating dish (Diameter 150mm) • 500mm square glass plate (thickness 10mm) • Wash bottle (plastic) • Stainless steel rod 3mm diameter and 100mm long • Mortar and rubber headed pestle <p>One set of Parts Catalogue & Operation and Service Manual shall be provided</p>	1 set
STE 7	<p><u>Dynamic Cone Penetrometer (DCP) equipment</u></p> <ul style="list-style-type: none"> • 16mm diameter rod with a cone having a base of 20mm diameter and apex angle of 60° at one end and shall be capable of being driven into the ground or the pavement with a 8kg built-in hammer falling along a guide rod through a height of 575mm • An extension rod of length 1.0m two Nos. • Extra DCP Cones (60°) <p>One set of Parts Catalogue & Operation and Service Manual shall be provided</p> <p>This equipment shall be similar to the design by the Transport and Road Research Laboratories England</p>	2 sets
STE 10	Drying pans 400x400x75 mm deep	10
STE 11	Wash Bottles	2

F Concrete Testing Equipments		
CTE 1	<p><u>Concrete compression testing machine to determine the compressive strength of concrete cubes, and cylinders</u></p> <p>Machine shall be completed with following requirements</p> <ul style="list-style-type: none"> • Machine shall be capable to apply the force up to 2000kN for compressive test • Digital display unit capable to measure up to 2000kN for compressive strength, having a readability of 0.1kN for lower ranges and 1kN for higher ranges. • Capable to store minimum of 200 test results in memory and enable to download the data to a PC a suitable printer <p>Machine shall be supplied with following accessories</p> <ul style="list-style-type: none"> • Sets of distance pieces for testing specimen size 300mm,200mm,150mm, 100mm <p>One set of Parts Catalogue & Operation and Service Manual shall be provided</p>	1
CTE 2	Steel cube moulds 150*150*150 mm (BS 1881 part 108:1983)	36
CTE3	Slump cones and associated equipment (slump cone, base plate, tamping rod) BS 1881 part – 102	3
CTE 4	Curing tank for test cubes (3m x1.5m x 1m)	Build up as required
CTE 5	Flakiness index gauge	1
E Bitumen Testing Equipment		
BTE 1	<p>Standard Penetrometer (ASTM D5-95, AASHTO Designation T49-97) with micrometer vertical adjustment and penetration digital measurement</p> <ul style="list-style-type: none"> • Penetrometer needles • Thermometer, ASTM 17C (+19 to 27 C0) • Thermometer, ASTM 63C (-8 to +32 C0) • Transfer dish • Stop watch • Sample containers dia: 55mm, internal depth 35mm • Sample containers dia: 70mm, internal depth 45mm • Thermostatically controlled digital Circulation water bath 230 v, 50-60 Hz, 1Ph <p>One set of Parts Catalogue & Operation and Service Manual shall be provided</p>	1

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BTE 2	<u>Softening point apparatus (Ring and Ball apparatus)</u> Electric Heaters with Magnetic stirrer ASTM D36-95, AASHTO designation T53-96) (brass ring, steel ball, ball centering guide, ring holder, flat brass pouring plate, glass vessel bath) and a thermometer conforming to ASTM E1, 15C (+2 to +80 C0) One set of Parts Catalogue & Operation and Service Manual shall be provided	1
BTE 3	<u>Specific Gravity Test (complying with ASTM D 70 -1990)</u> <ul style="list-style-type: none"> Specific gravity glass bottle with glass stopper, (24ml-30ml) Hubberd Carmic specific gravity bottle – 25ml capacity Specific Gravity test thermometer (Bitumen) shall conform to ASTM E1, 63C. One set of Parts Catalogue & Operation and Service Manual shall be provided	2
BTE 6	Ductility apparatus	1
BTE 7	Rotating Oven –Temp 10 ⁰ -200 ⁰ C (30x30x30 cm ³	1
F Asphalt Concrete Testing Equipment		
ACTE 1	Marshall Test Equipment (complying with ASTM D 1559- 1989) It shall be used for Marshall test on asphalt concrete including 06 nos of moulds and accessories, specimen extractor, compaction hammer (electrically operated), compaction pedestal, specimen mould holder, breaking head, testing machine and proving ring, flow meter with break, mixing apparatus, containers for heating bitumen, metal thermometer, electrically heated water bath, thermometers for water bath, scoop and spoon all conforming to ASTM D1559 -89 Note: The water bath shall be thermostatically controlled to maintain a temperature of 60 ± 0.05C fitted with trays to supports Marshall specimens in such a manner that a good circulation of water around them is assured. The bath is to be deep enough to allow at least 25cm depth of water to cover the trays and a pump stirrer is to be fitted to ensure continuous circulation of water. One set of Parts Catalogue & Operation and Service Manual shall be provided	1
ACTE 2	<u>Extraction Test</u> Centrifuge extractor complying with ASTM D 2172- 1995 Capacity : 1,500 gms Voltage : 220 – 240 v, 50-60 Hz, 1Ph, 550 w Speed Control up to 3600 r.p.m Filter disks 5 packs with 100 pieces in each pack. One set of Parts Catalogue & Operation and Service Manual shall be provided	1
ACTE 3	Petrol Driven Core Cutting Machine A petrol driven core cutting machine 3hp, 2stroke engine, supplied complete with water swivel including 100mm diameter core bits (03 Nos) 150mm diameter core bits (03 Nos). Core sample extruder Note: The core bits shall be well fitted to the core cutting machine. One set of Parts Catalogue & Operation and Service Manual shall be provided	1

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ACTE 4	<u>Specific Gravity Test Equipment (Bituminous Mix)</u> It shall be used in determining the theoretical maximum specific gravity and density of bituminous paving mixtures complying with ASTM testing standard D2041-90 <ul style="list-style-type: none"> • TypeE-4500ml metal vacuum pyknometer with lid clear (poly methyl metacrylate lid) • Vacuum pump capable of evacuating air from the vacuum container to a residual pressure of 30mm of Hg • Residual pressure manometer to be connected directly to the vacuum vessel and capable of measuring residual pressure down to 30mm of Hg • Manometer or vacuum gauge suitable for measuring the vacuum being applied at the source of the vacuum. • Balance, with ample capacity and shall be equipped with a suitable suspension apparatus and holder to permit weighing the sample while suspended from the center. One set of Parts Catalogue & Operation and Service Manual shall be provided	1
G Aggregate Testing Equipment		
ATE 1	<u>Aggregate Impact Value (AIV) Test Equipment</u> <u>Complying with BS 812 of 1990</u> This equipment shall include the following <ul style="list-style-type: none"> • Test machine 01 • Cylindrical steel cup 01 • Cylindrical metal measure 01 • Straight metal tamping rod 16mm dia, 600mm long One set of Parts Catalogue & Operation and Service Manual shall be provided	1 set
ATE 2	<u>Flakiness Index gauge (complying with BS 812 of 1990)</u> <u>Specific gravity and absorption of aggregate BS 812 Part 02 of 1990</u> It shall be used in determining specific gravity if aggregate, including <ul style="list-style-type: none"> • Wire basket, 8" dia* 8" height approximately • Sand absorption cone made of brass conforming to BS 812 • Tamping rod for use with cone conforming to BS 812 One set of Parts Catalogue & Operation and Service Manual shall be provided <ul style="list-style-type: none"> • Buoyancy balance with frame 	1 set
ATE 3	Electrical sieve shaker for of capable using 200mm & 300mm dia sieves	1set
ATE 4	Set 200 mm B.S. sieves 20,14,10,9.5,6.3,4.75,3.35,2.36,2.0,1.7,1.18,0.6,0.425,0.3,0.15, 0.075 Lid and pan Note: receiver pan and the lid shall be so constructed as to permit nesting all of them to form 1 unit	1 set
ATE 5	Set 300 mm B.S. sieves 75, 50, 37.5, 28, 25, 20, 19, 16, 14, 12.5, 10 with lid and pan Note: receiver pan and the lid shall be so constructed as to permit nesting all of them to form 1 unit	1 set
ATE 6	<u>Specific gravity and absorption of aggregate BS 812part 02 1990</u> It shall be used in determining specific gravity of aggregate, including one set of Parts Catalogue & Operation and Service Manual shall be provided	1 set
ATE 7	<u>Field Density Test for Coarse Material</u> <u>Field Density Test equipment BS1377-1990 part 9</u> <ul style="list-style-type: none"> • sand pouring cylinder, internal diameter,200mm 	2 sets

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	<ul style="list-style-type: none"> • Metal dibber tool for excavating hole Pointed steel rod about 250mm long and 10mm in diameter and having a wooden handle • Scraper for leveling ground • 200mm diameter calibrating container Field density plate or metal tray 500mm square, 50mm deep, with a 200mm central hole • Density sampling spoon large size. • Rubber headed mallet Club hammer • Density chisel • 2" paint brush <p>One set of Parts Catalogue & Operation and Service Manual shall be provided</p>	
ATE 8	Aggregate crushing value test apparatus inclusive of measuring mould and tamping rod Complying with BS 812 part 110 One set of parts catalogue AND Operation manual shall be provided	1 set
ATE 10	Electronic scale capacity 20kg, graduation 1 gm One set of Parts Catalogue & Operation and Service Manual shall be provided	1
ATE 11	Wash Sieves (75 microns)	2
ATE 12	Sieve Brush	3

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APPENDIX 6

SURVEY EQUIPMENT FOR THE ENGINEER

The survey equipment listed below is only tentative and the Engineer will decide and approve the items of equipment to be purchased. The equipment shall revert to the Contractor at the completion of the Contract.

Survey Equipment

DESCRIPTION	No.
Total Station with the following accuracy: -	1
Measuring range (using one AP01 prism) 1m to 2000m.	
Display resolution (selectable) 1" /0.2mgon/0.005mil, 5"/1 mgon/0.02 mil	
Accuracy (ISO/DIS 12857-2:1995) H&V 3"/1 mgon, Magnification 30x	
Accessories for total station	
Rechargeable batteries for above	2
Charger for above	1
Single or double prism – tilt type with carrying case	2
Targets with carrying case	2
Interchangeable tribraches with optical plummet telescope	2
Tripods telescopic type	3
Pole adapter for targets and prisms	2
Telescopic ranging rods	2
Automatic level with accessories	2
Camber measuring boards, 3.0m fitted with spirit levels and adjusters	2
Levelling staff – 5m aluminium telescopic	4
Circular bubble, clip on type for pole	4
Circular bubble, angular type for staff	4
50m fibre glass box tape	2
30m fibre glass box tape	4
Brass plumb bobs	1
Surveyors road wheel	1
Camber measuring boards, 3.0m fitted with spirit levels and adjusters	2
Hammer 2kg	2
3m aluminium straight edges with handles and with spirit level and 2 measuring wedges	2
Set of axes, shovels, mamoties etc.	2
Pegs and stakes	As reqd
Boxes of Yellow marking crayon and white chalk	As reqd

APPENDIX 7

SURVEY AND DESIGN SPECIFICATIONS

This Appendix to the Particular Specifications defines the general design specifications for survey and design required by the contract under Particular Specifications Clause 117. The details contained in this section shall be read in conjunction with Part II Section 6.3.1 Standard Drawings and Section 6.3.2 Drawings of the bidding documents.

1 Kilometre Referencing System

All kilometre reference points and road lengths given in the Bidding Document are not to be considered as precise and they may be amended by the Contractor after completing the detailed topographical survey that forms part of the design works.

2 General Design Obligations

2.1 Design Responsibility

The Contractor shall carry out and be responsible for the design of the Works which shall be carried out in accordance with the Design Specification and all other requirements of this Contract.

On completion of the design, the Contractor shall provide a certificate to the Engineer confirming that it has exercised due care in the preparation of the design.

The surveys and investigations to be carried out by the Contractor as detailed in Section 117 of the Particular Specifications are deemed to be part of the design of the Works.

Design shall be carried out by qualified designers who are professional engineers. For each part of the Works, the prior consent of the Engineer shall be obtained to the designer and design Subcontractor. If they are not named as such in the Contract, nothing contained in the Contract shall create any contractual relationship or professional obligations between any designer or design Subcontractor, and the Employer.

The Contractor holds itself, its designers and design Subcontractors as having the experience and capability necessary for the design. The Contractor undertakes that the designers shall be available to attend discussions with the Engineer at all reasonable times during the period of the contract.

2.2 Construction Documents

The Construction Documents shall comprise of all design (including survey and investigation) drawings, calculations, models, reports, and other manuals and information of a similar nature that the Contractor shall prepare and submit to the Engineer as part of its design obligations.

The Contractor shall prepare the Construction Documents in sufficient detail to demonstrate that it has complied with the requirements of the Contract, to satisfy all regulatory approvals, to provide sufficient instruction to execute the Works. The Engineer shall have the right to review and inspect the preparation of the Construction Documents, wherever they are being prepared.

Each of the Construction Documents shall, when considered ready for use, be submitted to the Engineer for pre-construction review and for the Engineer's consent. Each submission of a Construction Document made by the Contractor in an agreed format and shall be accompanied by notice that the Contractor considers the Construction Document ready for a pre-construction review and for use. The Engineer shall have a review period of 28 days, calculated from the date on which the Engineer receives a Construction Document to carry out the pre-construction review and grant its consent. If the Engineer, within this review period, notifies the Contractor that such Construction Document is incomplete or fails (to the extent stated) to comply with the Technical Specifications, it shall be rectified, resubmitted and reviewed in accordance with this clause at the Contractor's cost.

For each part of the Works, and except to the extent that the prior consent of the Engineer shall have been obtained:

- (a) construction shall not commence prior to the expiry of the review periods for the Construction Documents which are relevant to the design and construction such part;
- (b) construction shall be in accordance with such Construction Document; and
- (c) if the Contractor wishes to modify any design or document which has previously been submitted for such pre-construction review, the Contractor shall immediately notify the Engineer, and shall subsequently submit revised Documents to the Engineer for pre-construction review and consent.

If the Engineer instructs that further Construction Documents are necessary for carrying out the Works, the Contractor shall upon receiving the Engineer's instructions prepare such Construction Documents.

If errors, omissions, ambiguities, inconsistencies and other defects are found in the Construction Documents, they and the Works shall be rectified by the Contractor at its cost.

2.3 Technical Standards and Regulations

The design and the Construction Documents shall comply with the Country's national specifications, technical standards, building, construction and environmental regulations and the standards quoted in the Technical Specifications. References in the Contract to such specifications or standards shall be understood to be references to the edition applicable on the Contract Commencement Date. If substantially changed or new applicable national specifications, technical standards or regulations come into force after the Contract Commencement Date, the Contractor shall submit proposals for compliance to the Engineer. In the event that the Engineer determines such proposals to be a variation, the Engineer shall then initiate a Variation in accordance with Clause 13 of the Conditions of Contract.

3 Surveys and Investigations

3.1 General

All surveys and setting out throughout the works must be related to Sri Lanka Mean Sea level and coordinates as set by the Government Survey Department. Datum levels, coordinates of survey stations and values of any temporary bench marks to be fixed on site shall be tied to the Sri Lanka Survey Department datum. On completion of the project the as-built levels and coordinates of the road shall be connected to the National Grid of highways in Sri Lanka.

The Contractor shall carry out the following topographical surveys:

- (a) topographical survey and level survey along the full length of the road section which shall be plotted out on 1 to 2,000 scale drawings;
- (b) cross section survey of the road section which shall be plotted to a scale of 1:20 vertical and 1:50 horizontal.
- (c) topographical survey of the site of the bridges, which shall be plotted out on 1 to 200 scale drawing(s).
- (d) Longitudinal Section along centreline of road, plotted to a scale of 1:200 vertical and 1:1000 horizontal.

3.2 Existing Survey Control Data

Bench mark record sheets shall be obtained from the Department of Survey in Colombo or from their sub offices in the Project areas.

3.3 Primary Survey Control

Prior to the commencement of the topographic and level surveys, primary control monuments shall be established along the full length of the section at nominal 5 km space. A primary control survey shall then be carried out to determine X and Y co-ordinates of the primary control monuments by traversing or by a GPS survey. The elevations of the primary control monuments shall also be determined with reference to the existing National Datum and they shall be tied into the existing National Datum benchmarks.

The primary control monuments shall be as follows:

Monuments centre shall be a stainless steel pin of 12 mm diameter.

Body of monument shall be concrete with 20Mpa strength, constructed to the following Dimensions:

-Monument top surface:	40cm x 40cm
-Monument bottom:	50cm x 50 cm
-Monument height:	50cm
-Monument base:	60cm x 60cm x 10cm

Monuments shall be established at ground level in stable ground conditions in locations where they shall not be disturbed by the construction works and they shall be maintained throughout the Contract Period. Sufficient space shall be provided around each monument to enable survey instruments to be erected and operated.

Each monument shall be marked with its reference number, date of construction, elevation and co-ordinates. A Survey Monument Description Sheet for each primary control monuments shall be prepared in an appropriate format.

The traverse survey connecting the primary control monuments shall be carried out using theodolites, electronic distance meters (EDMs) or total station instruments. The elevation of each monument shall also be recorded with reference to the Sri Lanka National Datum.

Requirements for the traverse survey shall be as follows:

- a) Horizontal angle measurement
 - i) Horizontal angles shall be observed by 2 rounds of angle on 2 different zero settings:
 - ii) a total station theodolite instrument capable of reading horizontal and vertical angles to at least 10 seconds shall be used;
- b) Distance measurement

an Electronic Distance Meter (EDM) shall be used for distance measuring, which shall be accurate to at least $10\text{mm} + 5\text{ppm} \times D$;

Note: 5pp:5cm per 10 km, D: measured distance
- c) Accuracy of primary traverse

Linear mis-closure of the primary traverse shall be better than $1/10,000$.
- d) Requirements for a GPS (Global Positioning System) survey shall be as follows:

3.4 GPS Observation and Measurement

More than three GPS instruments shall be used which shall be capable of reading to a horizontal and vertical accuracy of at least $+5 \text{ ppm} \times \text{distance}$ between primary control monuments (e.g. 5 cm per 10km):

Elevation mask shall be 15 degrees;

Observations shall be made simultaneously at 3 points;

Signals from more than 3 satellites shall be received at each point simultaneously;

Observations shall be made for more than 1 hour;

Maximum measured distance between observation points shall be 10 km;

(e) Expected accuracy of GPS traverses

Mis-closure of GPS traverse shall be not more than $5\text{ppm} \times \text{measured distance}$.

3.5 Secondary Survey Control

The Contractor shall establish the secondary control points to provide a suitable basis for the topographical and level survey of the roads and bridge site. The secondary control survey shall then be carried out to determine X and Y co-ordinates of secondary control points by traversing.

The elevations of the secondary control points shall also be determined with reference to the existing National Datum and they shall be tied into the existing National Datum benchmarks via primary control monuments.

The secondary control points shall be spaced at maximum intervals of 500m and located so that a minimum of two adjacent points shall be located to fully enclose the required area of topographic survey for the roads (scale: 1/2000), and shall be at a sufficient distance from the proposed works so as not to be disturbed during the construction. The location of points shall also be suitable for use in setting out.

The secondary control points shall be established at ground level in stable ground conditions with the requirement that they remain stable during construction. Each point (monument) shall be as follows:

- (a) control point centre shall be a stainless steel pin of 12mm diameter;
- (b) body of control point shall be concrete with 20Mpa strength, constructed to the following dimensions.
 - point top surface: 20cm x 20cm
 - point bottom: 30cm x 30cm
 - point height: 40cm

Each secondary control point shall be marked with its reference number and date of construction. A survey Monument Description Sheet for each secondary control point shall be prepared as appropriate and these sheets shall form part of the Contractor's Construction Documents.

The requirements for horizontal angle measurement and distance measurement in the secondary control point traverse survey shall be the same as those specified above for primary control survey.

Linear mis-closure of secondary traverse shall be better than 1/8,000.

3.6 Levelling

Levelling shall be started from an existing National Datum benchmark, a primary control monument or a secondary control point and closed to another of these benchmarks, monuments or points.

Requirements for the levelling survey shall be as follows:

- a) an automatic level or digital level shall be used.
- b) Misclosure of levelling between existing National Datum benchmarks and primary control monuments shall not exceed $\pm 30 \text{ mm } \sqrt{D}$, where D is distance in kilometres between existing National Datum benchmarks or Primary control Monuments.

3.7 Topographical Survey of Roads (1/2,000)

A 1 to 2,000 scale plan topographic survey shall be conducted to locate man-made features such as roads, buildings, etc. and natural features such as creek, canals, etc. along the road section using the plan co-ordinates and heights of the primary control monuments and secondary control points. All features shall have elevations based on the National Datum benchmarks.

The extent of the 1/2000 plan map survey shall be at least 20m on either side of the existing road highway centreline, and this survey corridor shall be extended as required to ensure that the full extent of the existing road construction is covered.

Where features cannot be surveyed to the required accuracy without extensive clearing or due to other obstructions, the Contractor will seek the instruction of the Engineer.

The line or point to be surveyed on a feature shall be at the features intersection with the ground-surface unless otherwise instructed by the Engineer.

Any feature, which is in a state of change during the survey will be annotated to this effect with the proposed boundary changes marked, if known.

The ground surface shall be surveyed to truly indicate any change in feature, vertical alignment or horizontal alignment.

Appropriate references such as road section name, section limits (km-marks), north and east co-ordinates, benchmarks and other important data shall be shown in the topographic plans and profiles.

The requirement for the survey shall be as follows:

- a) an automatic-level, total station, EDM, theodolite, and surveying tape shall be used;
- b) traversing points for the topographic survey shall be set up by closed traverse from the control points;
- c) the height of traversing points shall be obtained by closed levelling from control points;
- d) spot height point shall be measured and distributed uniformly 2 cm x 2 cm for the 1/2,000 scale mapping area;
- e) accuracy of closed traverse;
linearmis-closure of closed traverse between control points shall be better than 1/5,000;
- f) accuracy of closed levelling:
mis-closure of closed levelling between control points and traversing points shall be within $\pm 30 \text{ mm } \sqrt{K}$;
- g) accuracy of radiation traverse and cross section survey:

positioning error and height error of spot height point shall be within + 5 cm from traversing points;

- h) minor control points established for the mapping survey shall not be permanently marked.

Accuracy of cross section levelling;

height error between beginning point, end point, curve point, and cross section points on structures shall be within + 2 cm and the ground surface points shall be within + 5 cm;

distance error between beginning point, end point, or curve point and cross section points shall be within + 5 cm.

3.8 Topographic Survey of Bridge Site

A 1 to 200 survey of the site of the new bridges shall be carried out. This survey shall cover the river bed for a minimum distance of 250 metres from the bridge location, on the upstream side and 200 metres on the downstream side. All other requirements for the survey shall be as specified above for the 1 to 2,000 scale topographic survey of the roads.

3.9 Survey Drawings

The requirements for all survey plans shall be as follows:

- a) all survey drawings shall be prepared on A3 size drawing sheets;
- b) name and annotations shall be aligned parallel to the gridlines except for names relating to linear features which shall be aligned parallel with those features;
- c) All final drawings shall be provided with a standard border of 50 mm for the left margin and 25 mm for the remaining margins. Each drawing will be labelled with the date of generation, and version number.
- d) the overlap of adjacent drawings shall give a minimum overlap of 75 mm of detail common to each drawing and match lines shall be included on each drawing;
- e) the co-ordinates and heights of all primary control monuments, secondary control points and existing National Datum benchmarks within the survey limits shall be shown on the drawings;
- f) Copies of the survey drawings shall form part of the Contractor's Construction Documents.

The survey drawings shall be used as the base for the As-Built Drawings that the Contractor is required to prepare.

3.10 Soil and Pavement Surveys

The contractor shall carry out any Soil and Pavement investigations he considers necessary.

3.11 Bridge Foundation Ground Investigation

The Contractor shall carry out a ground investigation at the sites of bridges to be re-constructed or widened to provide data for the design of the bridge foundations.

The exact locations and the number to be decided at site. The approval of the Engineer shall be obtained prior to commencement of investigations by the Contractor.

The Bridge foundation ground investigation shall be carried out according to the AASHTO Manual on Subsurface Investigations, 1988.

4. Highway Design

4.1 Horizontal Alignment

The designer shall be guided by the conceptual highway designs given in Part II Section 6.3.1 Drawings. The location map is based on 1:50,000 scale topographic maps. The chainages given are based on existing kilometre posts and vehicle odometer readings.

Based on the topographic survey and detailed engineering design, the centreline of the road shall be set out on ground and the boundaries of the right of way established. While using engineering judgment to maintain balance between traffic capacity, the environment, speed and safety, the design centreline is determined and established by using the existing centreline as the base line so that the design roadway is contained within the existing right of way boundaries, where necessary shoulder width shall be reduced to accommodate the existing boundaries and provision made for appropriate signage.

Existing radius of curvature shall be modified only to obtain a smooth and complying series of horizontal curves. Such modification shall not result in deviations that involve land acquisition, However, realignment where deviations are involved shall be carried out only where land has already been acquired for this purpose.

4.2 Vertical Alignment

Change in the existing vertical alignment shall be carried out only where:

- (1) the section of road has to be raised due to flooding,
- (2) the crest vertical curves causes adverse sight distance affecting safety.

4.3 Pavement

Prior to laying of the wearing course in sections where only overlay is to be carried out, a correction course not exceeding 50mm thick shall be used on the existing pavement. This course shall serve to correct any local undulations.

Where the pavement deformation is due to base failures and not due to road foundation failure, pavement strengthening shall be used as the treatment. This shall be done by laying aggregate base course on the existing pavement prepared by lightly scarifying the surface. The scarification shall be carried out to such extent that ensures bonding of new and old surfaces and care shall be taken not to disturb the existing macadam layer.

In cases where the surface is badly deformed and deteriorated the defect is corrected by reconstruction which involves removal of weak foundation material and replacing same with Type II material to required depths, followed by Type I material as sub-base. All material in weak pavements shall be removed completely to levels directed by the Engineer.

4.4 Embankment

Right of way in road sections that run on embankment shall extend to the toe of the embankment. Widening (and raising) of road sections on embankments shall be carried out so that the new toe line of embankment does not fall outside the right of way. In such cases a toe wall may be constructed at the edge of the right of way to retain the embankment.

4.6 Intersections

Improvement of intersections shall include provision of turning circles, traffic islands, storage facilities for right turning vehicles, removing of obstructions to line of sight, as warranted by the road hierarchy and the traffic conditions. All intersections shall be designed as shown in the typical drawings or as directed and the priority shall be placed on the hierarchy of the roads that intersect.

4.7 Parking Facilities

All on-street parking shall be of parallel parking and be provided only where sufficient space is available and in keeping with parking demand of the locality. Such parking lots shall be 2.4m x 5.9m or as directed and be laid staggered on either side of the road. All parking lots shall be marked clearly.

5. Drainage

5.1 Side Drainage

Side drainage of the road section shall be ensured in all cases by means of a suitable drain type as shown in the schedules and drawings or as directed. The type of drain shall be as required by the site conditions and environment. In general, the urban road lengths shall be provided with concrete lined drains. In case where the walkway is narrow, the drains shall be covered. All drains shall be taken across the side roads through structures designed to suit the runoff and site condition.

5.2 Cross Drainage Structures

The designer shall be guided by the Schedule of Culverts and typical drawings given in Part II Section 6.3.1 Standard Drawings. Where the existing culverts are to be widened, sufficient care shall be exercised to retain the general alignment of the road. Widening shall preferably be on one side particularly where the extent of widening is too small to be done on both sides. In case of widening of existing structures, the same types of structural components shall, preferably, be used in the new sections of the structure.

Design width of roadway shall be taken through all cross drainage structures

5.3 Inlet and Outlet Control at Culverts

Guiding ditches and guiding dams shall be provided wherever necessary to give an unimpeded flow of water run-off into and out of culverts.

The locations of guiding ditches shall be selected by site inspection and by reference to the 1 to 2,000 scale topographical survey plans.

In general guiding ditches are to have a 3 metre wide invert and side slopes of 1.5 slopes of 1.5 horizontal to 1 vertical. If the guiding ditches are restricted by adjacent properties and building they may have to be concrete lined drains possibly with cover slabs.

Guiding dams are to have a 3 metre wide crest and side slopes of 1.5 horizontal to 1 vertical. The guiding dams are to be constructed to the same requirements as embankments.

5.4 Rehabilitation of Side Drainage in Cut Sections

Effective side drainage shall be provided in all cut sections to ensure no surface water run-off ponds against the carriageway and that all surface water runoff is led away from the cut section into culverts or towards ground that slopes away from the road.

This rehabilitation of side drainage shall involve:

- a) removal of scree material and boulders from the foot of cut slopes;
- b) provision of retaining walls formed by gabion boxes at the foot of cut slopes at locations where there is a likelihood of future falls of scree material;
- c) re-establishing unlined side drains adjacent to existing cut slopes.
- d) Constructing new earth drains, concrete lined drains or kerb and gutter construction.

The locations of these works shall be selected by site inspection.

6 Protection Works

Refer to Appendix 7A

7. Bridge Design

Part II Section 6.3.2 Drawings of the bidding documents give all bridges to be widened or re-constructed in outline design and general arrangement drawings are also given. In addition a detailed schedule of all the bridges is given indicating the location, inventory details and the proposed work to be carried out on each bridge. Details shown are in outline form only, specifying the main parameters and detailing general arrangement and component proportion for construction. Detailed engineering design is to be carried out by the construction Contractor. The Contractor shall carry out necessary soil and foundation investigation before the detailed engineering design.

All bridges are to be designed by the Contractor in accordance with the Road Development Authority (RDA) of Sri Lanka Bridge Design Manual 1997, which is based on the British Standard Institution Code of Practice for Bridge Design: BS 5400. Reference should be made to BD31/87 for the design of buried concrete box type structures.

The contractor shall design the new bridges, bridge widening and repairs as scheduled in drawings and Part II Section 6.3.2 Drawings. The bridges to be designed shall be of the types and general arrangements shown in drawings.

7.1 Structural Arrangement Requirements for Bridges

Standard pre tensioned/post tensioned PSC beam sections, which are designed in according to BS5400 standard can be used wherever necessary.

Any other types of superstructure should be designed in accordance with BS 5400 standard and RDA bridge design manual requirement.

Once the Mass concrete structures are used, factor of safety against overturning and permissible stresses should be in accordance with the section 5.2 of Bridge Design Manual prepared by Road Development Authority, Sri Lanka.

Bearings shall be Elastomeric/PTFF type that meets the requirements of Clause 9.1 and 9.2 of BS5300.

Expansion joints shall be strip seal type or allow water to penetrate through it and make appropriate provisions for the drainage that meet the requirements of section 5.5 of the Bridge Design Manual prepared by Road Development Authority, Sri Lanka. Expansion joints are not required for bridges of span less than 30.0m.

The foundation type and depth will be based on geological investigations that shall be carried out by the Contractor

The surfacing for the bridge deck shall consist of a 50 mm thick layer of asphalt (or specified DBST over the deck where asphalt is not reachable) laid on a bituminous prime coat over the concrete deck. The asphalt wearing course and DBST surfacing shall confirm to the specification of wearing course given in the Specification for Road and Bridges prepared by Road Development Authority, Sri Lanka. Drainage spouts with grating at the top surface shall be provided on the bridge to ensure proper drainage of surface water.

Hand rails, Upright, Parapets, Kerb and End pilasters are designed for the requirements given in RDA bridge design manual.

7.2 Design Loading Requirements for Bridges

The contractor shall design the bridges to sustain the most critical combination of the various loads, forces and stresses that can coexist as given in the BS 5400; Part 2. The allowable stresses and the permissible increase in stresses for various load combinations shall be adopted as given in the relevant clauses of the BS 5400; Part 2. Design loadings that shall be considered for bridge are as follows:

Traffic Load. Primary and secondary loading due to vehicular and pedestrian traffic are applied in accordance with the relevant clauses of BS 5400 part – 2, together with section 2.2.3 of Bridge Design manual of RDA. Class of traffic loading is full HA (Nominal loading) and 30 units of HB (abnormal loading).

Environmental loads (wind thermal effects etc.).

Environmental loads applied in accordance with BS 5400 part 2, subjected to local requirements as specified in RDA bridge design manual.

Buoyancy Effects. The buoyancy effects shall be considered, wherever applicable, for the design of various components of the bridges.

Horizontal forces due to floating debris and impact. These forces shall be considered, wherever applicable, for the design of piers of the bridges as specified in the Section 2.2.8 of the Bridge Design Manual prepared by Road Development Authority, Sri Lanka.

Reinforcing Steel. Reinforcing steel shall be High yield deformed Hot – Rolled Bars of specified characteristic strength, $f_y = 460$ Mpa and plain round Mild steel bars of characteristic strength, $f_y = 250$ Mpa are specified to BS 4449.

Concrete. Concrete material, production, placement, curing and testing shall in be accordance with BS 5328 of design specifications and accordance with Part II Section 6.2 Particular Specifications Sub Section 1001.

7.3 Requirements for Design of Bridge Rehabilitation Works

The structural requirements for the bridge deck surfacing, bridge deck drainage and bridge deck approach slabs in the bridge rehabilitation works shall be as given above for the new bridges.

7.4 Retaining Wall Design

Retaining walls shall be designed to comply with the following requirements;

- a) a factor of safety greater than 1.5 shall be provided against sliding;
- b) a factor of safety greater than 1.5 shall be provided against overturning;
- c) a factor of safety greater than 2.0 shall be provided for foundation bearing capacity.

The retaining walls to be provided at the foot of the reinstated sections of embankment slope can be designed as either;

- Gravity retaining walls to be constructed in mass concrete, masonry or gabion boxes; or
- Cantilever retaining walls to be constructed in reinforced concrete.

8 Road Furniture

The contractor shall provide, essential road signs only to as approved by the Engineer, whether advance direction signs warning road signs regulatory road signs informative road signs and road markings that are necessary to ensure safety of road users. The road signs shall be in accordance with extraordinary gazette notification number 1940/21 dated 12th November 2015. RDA manual of traffic control devices part 1 and part 2, and shall be in accordance with part II Section 6.1 Standard Specification.

Road signs post and foundation shall be designed to withstand forces generated by wind speed of 50 metres per second.

Sign plate and text height dimensions for all roads signs shall be suitable for the narrow streets and low speed built up areas or Within and outside built up area as given Manual on Traffic Control Devices Second Edition August 2007 by Road Development Authority.

Text shall be provided in Sinhala, Tamil and English languages.

Guard rail / Gaurdstones

- (i) On the outside of horizontal curve with radii vary than that generally occurring and not in conformity with a design speed of 30km/h
- (ii) Where the embankment is very steep and significantly different from general terrain along the road
- (iii) Before and after bridge parapet where it is necessary to provide a transition barrier.

The Contractor shall provide advance direction road signs, route confirmatory road signs, warning road signs and regulatory road signs and all road signs necessary for safe and effective traffic operations. The road signs shall be in accordance with Part II Section 6.1 Standard Specifications.

Road sign posts and foundations shall be designed to withstand forces generated by a minimum wind velocity of 50 metres per second.

Sign plate and text height dimensions for all road signs shall be suitable for a traffic speed of 100 kilometres per hour.

Text shall be provided in Sinhala, Tamil and English languages.

Guardrail/Guard stones

The Contractor shall provide guardrail at the following general locations.

- (i) On the outside of horizontal curves with radii generally less than 500 metres;
- (ii) Where the embankment height exceeds 4 metres.
- (iii) Before and after bridge parapets where it is necessary to provide a transition barrier.

Appendix 7A

Protection Works

Protection works for embankment slopes, culvert inlets and outlets, river training works, guiding dams and around bridge abutments and piers shall be provided where scour has occurred or where there is a risk of future scour taking place.

Protection works shall be constructed using gabions, grouted stone pitching or rip rap in accordance with the requirements at site as per Part II Volume II Section 6.1 Standard Specifications Sub Section 805 and as instructed by the Engineer. Additional information is given below.

Gabions/Reno Mattresses. Gabions mattresses and boxes shall have galvanized steel wire mesh and shall be laid on a geotextile filter membrane, which is suitable for the underlying soil. The physical and dimensional properties of the stone filling shall conform to gabion manufacturer's recommendations.

Grouted Stone Pitching. Grouted stone pitching shall conform to the construction requirements contained in design standard acceptable by the Engineer.

Rip rap. Rip rap protection shall conform to the construction requirements contained in design standard acceptable by the Engineer and shall be designed in accordance with the following procedure:

Size and weight of stones for pitching: Rip rap for sloping surfaces

The size of the stone required on sloping surface to withstand erosive action of flow is to be calculated by following equation:

$$d = Kv^2$$

Where, d is the equivalent diameter of stone in metres,
v is the mean design velocity in metre/second,

And K is a constant and is to be taken as 0.0282 for face slope of 2:1 and 0.0216 for a face slope of 3:1.

The weight of the stone can be worked out by assuming a spherical shape stone with a specific gravity of 2.65. However the minimum diameter of a stone shall be 300 mm, and the weight shall not be less than 40 kg.

Thickness of pitching;

The thickness of pitching is to be worked out by the following formula:

$$T = 0.06Q^{1/3}$$

Where, T is the thickness of pitching and Q is the design discharge in m³/second.

Filter design. Filter provided below the boulder pitching shall consist of sound gravel, stone, over burnt brick ballast and coarse sand. Geotextiles can also be used as filter material.

Rip rap for launching aprons or cut off blankets. The design of launching apron or cut off blanket shall be carried out based on following considerations:

Size and weight of stone. The size of stone required for launching apron is to be calculated based on following formula.

$$V = 4.893(d)^{1/2}$$

Where V is the mean design velocity in metre/second and d is the equivalent diameter of stone in metres.

The weight of the stone can be worked out by assuming spherical shape of stones having a specific gravity of 2.65. However, the minimum diameter of stone shall be 300mm, and the weight shall not be less than 40 kg.

Depth of scour. The maximum depth of scour for surfaces of the protection works is to be determined as follows:

Up-stream curved surfaces	2.5 dsm
Straight surfaces upstream and downstream	1.5 dsm

Where dsm is the mean depth of scour

Width of launching apron. A width of launching apron of 1.5 dmax is to be provided where dmax is the maximum anticipated scour below the bed level in metres.

The thickness of pitching is to be worked out by the following formula:

$$T = 0.06Q^{1/3}$$

Where, T is the thickness of pitching and Q is the design discharge in m³/second.

The thickness of launching apron at inner end is to be kept as 1.50T and outer end as 2.25T.

Slope of launching apron. The slope of the launching apron is to be considered as 2 Horizontal and 1 Vertical for loose boulders and 1.50 Horizontal, 1 Vertical for gabions.

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Part II Employer's Requirements

Section 6.3 Conceptual Design Drawings

Submitted as a separate document

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Part II Employer's Requirements

Section 6.4 Supplementary Information

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Supplementary Information

1. Brief Description of the Project

The Ministry of Highways (MoH) has undertaken Rehabilitation / Improvements and Maintenance of about 70 km National in Western Province in four contracts under the Second Integrated Investment Road Program for which the Government of Sri Lanka has received a loan from the Asian Development Bank (ADB).

National Competitive Bidding will be conducted in accordance with ADB's single – stage single envelope bidding procedure and is open to bidders from eligible source countries of ADB.

2. Scope of Works

- 2.1 The Works involve the rehabilitation and upgrading of the existing roads with improvements to the longitudinal and transverse drainage and performance based maintenance of the roads. The Work shall be carried out within the established right of way.

The Contractor is required to carry out the detailed engineering design of the work after carrying out the necessary topographic surveys and geotechnical investigations. The Contractor is required to set out the centre line of the road in accordance with the information provided in the specifications and conceptual design.

The Safety Audit of the candidate road shall be carried out by the Contractor prior to commencing the work in order to take appropriate safety measures such as erection of Temporary Permanent and safety signs.

The work will generally be as follows:

- Rehabilitation and improvement works will consist of strengthening base of existing pavement where necessary, widening the carriageway to the required standard, rebuilding the shoulders to the required width with soft shoulder on either side, followed by Asphalt Concrete surfacing/Concrete Paving/ Concrete Block Paving as necessary to the Carriageway.
- In the case of heavily distressed or deformed sections of bituminous surfaced roads of the existing roads, rehabilitation will involve the reconstruction of the pavement from sub-grade level.
- Soft shoulders will be rehabilitated with granular material on either side of the pavement. The shoulder may be constructed as pedestrian walk.
- Longitudinal drainage works will involve the provision/rehabilitation earth drains. Unlined longitudinal drains will generally be constructed/rehabilitated.
- Transverse drainage improvements will involve the extension and replacement of existing culverts together with the provision of additional units to correspond with the geometric standards of the road.
- Both longitudinal and transverse sub-soil drainage will be introduced in areas of high water table and where this is affecting subgrade support.
- Structural works will generally consist of culvert construction and the provision of appurtenant structures.
- Minimum earthworks are envisaged. However, protection works also be required to stabilize cut slopes or embankments where localised earthworks are involved.

2.2 The works will also involve the provision of safety measures such as roundabouts, centre islands, guard rails, parking bays, road marking and signing where specified in the Contract and / or directed by the Engineer.

2.3 The scope of the works will also address the following issues:

- Provision of facilities for the Engineer including office, living accommodation, survey equipment, etc.
- Provision of equipped material testing laboratory
- Implementing and managing site safety
- Implementing the Environmental Management Plan
- Implementing and maintaining traffic management along the project.
- Maintaining access to adjacent properties

2.4 Maintenance of Roads under construction

The Contractor will be required to generally maintain the road section covered by the Contract during construction of the Works to ensure the safety of the public and residents along the road and minimum disruption to flow of traffic to the satisfaction of the Engineer.

If the Contractor fails to maintain the road to ensure the safety of road users, the public and residents along the road and minimum disruption to flow of traffic to the satisfaction of the Engineer, the Engineer shall be entitled to employ a subcontractor to carry out the required works and pay for such work done and recover the cost from the Contractor. The Engineer may, without prejudice to any other method of recovery, deduct such cost from any money due or which may become due to the Contractor and such deduction shall not relieve the Contractor of any of his obligations under the Contract.

2.5 Performance Based Road Maintenance

The Contractor is expected to maintain the roads for a period of 5 years as applicable commencing from the date of issue of Taking Over Certificate for which payment will be based on satisfactory maintenance of the road. The performance will be assessed monthly and payment in full or part made accordingly.

Maintenance Services or "Services" for the Road(s) indicated in the Document consisting of all interventions on the Roads under contract which are carried out in order to achieve and keep the Road performance standards as defined by the service quality level included in the Specifications, and all activities related to the management and evaluation of the road network under contract. Maintenance Services shall include the works necessary to achieve and maintain the required Service Quality Levels.

2.6 Environmental Management Plan (EMP)

The Contractor will be required to adhere to all environmental requirements outlined in Environmental Management Plan (EMP) under IEE report annexed.

2.7 Any other items of work as may be required to be carried out for proper completion of the Works in all respects in accordance with the provisions of the Contract.

3. Bridges

This road package includes bridges need improvements or new constructions as specified.

4. Quarries and Barrow areas

The Contractor is responsible to locate and arrange suitable quarries to obtain his requirement of aggregates and other resources necessary for the Contract.

5. Personnel

The Bidder must demonstrate that it has the personnel for the key positions that meet the following requirements for employment under this project:

The Contractor shall provide sufficient staff during the Performance Based Maintenance period for carrying out routine road maintenance of the project road network.

In the case of a joint venture, the Contractor's Representative whom a full time Employee of the Lead Partner, working for at least two year prior to bid submission date.

The Contractor's Representative shall be at the work site during the contract duration, and failure to comply with this requirement will lead to Termination by the Employer as stipulated in GCC 15.

The position numbers (1) and (9) as given in the table below should remain in employment of this project during the Performance Based Maintenance period. During this period the number of the positions of each category of the above positions under the employment of the project should be minimum of one. Position (1) shall be part time.

No.	Position	Professional Qualifications	No of Positions	Total Work Experience [years]	Experience In Similar Work [years]
1	Contractor's Representative / Project Manager	B.Sc.(Eng.) and Corporate membership of IESL or equivalent	1	8	5
2	Site Engineer cum Planning Engineer	B.Sc.(Eng.) or equivalent	1	3	2
3	Highway/Pavement Design Engineer – Part Time	B.Sc.(Eng.) or equivalent	1	5	2
4	Structural Engineer– Part Time	B.Sc.(Eng.) and Corporate membership of IESL or equivalent	1	5	3
5	Material Engineer	B.Sc.(Eng.) or equivalent	1	6	3
6	Quality Assurance Inspectors	NVQ – Level 4 (Civil) or equivalent	2	4	2
7	Quantity Surveyor	B.Sc.(QS) or equivalent	1	4	2
8	Environmental and Social Officer	B.Sc in Agriculture or Science or Environmental Science or BA(Sociology) equivalent	1	2	1
9	Technical officer	NVQ – Level 4 (Civil) or equivalent	3	5	2
10	Surveyor	B.Sc (Surveying) or equivalent	1	3	2

The bidder shall provide details of the proposed personnel and their experience records in the relevant Information Forms included in Section 4(Bidding Forms).

6 Equipment

The Bidder must demonstrate that he has the key equipment listed hereafter through presentation of proof of ownership or lease agreement or rental agreement with a provision that the equipment will remain on site (or be vested in the Employer) in the event of default of the Contractor, thereby ensuring more timely continuity of work by the replacement Contractor and an undertaking to mobilize these equipment in case of award of contract to him. Where the equipment is to be leased or rented, the Bidder shall submit a copy of the proposed Lease/Rental Agreement between the bidder and the owner of the equipment.

6.1 Key Equipment

The Bidder must demonstrate that it has the minimum of key equipment listed hereafter.

No.	Equipment Type and Characteristics	Min. Number Required
1	Back Hoe Loader - 180 HP	2
2	Excavator - 120 HP	2
3	Motor Grader - 120 HP	2
4	Water Bowser - 13000 liter	2
5	Vibrating Roller 8/10 Ton	3
6	Vibrating Roller 3/4 Ton	2
7	Pneumatic Tyred Roller 3/4 Ton	2
8	Asphalt Paver	1
9	Stone Crusher (minimum 200 m ³ /day)	1
10	Asphalt Concrete Plant (minimum 40 T/hr)	1
11	Tipper Truck	8

The Bidder shall provide further details of above items of equipment using the relevant Form in Section 4. (Bidding Forms). The age of the equipment shall not be greater than ten (10) years from the Date of Manufacture.

6.2 Other equipment

In addition to the above the bidder shall submit a detailed list of all other equipment included in its Method Statement and Mobilization Schedule.

The Bidder must in particular demonstrate that he has access to aggregate crushing plant located within reasonable distance from project site from where he could obtain his requirements as programmed.

7 Location Map

A map shows the locations of road as a guide to the Contractor. The Contractor is responsible to locate and arrange suitable quarries to obtain his requirements of materials and other resources necessary for the Contract.

Part II Employer's Requirements

Section 6.5 Traffic Control and Safety during Construction

The Contractor shall refer to Manual on Traffic Control Devices, Part II Road Works Areas (Second Edition), Ministry of Roads & Highways (MoR&H) and Road Development Authority (RDA), August 2007. If the Contractor does not already possess a copy, may purchase from: Planning Division, Road Development Authority. .

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Part II Employer's Requirements

Section 6.6 Environmental Management Plan and Environmental Check List

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- II. Environment Management Plan (EMP)
 - Refer Initial Environmental Examination (IEE) Report
- III. Environmental Check List
 - Refer Initial Environmental Examination (IEE) Report

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Preamble

1. The Environmental Management Plan (EMP) should form part of Bid Documents and shall be considered alongside the specifications. Thereby the prescriptions detailed in the EMP are mandatory in nature and also contractually binding. The EMP will also equally applicable to sub – contractors including nominated sub – contractors if any. The Contractor will be responsible for the compliance with the requirements of the EMP. With the assistance of CSC the Engineer on behalf of the Employer the RDA will monitor the compliance of EMP by the Contractor.
2. The bidders are advised to carefully consider the EMP requirements stated under item Construction phase, when preparing the bid and pricing the items of work. The prescriptions and clauses detailed in the EMP are integral component of the specifications for relevant item of work unless separate items are included in the Bill of Materials. Thus separate payments will not be made in respect of compliance with the EMP. In case the Contractor or his sub – contractor/s fails to implement the EMP recommendations after informing in writing, the Engineer will take whatever actions it is deemed necessary to ensure that the EMP is properly implemented. If the Contractor or his – sub contractor/s still fails to comply with EMP requirement, the Engineer may levy a penalty based on the level of non – compliance, cost incurred to rectify the damages caused by such negligence and/or recover the cost from Contractor's payments.
3. A general EMP (Appendix A.1) for rural and national roads was prepared as part of the IEE report taking in to account the project induced impacts and mitigation measures. The contractor is supposed to prepare Site Specific Environmental Management Action Plan (SSEMAP) for each package with road specific details based on the impacts and mitigation measures discussed in the general EMP. SSEMAPs should include road specific impacts, mitigation measures supported by site plans as indicated in the EARF.
4. The Contractor through an appointed Environmental and Social Officer shall assist the Engineer to discharge his duties as required in the SSEMAP implementation by
 - a) Maintaining up to date records in actions taken by Contractor with regard to implementation of the SSEMAP.
 - b) Timely submission of reports, information and data to the PMU through Supervision Consultant.
 - c) Participating in the meetings conveyed by the Engineer.
 - d) Any other assistance requested by the Engineer.
5. The rates provided for carrying out tests in the Environmental Monitoring Plan are indicative only.
6. Environmental Checklists (EC) have been prepared for each road to be improved and describe road specific environmental aspects (Appendix A. 2). The Contractor is supposed to go through the ECs of the relevant package and is responsible to incorporate the findings and recommendations of ECs to the design if found to be feasible. Further the Contractor should pay special attention to the sensitive environmental aspects as given in ECs (if any) in order to conserve or to mitigate them during construction phase.

Table 3: Applicable Approvals required for the Investment Program

Project stage	Approvals	Project related activity	Relevant agency
Pre-Construction Stage Note: Although clearances and approval should be obtained during preconstruction stage it is valid throughout the project cycle. However this should be renewed before expiry date	Environment clearance	Implementation of the project	Central Environment Authority
	Clearance from Coast Conservation and coastal resources management department	Development activities in coastal areas	Coast Conservation and coastal resources management department
	Industrial Mining License (IML)	Operation of quarries, borrow areas and other material extraction sites	Geological Survey and Mines Bureau
	Environmental Protection License (EPL)	Operation of material extraction site including operation of asphalt plants, treatment plants etc.	CEA
	Local Government Authority Trade license and machinery permits	Deciding waste disposal sites, material storage and sites for worker camps and other project stations Trade license should be obtained for asphalt plants, batching plants, quarries etc.	Respective Provincial Council, Local authorities and respective Pradeshiya Sabha
	Explosive Permits	Blasting activities	Ministry of Defence
	Approval for removal of trees	Road clearance for construction	Forest department, CEA and local authorities
	Disturbance to Paddy Lands	Ground preparation for ROW and side drains	Commissioner of Agrarian Services
Construction stage	Consent from relevant government agencies	Construction of bridges, culverts and other drainage systems, land filling, dredging activities	Department of Irrigation, Department of Agrarian services, Local government authority, Land Reclamation and Development Cooperation
	Approval from relevant state /local agencies for the removal/ temporary disturbances for existing utilities	Surfacing, construction of bridges and side drains, embankment filling works	NWSDB for water lines, Ceylon electricity Board for Electric cable/poles, Sri Lanka Telecom for land line telephone cables,

Project stage	Approvals	Project activity related	Relevant agency
			poles, Pradeshiyasabha, other local authorities for drainage, sewer systems etc

Contractor is responsible for carrying out following activities

Agency	Responsibilities
Contractor	<ul style="list-style-type: none"> – Based on the standard EMP, environment checklists for each road and the detailed design (level 1 design) prepare a contract package specific EMP for approval by the PIC and/or PIU before start of physical works – Based on the standard Environmental Monitoring Program (EMOP) on collection of environmental quality data prepare contract package specific (EMOP) for approval by the PIC and/or PIU before the start of physical works – Ensure that adequate budget provisions are made for implementing all mitigation measures specified in the EMP – Participate in induction training on EMP provisions and requirements delivered by the PIU – Obtain necessary environmental license(s), permits etc. from relevant agencies as specified by EARF (Table 3) for associated facilities for project road works, quarries, hot-mix plant etc. prior to commencement of civil works contracts – Implement all mitigation measures in the EMP – Ensure that all workers, site agents, including site supervisors and management participate in training sessions delivered by PIU. – Ensure compliance with environmental statutory requirements and contractual obligations – Collect the baseline data on environmental quality before the start of physical works and continue collection of environmental quality data as given in the Environmental Monitoring Plan during construction and operation – Participate in resolving issues as a member of the GRC – Respond promptly to grievances raised by the local community or any stakeholder and implement environmental corrective actions or additional environmental mitigation measures as necessary. – Based on the results of EMP monitoring, cooperate with the PIU to implement environmental corrective actions and corrective action plans, as necessary. – Annually review the road specific EMP and update it if required

Appendix 8.1: Environmental Management Plan: Design and Pre-construction Stage

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementation Agency	Monitoring Agency	Estimated cost
1	Poor environmental management by the Contractor	<ul style="list-style-type: none"> Designate a full-time environment specialist (one of the PIC) who will be in-charge of coordination with PIU for updating this IEE and implementing the EMP and EMoP, including conduct of all surveys, monitoring actions etc. Environmental specialist shall be in place from the day of mobilization of contractor (throughout design and construction, and intermittent during operations) Coordinate with the PIU on confirmatory surveys to be conducted during design phase and complete as required with support of external experts (if needed) 	<p>Mobilization of PIC and PIU staff with suitable experience and expertise</p> <p>One-off during mobilization, and continuously throughout the contract period</p>	Contractor	PIU	Part of construction cost
2	Climate Change Consideration and Vulnerability Screening	<ul style="list-style-type: none"> Climate change vulnerability checks in compliance with the provisions provided in the IEE Report. Adopting proper mitigation measures as may be required Cross drainage structures to be designed and located based on recommendations of hydrological studies to be conducted during detailed design phase. Alteration of rainfall intensities due to climate change therefore change of peak flows of waterways and land use changes should be clearly studied under hydrological assessments and appropriate mitigation measures should be incorporated to final designs. Efforts shall be made to plant additional trees for increasing the carbon sink. The trees may be selected with help of Forest Department and space for additional planting (if the remaining space within ROW is not adequate) will be secured with the help of Forest Department, Divisional Secretary (DS) and Community-based Organizations (CBOs). 	Throughout the project and flood prone areas in all the three road stretches and other possible areas of tree planting	PIU, Design consultant of the contractor	PIU and PIC	Cost included in the Designs

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementation Agency	Monitoring Agency	Estimated cost
3(a)	Site selection and preparation for quarrying, borrow operations, clearing land for stockpiling, labour huts, machinery yards, asphalt plants, batching plants, etc. a) Loss of scrub land, trees and other flora, and protected flora species	<ul style="list-style-type: none"> Conduct a confirmatory survey by an Ecologist to identify and mark, if any, protected plant species on site and also on the site survey maps. Integrate identified protected plants (if any) in the location maps to avoid the need to remove/cut these plants. 	Protected plants survey map & markings on site maps of quarries, borrow areas, and other areas cleared for yards, etc. One-off after survey	Contractor (if needed, through a pre-approved party)	PIU supported by an independent consultant (Ecologist)	Lump sum costs
		<ul style="list-style-type: none"> If removal of trees is unavoidable, translocate protected species in the nearby areas; prepare Tree Translocation, Cutting & Re-plantation Plan. If translocation is not possible, and if it is necessary to remove/cut protected plants, prepare a justification to establish that it is not feasible to avoid or translocate trees. Obtain approval of relevant authority for cutting/removal and plant 3-5 trees of same species for each tree that is removed Adopt minimal tree cutting as a general principle in planning & design; minimize tree cutting – either of protected species or otherwise In general, follow avoidance and compensatory approach for cutting of tree species; plant 3-5 trees for each tree removed. 	Tree Translocation, Cutting & Re-plantation Plan (shall include justification, minimization & approvals) One-off during site location finalization	Contractor (if needed, through a pre-approved party)	PIU supported by an independent consultant (Ecologist)	Lump sum costs
		<ul style="list-style-type: none"> Site Operation manual shall include clear provisions on protection and conservation of environment & wildlife, including prohibition on cutting of trees, removal of shrubs and bushes, hunting / harming wild animals etc.; do's and don'ts to be followed by all concerned with the Contractors 	Operation plan for site operations, including quarries, borrow sites, plans and yards.	Contractor	PIU	No additional costs

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementation Agency	Monitoring Agency	Estimated cost
3(b)	Site selection and preparation for quarrying, borrow operations, clearing land for stockpiling, labour huts, machinery yards, asphalt plants, batching plants, etc. (b) Impacts on protected species of avifauna	<ul style="list-style-type: none"> Conduct field surveys by an ecologist (st least one season prior to start of work) to confirm if there are any birds of protected species, and identify if any trees with nests / breeding places: If there are birds any of these species on trees within the site, but no nests, ensure that the birds are not harmed, and allowed to move away freely If there are any trees with nests / breeding birds, work shall not commence until nesting cycle is complete and the birds leave the nest If there are no protected birds or any other protected species, immediately initiate work on boundary fencing; the work related disturbance will ensure the birds move away from the site, and do not prefer the site for further roosting/nesting 	Confirmation survey output & mitigation measures One-off prior to survey One-off after survey	Contractor (if needed, through a pre-approved party)	PIU supported by an independent consultant (Ecologist)	Lump sum costs
3(c)	Site selection and preparation for quarrying, borrow operations, clearing land for stockpiling, labour huts, machinery yards, asphalt plants, batching plants, etc. (c) Impacts on protected species of fauna	<ul style="list-style-type: none"> Conduct confirmatory surveys by experts to rule out fauna breeding areas in the proposed sites and reconfirm that their extent & nature of inhabitation is limited to occasional visits Review the following suggested measures & develop further based on confirmatory survey: <ul style="list-style-type: none"> Providing workers or posting in public places for the workers, illustrations or pictures of protected, endangered, threatened, and/or near-threatened species, which can be found in the work area or its immediate surroundings. Instructing workers to stop work immediately and report if any such species are spotted on the site Creating awareness and conducting training; prohibiting killing or harming of any animals by site personnel 	Confirmatory survey results & suggested mitigation measures One-off after survey	Contractor (if needed, through a pre-approved party)	PIU supported by an independent consultant (Ecologist)	Lump sum costs

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementation Agency	Monitoring Agency	Estimated cost
3(d)	<p>Site selection and preparation for quarrying, borrow operations, clearing land for stockpiling, labour huts, machinery yards, asphalt plants, batching plants, etc.</p> <p>(c) Infection and spread of diseases within camp sites (Labour accommodation s)</p>	<ul style="list-style-type: none"> Labour huts shall be designed and constructed considering adequate physical distancing between users of such accommodations, provision of adequate ventilation, with separate area to store boots, shoes which shall not be allowed inside the huts. A hand washing area shall be provided at the entrance of each labour camp. Inform the public health officer (PHI) and local health authorities of establishment of labour camps. 	<p>Labour camps</p> <p>Sufficient spacing between beds</p> <p>Once before workers can settle in.</p>			

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementation Agency	Monitoring Agency	Estimated cost
4	Demolition of temporary structures and site preparation for quarrying, borrow sites, clearing land for labour huts, machinery yards, asphalt, batching plants	<ul style="list-style-type: none"> • Prepare a solid waste management plan for disposal of spoil, dredged material and construction debris • Waste shall be disposed in existing approved disposal sites; any new sites shall be developed considering siting guidelines, maintained and operated accordingly 	Quantity and quality of waste and disposal methods One off during finalization site selection	Contractor	PIU	No additional costs
5	Disturbance to natural drainage due to site preparation for quarrying, borrow sites, clearing land for stockpiling, labour huts, machinery yards, asphalt batching plants	<ul style="list-style-type: none"> • Identify & demarcate drainage paths on the sites & approach roads • Integrate these channels in the layout plans so that natural drainage is not disturbed • Provide cross drainage structures wherever necessary along the new approach roads, yards, and plants 	Site drainage plans One-off during the site preparation work	Contractor	PIU	No additional Costs

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementation Agency	Monitoring Agency	Estimated cost
6	Sites for construction work camps, areas for stockpile, storage and disposal	<ul style="list-style-type: none"> Except disposal sites, all the work sites (camps, storage, stockpiles etc.) will be located within the selected section of the road. No construction camp shall be located close to water bodies (at least 500 m away) Construction material shall be brought to site as and when required, and temporary storage of material shall be made near the work site along the road itself outside the RoW. No temporary storage shall be located near water ways or areas prone for flooding or locations where there are natural drainage paths 	Plan for site selection One-off prior to start of construction	Contractor	PIU	No additional costs
7	Delays in mobilisation and timely implementation of work program & plans	<ul style="list-style-type: none"> Finalize construction programs duly considering provisions for work schedule Following plans be developed for implementation: <ul style="list-style-type: none"> Construction Waste Management Plan Transportation Plan for construction material, equipment and waste conveyance Health & Safety Plan; Construction Camp Development & Management Plan Material Procurement Plans and EMPs Area Construction Work Plan Erosion control plan near the water bodies for earth works (if any) 	Work schedule Respective plans One-off prior to start of construction	Contractor	PIU	No additional costs
8	Consents, permits, clearances, no objection certificate (NOC), etc.	<ul style="list-style-type: none"> Obtain all necessary consents, permits, clearance, NOCs, prior to start of civil works (PAA/CEA; EPL; permits from LAs, etc.) Include in project implementation all conditions and provisions where necessary 	Clearances and approvals One-off prior to start of construction	PIU facilitated by the EA and/or IA Contractor facilitated by the IA and PIU	PIU	No additional costs

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementation Agency	Monitoring Agency	Estimated cost
9	Shifting of Utilities	<ul style="list-style-type: none"> Identify and include locations and operators of these utilities in the detailed design to prevent unnecessary disruption of services during the construction phase. Prepare a contingency plan to include actions to be done in case of unintentional interruption of services. Identify the list of affected utilities and operators and coordinate closely with relevant government departments. If relocations are necessary, coordinate with the providers to relocate the utility. 	<p>Maps/locations showing utilities & likely disruptions</p> <p>Emergency plans in case of any likely disruption</p> <p>One-off during design & prior to start of construction</p>	Contractor facilitated by the IA and PIU	PIU facilitated by EA and/or IA CEB, SLT, NWS&DB, LAs and CBO for Community based water supply	Costs of shifting and re-installation of utilities and common property to be included in project costs
10	Finalizing the Sources of construction materials	<ul style="list-style-type: none"> Obtain construction materials for this project from the existing quarries permitted / licensed by government (Geological Survey and Mines Bureau, GSMB) only For new borrow-pits, prior permission must be obtained from the PIU, landowner, GSMB, and the Central Environment Authority, and the environmental impacts of the operation should properly be examined and mitigated as necessary Make efforts to minimize the overall material requirement for the project by adopting various approaches – balanced cut and fill, re-use as much excavated material from this project as possible Submit documentation on a monthly basis (materials quantities with source). 	<p>Permits issued to quarries/sources of materials</p> <p>One-off prior to start of work</p>	Contractor	PIU	No additional costs
11	Planning of access routes to sites	<ul style="list-style-type: none"> Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites. Schedule transport and hauling activities during non-peak hours. Locate entry and exit points in areas where there is 	<p>Transportation Plan</p> <p>One-off prior to start of construction work</p>	Contractor	PIU	No additional costs

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementation Agency	Monitoring Agency	Estimated cost
		<p>low potential for traffic congestion.</p> <ul style="list-style-type: none"> • Keep the site free from all unnecessary obstructions. • Drive vehicles in a considerate manner. • Coordinate with the Traffic Police for temporary road diversions and for provision of traffic aids if transportation activities cannot be avoided during peak hours. • Notify affected sensitive receptors by providing sign boards with information about the nature and duration of construction works and contact numbers for concerns/complaints • Road works and road signage must be illuminated at night. • Ensure access to households along the three roads during the construction phase. 				

Appendix 8.2: Environmental Management Plan: Construction Stage

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
1(a)	Air quality impacts: Site works	<ul style="list-style-type: none"> As far as possible, plan site clearance and earthwork activities towards the end of the north-east monsoon (January - February), when the soils will be damp naturally, without being subject to the downpours of the previous two months. To suppress dust, Contractor should water exposed sand, soil and stockpiled material on site sufficiently frequently (several times per day) Provide a compound wall or wind breaking structure around the plant site to minimize the wind; this will minimize dust generation, and also drifting of sand into excavated trenches If dust generation is significant, provide a dust screen of appropriate height Conduct work in stages to reduce dust impacts, clearing and then conducting construction in only a portion of the site at a time. Control access to work area, prevent unnecessary movement of vehicles, workers, public trespassing into work areas; limiting soil disturbance will minimize dust generation Contractor's environmental manager should monitor these activities and take action to apply the mitigation if dust production becomes significant. 	<p>Schedule of works</p> <p>Dust suppression measures - Visual site observations</p> <p>Ambient air quality monitoring as per EMP</p> <p>Weekly</p>	Contractor	PIU	Part of construction cost
1(b)	Air quality impacts: material haulage, vehicle and equipment use	<ul style="list-style-type: none"> Use tarpaulins to cover loose material (soil, sand, aggregate) when transported by trucks Clean wheels and undercarriage of haul trucks prior to leaving construction site/quarry Control dust generation while unloading the loose material (particularly aggregate, soil) at the site by sprinkling water 	<p>Transportation Plan</p> <p>Dust suppression measures - Visual site observations</p> <p>Ambient air quality</p>	Contractor	PIU	Part of construction cost

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<ul style="list-style-type: none"> Stabilize surface soils where loaders, support equipment and vehicles will operate by using water and maintain surface soils in a stabilized condition Ensure that all the construction equipment, machinery are fitted with pollution control devises, which are operating correctly, Ensure that only those vehicles and equipment in good condition, and are in good maintenance are used for project construction Vehicles/equipment should have a valid Vehicle Emission Certificate (VEC) showcasing emissions below the specified limits Maintain VEC records of all vehicles all times for ready inspection at the work sites 	<p>monitoring as per EMP</p> <p>Weekly</p>			
2	Construction noise & vibration	<ul style="list-style-type: none"> Do not conduct any high noise generating activities near sensitive receptors; conduct regular monitoring of noise levels as per the monitoring plan Limit construction activities to day time only Noise level at the boundary of site shall not exceed 70 dB(A) during day and 50 dB(A) during night Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and use portable street barriers to minimize sound impact to surrounding sensitive receptor Avoid loud random noise from sirens, air compression, etc. Avoid using multiple high noise generating equipment / activities simultaneously Install temporary or portable acoustic barriers around stationary construction noise sources Horns should not be used unless it is necessary 	<p>One-off Work program</p> <p>Continuous site auditory observations</p> <p>Continuous vibration monitoring by 'feeling state' monitoring</p> <p>Weekly noise monitoring data using mobile measuring device</p> <p>Vibration measurements using a measuring equipment, if needed</p>	Contractor	PIU	Part of construction cost

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<ul style="list-style-type: none"> Consult local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals (for road construction works) Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity (for pipeline works). Conduct noise and vibration monitoring as per the EMoP. For this purpose, the Contractor should carry out crack surveys prior to commencement of the work. 				
3	Impacts on soil and geology Loss of productive soil due to erosion Slope stability Soil contamination	<ul style="list-style-type: none"> Retention the ground cover and vegetation (to the extent as possible) is the most natural and effective way of protecting soil from erosion by wind and rain; the feasibility of phasing site clearance in this way in order to reduce these impacts should be investigated when the construction work is planned in detail by the Contractor. Top soil removed from productive land shall be reused at other land or for re-plantation purposes. Such soil shall also be used as top cover of embankment slopes, and other areas for growing vegetation to protect soil erosion. Exposed areas and areas of loose soil shall be turfed or planted with shrubs. Follow up watering and maintenance of the turf must be carried out to ensure the survival of the plants and success of the slope stabilization. Land used for yards, labor camps and offices, temporary access road, borrow and quarry sites shall be rehabilitated and restored back to its original use as practical as possible Fresh and unstable slopes, loose rock and boulders shall be appropriately protected. Embankment surfaces shall be compacted and turfed. Proper 	<p>Throughout the project area with special attention to yards, vehicle parking and servicing areas and construction activities near paddy and other agricultural lands</p> <p>Near quarry and borrow sites, camps sites, storage yards, vehicle parks, yards and temporary offices</p> <p>Along embankments</p>	Contractor	PIU, PIC & RDA	To be included under contractors costs

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<p>drainage improvement works shall be done along toes areas of embankments and slopes.</p> <ul style="list-style-type: none"> • Movement of construction vehicles shall be restricted to access roads, haulage routes and yards to prevent soil compaction in other land, especially agricultural lands. In case this is not prevented, such disturbed land should be tilled/harrowed. • Chemicals such as bituminous products, fuel, lubricants, paints, solvents and other chemicals shall be stored at designated laces, well-sheltered and impervious floors (preferable paved). The paving area of the storage yards be provided with gentle slope and shall be made so that any leaks/spills can be collected into a chamber for safe disposal. Such chemicals shall be well-managed and efforts shall be made to minimize the waste generation. 				
4	Impacts on hydrology and flooding	<ul style="list-style-type: none"> • Contractor's activities shall not lead to flooding conditions as a result of blocked drainage paths and drains or any other modifications to drainage paths. • The contractor shall take all measures necessary and as directed by the PIU to keep all drainage paths and drains clear of blockage at all times. • If flooding or stagnation of water is caused by contractor's activities, contractors shall provide suitable means to (a) prevent loss of access to any land or property and (b) prevent damage to land and property. • Contractor's activities shall not lead to aggravate floods when working in flood prone areas. • Further, any recommendations laid down by the hydrological studies, should be adopted at flood prone areas. • Contractor shall not select land within flood prone 	<p>Throughout project area with special attention to the locations of cross drainage, Major culverts/bridges, Identified flood prone areas with Visual inspection</p> <p>Locations of flooding (if any), Flood depth, Flood duration, Flood frequency, Causes of flooding (debris/ sediment level)</p> <p>Continuous monitoring during rainy season and</p>	Contractor	PIU, PIC & RDA /Local authority	To be included under contractor's costs

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		areas for the purpose of disposing excavated and unsuitable material, locations for material stock piles, yards and other locations where chemicals and other construction material are stored	especially during major storm events			
5	Deterioration of Water quality	<ul style="list-style-type: none"> • Prepare a method statement following accepted construction procedures for works located close to water bodies and close to water bodies. • Avoid earthworks during rainy days and monsoon season to prevent soil run-off and schedule works during dry season when the water levels are low • Avoid stockpiling of earth fill during the monsoon season unless covered by tarpaulins or plastic sheets • Dispose spoils in designated disposal areas • Install temporary silt traps or sedimentation basins along drainage leading to water bodies • Place storage areas for chemicals, fuels & lubricants away from any drainage leading to water bodies; Store fuel, construction chemicals etc., under shelter and on an impervious floor, also avoid spillage • Pump out the water collected in the pits/excavations to a temporary sedimentation basin dispose off only clarified water into drainage channels/streams • Consider safety aspects related to trench/pit collapse due to accumulation of water • No spillage of oil, grease, chemicals etc., into the paddy fields and water bodies, flood plains and reservations • Dispose any residuals at identified disposal site, and stock pile construction material away from paddy fields and water bodies, flood plains and reservations • Do not conduct any cleaning, washing, rinsing of machinery and equipment near the water bodies; 	<p>One-off Work program</p> <p>Visual site observations</p> <p>Water quality monitoring data</p>	Contractor	PIU PIC	Part of construction cost

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<p>prevent any waste/water from discharging into water bodies.</p> <ul style="list-style-type: none"> Inspect all vehicles daily for fluid leaks before leaving the vehicle staging area, and repair any leaks before the vehicle resumes operation Ensure that no silt laden runoff from nearby construction area enter the water bodies; Excess water sprinkling on soil, material to control dust may also generate runoff which may enter the water bodies; this should be avoided by controlled water sprinkling Conduct surface quality inspection according to the EMoP 				
6	Pollution from asphalt and batching plant operation	<ul style="list-style-type: none"> Ensure that batching plant is installed with in-built air pollution and dust control system; for fugitive emissions/dust from loading area, provide dust screen around the components Ensure that plant is well operated & maintained at all times according to O&M manuals provided by the equipment manufacturer; The asphalt loading area is equipped with a leak-proof concrete floor, from which all drainage is collected and treated as necessary prior to discharge Asphalt trucks and especially drums are washed out only in a designated area, which should also be equipped with a leak-proof floor, from which drainage is collected and treated as necessary All chemicals used in asphalt preparation are properly stored, whether dry, in powder or granular form, or as liquids. Storage facilities should be as specified in the appropriate international standard, and should include equipment to extract dust and completely contain any spillage from leaks 	<p>Establishment of batching plant One-off for preparation and establishment of the Operations Manual</p> <p>Operations manual should include waste management plan</p> <p>Visual site observation by weekly inspection of waste storage area</p> <p>Monthly Waste audits</p>	Contractor	PIU PIC CEA LAs	Part of construction cost

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<ul style="list-style-type: none"> Conduct waste audits and inspections according to the EMoP 				
7	Hazardous waste management	<ul style="list-style-type: none"> Any hazardous waste shall be stored at the designated place prior to disposal. To avoid water and soil contamination at batching plants, storage areas and wash-down areas, leak and spill prevention plans shall be established. Any accidental leaks/spills shall be arrested and cleaned appropriately and such procedures shall be established. Workers shall be trained and made aware of such procedures. Oil interceptors shall be provided at appropriate locations (e.g., vehicle service areas). Residual and hazardous wastes such as asphalt and bituminous waste, solvents, oils, fuels, and lubricants shall be disposed of in approved disposal sites approved by the CEA Hazardous material, including oil and grease to be collected in leak-proof, properly-labeled containers and stored appropriately. Proper signs should be displayed for hazardous waste) and should be handed over to authorized third parties who has CEA licenses 	<p>One-off for preparation and establishment of the Operations Manual that should include waste management plan</p> <p>Visual site observation of proper management practices by weekly inspection of waste storage area</p> <p>Monthly Waste audits</p>	Contractor	PIU to monitor and report to the CEA and LA	
8	Debris / waste disposal	<ul style="list-style-type: none"> Implement a Construction Waste Management Plan (CWMP); include the following measures in the plan Reuse as much waste sand in this project as possible Find alternative beneficial uses for any unused sand, e.g., fills in other construction works stripping out the trunks and larger branches from trees and shrubs and providing these to the local community free of charge for building or fuel No vegetation should be burnt on site to avoid release of greenhouse gases 	<p>Implementation of CWMP</p> <p>Weekly visual site observations</p> <p>Monthly Waste audits</p>	Contractor	PIU to monitor and report to the CEA and LA	Part of construction cost

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<ul style="list-style-type: none"> All waste/waste sand and vegetation should be covered by secure tarpaulins whenever transported offsite, to prevent material being blown from trucks Avoid stockpiling any excess spoils at the site for long time. Excess excavated soils should be disposed off to approved designated areas immediately If disposal is required, the site shall be selected from barren, infertile lands, no/least vegetated areas; site should located away from residential areas, forests, coast, water bodies and any other sensitive land uses Domestic solid wastes should be properly segregated for collection & disposal to designated disposal site; create a compost pit at workers camp sites for disposal of biodegradable waste; non-biodegradable / recyclable material shall be collected separately and sold in the local recycling material market Prohibit burning of construction and domestic waste; Ensure that wastes are not haphazardly thrown in and around the project site; provide proper collection bins, and create awareness to use the dust bins Conduct site clearance and restoration to original condition after the completion of construction work especially along the conveyance pipeline route, beach area, and around the RODP; ensure that site is properly restored prior to issuing of completion certificate 				
9	Traffic and access related impacts	<ul style="list-style-type: none"> Temporary access will be provided to properties that are located adjacent to the roads under construction Temporary parking areas for urban areas will be identified. Proper management of work zone will be carried out in urban areas. Construction scheduling will be done to allow accessibility from alternative routes 	<p>Properties along the three roads, especially access to residents, business premises and by-roads</p> <p>Urban areas where</p>	Contractor	PIU to monitor and report to LAs	Part of construction cost

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<ul style="list-style-type: none"> Temporary traffic management schemes will be used at the commencement of the project Traffic diversion planning and implementation will be done. Adequate signboards shall be placed much ahead of diversion site to caution the road users. The road signs should comply with the Road Safety Manual of RDA Reinstatement of road sections be carried out as per specifications and method statement will be given at the commencement of the project. Road furniture including footpaths, railings, storm water drains, crash barrier, traffic signs, speed zone signs, pavement markers and any other such items will be provided to enhance the road safety where necessary at the completion of the project Night time illumination should be in place at every location where the road is narrow, diverted and structures are repaired and any other places where PIC recommends to do so. Monitor and record road crashes during construction and maintenance stages and take appropriate remedial actions 	<p>disturbances to vehicle parking would occur.</p> <p>Locations where access to businesses premises are disturbed in urban areas</p> <p>Continuous throughout the construction period</p>			
Ecological Impacts						
10	Loss / damage to flora and fauna	<ul style="list-style-type: none"> Ensure that all construction activities are conducted strictly within the site footprints (including offices, vehicle parking and other activities that might normally be located in an exterior contractor's area); no clearance of vegetation/trees outside footprint is permitted Prohibit any deliberate killing or harming of animals on or off-site; any hunting or fishing or in nearby areas by site personnel; preventive actions shall be put in place 	<p>One-off prior to start of work: Construction camp/yard establishment & management plan</p> <p>Weekly Visual observations</p>	Contractor Labour sub-contractors	PIU with the assistance of specialist monitoring agency	Part of construction cost

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<p>by contractor for hunting/killing of wild animals</p> <ul style="list-style-type: none"> • Ensure that all construction work or other activities near the site perimeter are conducted with particular care and include measures to reduce noise and dust to minimum possible • Conduct the site clearance and earthworks in a phased manner, gradually advancing noise & visual disturbance, which will encourage animals to leave before their habitat is affected • Create awareness in all site staff & workers on the importance of the animals and plants on site and in the surrounding area, and their vulnerability • To protect site personnel, training should also be provided to enable them to recognize & deal safely & humanely with all venomous animals that may be encountered (e.g., snakes and scorpions) • Conduct site preparation activities, including vegetation removals, outside of the breeding season for wildlife, including migratory birds • Prevent access to areas located beyond the construction zone; fence and barricade the plant area with controlled entry and exit 	<p>Monthly Interviews with workers and local people</p> <p>Accident and medical records</p>			
11	Impacts on protected species of flora and fauna	<ul style="list-style-type: none"> • Prepare a method statement following accepted construction procedures in paddy/wetlands. This interalia include pollution control (water, air, noise), limiting disturbance, unharmed wildlife etc. • Create awareness among workers and site staff on wildlife and protected species • Provide to workers or post in work area for the workers, illustrations or pictures of protected/ endangered species, which can be found in the work area or its immediate surroundings • Instruct workers to stop work immediately and report 	<p>Monthly Awareness & training programs</p> <p>Consulting an ecologist during the construction work</p>	Contractor Labour sub-contractors	PIU with the assistance of specialist monitoring agency	Part of construction cost

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<p>to supervisor/contractor's environment specialist on any on-site presence of protected/endangered species</p> <ul style="list-style-type: none"> Conduct construction works under the continuous monitoring of an Ecologist (as far as the same expert who conducted confirmatory survey) Conduct work in areas close to water bodies when the water level is very low 				
Health & Safety						
12	Community safety & health	<p><u>Work along public roads</u></p> <ul style="list-style-type: none"> Adopt standard and safe practices for road construction Ensure access to houses and business along the alignment; provide wooden planks, metal sheet with protective barricades/rails to allow access to the properties Provide temporary traffic control (e.g. flagmen) & signs where necessary to improve safety and provide directions Restrict public access to all areas where construction works are on-going through the use of barricading and security personnel Ensure that all material, equipment, workers and all activities are conducted within the demarcated / barricaded strip of land along the road; there should be no spillage of any activity outside this zone Clearly separate work area with traffic/pedestrian flow; provide public information boards to easily identify the work area Warning signs, blinkers will be attached to the barricading to caution the public about the hazards 	<p>Work methods and implementation of measures</p> <p>Weekly visual site observations, interviews with workers and community</p>	Contractor Labour sub-contractors	<p>PIU to monitor and report to PHI of the LAs and MOH</p> <p>PIU to coordinate with the Police Department</p>	Part of construction cost

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<p>associated with the works such as presence of trenches / deep excavation</p> <ul style="list-style-type: none"> Plan carefully using section-by-section approach, so that open trenches are quickly closed and road restored Control dust pollution – implement dust control measures as suggested under air quality Organize public awareness campaigns. 				
		<p><u>Safety risk due to construction vehicle/equipment movement on public roads</u></p> <ul style="list-style-type: none"> Prepare a Transportation Plan for material, waste and equipment; consult highways agencies, police and other relevant authorities during both planning & implementation Plan transportation routes to avoid heavily populated areas Schedule deliveries to avoid town centers and other congested areas during morning and evening peak traffic periods Astute coordination to combine deliveries where possible, to avoid under-utilization of vehicles and reduce the number of journeys Source materials in the close proximity (within NCP) and other local outlets wherever possible, to reduce the length of delivery journeys Conduct awareness programs and information campaigns in habitations along the roads about the movement of heavy vehicles and traffic safety measures Provide safety, information and caution boards where necessary There are schools along the roads, construction 	<p>Implementation of Transportation Plan and Monthly monitoring</p> <p>Weekly Visual site observations, interviews with workers and community</p>	Contractor and labour sub-contractors	<p>PIU to monitor and report to PHI of the LAs and MOH</p> <p>PIU to coordinate with the Police Department</p>	<p>Part of construction cost</p> <p>Part of construction cost</p>

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<p>vehicle movement shall be restricted during the school opening and closing hours; if unavoidable, place traffic guards at school and other sensitive places, like hospitals, religious place etc. Notify affected sensitive receptors by providing sign boards with information about the nature and duration of construction works and contact numbers for concerns/complaints</p> <ul style="list-style-type: none"> • Provide continuous training to drivers to drive vehicles in safe & considerate manner • Coordinate with the Traffic Police for temporary road diversions and for provision of traffic aids if transportation activities cannot be avoided during peak hours. 				

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13	Occupational health & safety	<ul style="list-style-type: none"> • Comply with National Institute of Occupational Safety and Health and IFC EHS Guidelines on Occupational Health and Safety. And other guidelines on occupational health and safety issued time to time by other government institutes/ agencies of Sri Lanka. • Prepare a comprehensive & site-specific Health and Safety Plan (H&SP) describing in detail how the health and safety of all site personnel (workers, staff and visitors) will be maintained at all times (including measures that would be taken in case of spread of a communicable disease within the site or project area). It is to provide guidance on establishing a management strategy and applying practices that are intended to eliminate, or reduce, fatalities, injuries and illnesses for workers performing activities and tasks associated with the project. • Obtain a health (medical certificate) and behavioral certificate (police report) from all staff and workers who are recruited to office and sites (this shall be applicable for sub-contractors also). • Upon returning for work (after a shutdown) all staff and workers shall inform the health and safety officer of any ailments they had during the vacation period. • Provide compulsory H&S orientation training (including awareness on both communicable/ non-communicable diseases, good health and hygienic practices) to all new workers to ensure that they are apprised of H&S Plan including rules of work, PPE, preventing injury to fellow workers, etc.,. • Conduct regular tool box safety briefings; leanings, causes, risks & safe procedures • Conduct periodic safety audit, identify and remove potential hazard • Ensure that qualified first-aid is provided at all times; • Staff/ workers shall be made aware to report any symptoms of ailments immediately to their supervisor/s. • The site management shall keep continuous contact with PHI, local health authorities during the construction period. 	<p>Health & Safety Plan</p> <p>Implementation of measures</p> <p>Weekly visual observations</p> <p>Weekly interviews with workers</p>	contractor	PIU	Part of construction cost
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	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<p>equipped first-aid stations shall be easily accessible throughout the work sites and camps. These first-aid stations shall include an isolation room, or the project office or site shall have a room/ structure that would be converted to an isolation room if required.</p> <ul style="list-style-type: none"> • Provide medical insurance coverage to workers. • Secure all installations from unauthorized intrusion and accident risks. • Provide supplies of potable drinking water • Provide clean eating areas where workers are not exposed to hazardous or noxious substances. • Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present; visitors not to enter hazard areas unescorted • Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas • Ensure moving equipment is outfitted with audible back-up alarms • Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate. • Disallow worker exposure to high noise level for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively. • Sharing of tools and equipment shall be not allowed. Tools and equipment used shall be cleaned and returned to stores on a daily basis. 				

		<ul style="list-style-type: none"> Smoking and chewing of betel shall be prohibited during work hours. 				
14	Labor camps	<ul style="list-style-type: none"> Avoid / minimize the requirement to establish camps by hiring gangs by employing local workers as far as possible. Separate and adequate number of waste bins shall be provided and maintained at labour camps. Waste collected in these bins shall be disposed as per guidelines/ instructions/ regulations of local authority/ies of the project area. Proper health and hygienic conditions shall be maintained in the labour camps. Labour huts shall be cleaned on a regular basis and especially before re-opening after a shutdown. The storm water drains around the labour camps shall be maintained and stagnation of storm water or waste water from kitchen, canteen and bathing/washing areas shall be avoided. PHI of the area shall be invited to visit these labour camps on a regular basis to obtain his/ her advice on maintaining good hygienic conditions at site. 	<p>Construction Camp Management Plan</p> <p>Monthly visual</p>	contractor	PIU	Part of construction cost

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		<p>environment</p> <ul style="list-style-type: none"> • If necessary contractor to identify a barren, vacant land (preferably private unused land) to establish the camp nearby; ensure that such camp is at least 500 m away from habitation, water bodies, scrub lands etc., and 1 km from forest reserves • Prepare & implement Construction Camp Management plan (CCMP). Plan should include: <ul style="list-style-type: none"> ○ Layout plan showing all the proposed facilities, offices, material storage area (separately for hazardous waste, fuel, chemicals etc.), amenities, repair and washing areas, and circulation areas/roads ○ Integrate drainage, water pollution, air pollution, and noise control measures ○ Drinking water, sanitation, washing, eating and resting places for workers ○ Proper liquid waste and solid waste collection, treatment and disposal system ○ Fire safety, medical facilities • Separate the workers living areas and material storage areas, work sites clearly with a fencing and separate entry and exit • Ensure conditions of livability at work camps are maintained at the highest standards possible at all times; living quarters and construction camps shall be provided with standard materials with proper ventilation); thatched huts, and facilities constructed with materials like GI sheets, tarpaulins, etc., shall not be allowed as accommodation for workers • Camp shall be provided with proper drainage, there shall not be any water accumulation • Provide drinking water, water for other uses, & 	<p>observations, interviews with workers and local people</p>			

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
		sanitation facilities (separate toilets for men and women) <ul style="list-style-type: none"> Prohibit employees from cutting of trees for firewood; contractor should provide cooking fuel (oil or gas; fire wood not allowed) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; provide a compost pit for biodegradable waste, and non-biodegradable / recyclable waste shall be collected and sold in local market 				
Socio-economic Impacts						
15	Impacts on Livelihood activities of the project area	<ul style="list-style-type: none"> Providing information related to construction schedules of each road to business persons, public institutions and also the householders. Providing supports through contractors to the operators of small movable business structures to shift their temporary structures to another location in the same area if required. Providing supports to establish temporary access to business ventures located adjacent to the road edges Action to complete the construction activities in sensitive locations within the planned time periods. 	Entire stretch of each road but especially the sections fallen within town ships, Leaflets including project and its implementation schedule to be distributed ,The number of temporary business structures available vs. number moved can be used as monitoring parameter, Similarly number of households/business establishments had access difficulties vs. number helped by the	, Contractors and affected community members,	PIU, Design and construction supervision consultants	Costs are inbuilt to the budgets of PIU, Design consultants and contractors

	Project Action/ Environmental Impact	Mitigation Measures	Location/ Parameter/ Monitoring Frequency	Implementing Agency	Monitoring Agency	Estimated cost
			project will be used as monitoring parameter, The planned period for construction vs. the actual time period taken to complete construction can be used as monitoring parameter.			

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Section 6.7 Specifications for Performance Based Maintenance Contract

The Section 6.7, Specifications for Performance Based Maintenance (PBM) given in this Section shall form part of the Bid Document and the details prescribed therein are contractually binding. The implementation of the Performance Based Maintenance of the project is mandatory and hence the bidders are advised to go through the requirements specified in this section for pricing the relevant items in the Bills of Quantities.

The bidders shall quote rates for PBM for a period of five years from the date of taking over of works. The total amount quoted for PBM shall not be less than 5% of the cost or rehabilitation/improvement of the road, i.e. sum of amounts in Bill Nos. 2, 3, 4, 5, 6, 7 & 8 of the BoQ.

If the bidder's quoted price is less than 5% of Bill Nos. 2, 3, 4, 5, 6, 7 & 8 of the BoQ, then, only for evaluation purposes, an amount equivalent to 5% will be considered.

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1. Service Levels and Performance Indicators

1.1 Introduction

A road is designed and constructed to pre-determined standards in order to fulfil a particular function required by road users, e.g. adequate capacity and safe, economic operational characteristics.

As with any other type of infrastructure, a road asset will deteriorate over time and will depend on many factors. Maintenance will be essential in order to preserve the asset and ensure the original levels of service are prolonged for as long as possible.

Performance Based Maintenance contracting for Roads is designed to increase the efficiency and effectiveness of road asset management and maintenance. It should ensure that the physical condition of the roads under contract is adequate for the need of road users, over the entire period of the PBM contract by ensuring compliance with performance levels .

1.2 Scope of Services to be provided

The services to be provided by the Contractor include all activities, physical or others, which the Contractor needs to, carry out, in order to comply with the Service Levels and other output and performance criteria indicated under the contract, or with any other requirements of the contract. In particular, they include management tasks and physical works associated with the following road-related assets and items:

- Roadway
- Shoulder
- Drainage
- Structures
- Right of Way
- Signage and Road Safety
- Other

The Contractor shall prepare and submit a monthly report including resources allocated during the month and the work performed.

1.3 Service levels

Service levels for maintenance describe the limits within which specific features of the road are to be preserved and are set according to the *achievable* service levels for the constructed asset.

1.4 Logistics Required

For the monthly service level compliance inspections and re-inspections, the Contractor's own maintenance unit should work in close collaboration with the Engineer. The physical resources required for the inspections / re-inspections shall be provided by the Contractor and shall comprise as a minimum:

- 2 No air conditioned 4WD double cabin pickup vehicles.
- The Contractor's representative plus two helpers.
- All equipment, tools and instruments needed, as elsewhere described.

1.5 Performance Levels (Indicators)

The monitoring of road performance and service levels requires the use of indicators for individual road features, which specify limits within which an acceptable condition or measurable value shall lie and the response time for any required rectification measures to be effected. The Performance level requirements are given in the **Table-1**.

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Table 1 –Service Levels (Indicators)
Road carriageway

Maintenance Element	Defect	Description, Measurement, Detection	Allowable level	Delay Standard Dangerous defect	PBM Payment Applicable	
					Year 1&2	Year 3-5
CARRIAGEWAY	Road Roughness	International Roughness Index (IRI)	Not to exceed 2.5	Apply corrective course to defective areas	yes	yes
ROADWAY	Road Closure	Road Closure	Open to traffic and free of interruptions at all times. Except for lane closures due to emergencies like landslides or flooding, accidents, and road works. In such cases, the interruptions to traffic shall be kept as short as possible. For road works, only one lane shall be closed at a time.	The contractor shall inform the Engineer of any lane closures and indicate the location, length and time period of the road closure. Lane closures for scheduled road works shall be reported to the Engineer at least 24 hours in advance. if road closure occurs due to unforeseen event it shall be reported to the Engineer within 2 hours	Yes	Yes
	Cracking	Measure the width of cracks with transparent ruler. For isolated cracks, the cracked area includes the surface 500mm at both sides of the crack plus 500 mm at each end of the crack. For ramified cracks or alligator cracking the area shall be defined as a rectangle, parallel to the axis of the carriageway, enclosing the cracked area by a 500mm excess in all parts.	No cracks wider than 3mm are allowed. For whatever 50m length section, the cracked area will be lower than 10% of the total sealed area	Cracks shall be sealed within seven days (7) from their detection	Repair under DNP provision	Yes
	Potholes	eregradation of pavement, visual inspection, ruler	No Potholes with biggest dimension superior to 100mm and depth superior or equal to 20mm. Permitted maximum number of accumulated potholes with an equivalent diameter greater than 100mm in any continuous 1000m section is 5 nos. (Vol 0.15lit)	Potholes shall be repaired within seven days (7) from their detection. Potholes over 50 cm and deeper than 7 cm are considered as dangerous and shall be repaired within two (2) days	Repair under DNP provision	Yes
	Localized patching	Visual inspection and transparent ruler and 3 m rule for verification of the level compared to the carriageway	Patches have to be square, in level with the rest of the carriageway or shoulder, must have been executed using materials similar to the ones used during construction and shall not present cracks wider than 3 mm	Non-conforming patches shall be redone within seven days (7) from their detection	Repair under DNP provision	Yes
	Edge-break	Visual inspection	No edge-break shall be present reducing the width of the carriageway or sealed shoulders by more than 50mm	The affected areas shall be repaired within 7 days (7) from their detection	Repair under DNP provision	Yes
	Rutting	With the use of 2 rulers: 3 m ruler perpendicular and across the lane and plastic ruler to measure the distance between the horizontal 3 m ruler and the lowest point of the rut.	No rut exceeding 15 mm will be present. 1 km section, no ruts exceeding 10 mm and cumulative length over 50 m can exist	The affected areas shall be repaired within seven days (7) from their detection. If rut exceeds 50mm it is considered as dangerous and shall be repaired within 2 days (2) from their detection.	Repair under DNP provision	Yes

Section 6 - Employer's Requirements

	Ravelling	Visual Inspection	Ravelling areas must not exist	Ravelled areas must be sealed within 07 days after their detection	Repair under DNP provision	Yes
	Stripping, peeling, bleeding	Visual inspection	No stripping, peeling, bleeding should be present over an cumulative area representing 5% of the surface of whatever 50 m road section	The affected areas shall be repaired within seven days (7) from their detection If bleeding on the carriageway compromises the skid resistance, it is considered as dangerous and will be sanded within two (2) days	Repair under DNP provision	Yes

Road Shoulder including Verges

Maintenance Element	Defect	Description, Measurement, Detection	Allowable level	Delay Standard Dangerous defect	PBM Payment Applicable	
					Year 1&2	Year 3-5
SHOULDERS (Unsealed)	Height of shoulders vs. height of pavement (Edge Gap)	Measured with ruler, with scale in mm.	Difference in height at edge of pavement shall not be more than 50 mm.	The affected areas shall be repaired within seven days (7) from their detection Levels exceeding 100 mm are considered to be dangerous and should be repaired within seven (7) days.	Repair under DNP provision	Yes
	Rutting	With the use of 2 rulers: 3 m ruler perpendicular and across the lane and plastic ruler to measure the distance between the horizontal 3 m ruler and the lowest point of the rut.	No rut exceeding 50 mm will be present. For every 1 km section, no ruts exceeding 30 mm and with cumulative length over 100 m can exist	The affected areas shall be repaired within seven days (7) from their detection.	Repair under DNP provision	Yes
	Erosion / deformation	Visual Inspection, transparent ruler. Spirit level.	Will not present erosion or deformation superior to 50 mm deep or 200 mm wide. Shall not present negative slopes blocking the water to run out of the carriageway.	The affected areas shall be repaired within seven days (7) from their detection.	Repair under DNP provision	Yes
SHOULDERS (Sealed)	Cracking	Measure the width of cracks with transparent ruler. For isolated cracks, the cracked area includes the surface 500mm at both sides of the crack plus 500mm at each end of the crack. For ramified cracks or alligator cracking the area shall be defined as a rectangle, parallel to the axis of the carriageway, enclosing the cracked area by a 500mm excess in all parts.	No cracks are allowed. For whatever 50m length section, the cumulative cracked area will be lower than 10% of the total sealed area	Cracks shall be sealed within seven days (7) from their detection	Repair under DNP provision	Yes
	Potholes	degredation of sealing, Visual Inspection, Ruler.	Potholes with biggest dimension superior to 100 mm and depth superior or equal to 20 mm ,Permitted maximum number of accumulated potholes with an equivalent diameter greater than 100mm in any continuous 1000m section is 5 nos.	Potholes shall be repaired within seven days (7) from their detection Potholes over 300mm and/or deeper than 75 mm are considered as dangerous and shall be repaired within two (2) days	Repair under DNP provision	Yes

Section 6 - Employer's Requirements

	Localized patching	Visual inspection and transparent ruler and 3 m rule for verification of the level compared to the carriageway	Patches have to be rectangular/square, in level with the rest of the carriageway or shoulder , must have been executed using materials similar to the ones used during construction and shall not present cracks wider than 3 mm	Non-conforming patches shall be redone within seven days (7) from their detection	Repair under DNP provision	Yes
	Edge-break	Visual inspection	No edge-break shall be present reducing the width of the carriageway or sealed shoulders by more than 50mm	The affected areas shall be repaired within seven days (7) from their detection	Repair under DNP provision	Yes
	Rutting	With the use of 2 rulers: 3 m ruler perpendicular and across the lane and plastic ruler to measure the distance between the horizontal 3 m ruler and the lowest point of the rut.	No rut exceeding 15 mm will be present. For every 1 km section, no ruts exceeding 10 mm and with cumulative length over 50 m can exist	The affected areas shall be repaired within seven days (7) from their detection. If rut exceeds 5 cm it is considered as dangerous and shall be repaired within 7 days (7) from their detection.	Repair under DNP provision	Yes
	Ravelling	Visual Inspection	Ravelled areas of depth \geq 20mm shall not exist	Shall be sealed within 7 days after detection	Under DNP provision	Yes
	Stripping, peeling, bleeding	Visual inspection	No stripping, peeling, bleeding should be present over an cumulative area representing 5% of the surface of whatever 50 m road section	The affected areas shall be repaired within seven days (7) from their detection If bleeding on the carriageway compromises the skid resistance, it is considered as dangerous and will be sanded within two (2) days	Repair under DNP provision	Yes

Right of Way

ROW	Poorly maintained vegetation and litter control	Visual inspection	Shall be clean and free of litter. Vegetation shall not be higher than 50-200 mm within the ROW except for designated trees. No signs will be obstructed with vegetation and vegetation will not obstruct free water flow	The affected areas shall be cleared within seven days (7) from their detection.	Yes	Yes
	Over hanging branches above carriageway dangerous to traffic	Measuring Pole	No branches above the Carriageway or shoulder shall be lower than 6.0 m above the surface at any time	The affected areas shall be cleared within seven days (7) from their detection.	Yes	Yes
	Over grown vegetation	Visual inspection	Grass around signs, structures, barriers shall be kept lower than 150mm within 1 m around the element.	The affected areas shall be cleared within seven days (7) from their detection	Yes	Yes

Drainage

Maintenance Element	Defect	Description, Measurement, Detection	Allowable level	Delay Standard Dangerous defect	PBM Payment Applicable	
					Year 1&2	Year 3-5
DRAINAGE (Longitudinal)	Inefficient earth drains	Visual inspection	Obstruction shall be less than 10% of the theoretical capacity of the drain	The affected areas shall be repaired within seven days (7) from their detection.	Yes	Yes
	Inefficient lined drains	Visual inspection	Obstruction shall be less than 10% of the theoretical capacity of the drain. Lining without any significant damage of the lining.	The affected areas or damage shall be repaired within seven days (7) from their detection.	Yes	Yes
	Inefficient covered drains	Visual inspection	Obstruction shall be less than 10% of the theoretical capacity of the drain. Lining without any significant damage of the lining. Covers should be present and in good condition on the total longitude and no space between covers shall exceed 50mm	The affected areas or damage shall be repaired within seven days (7) from their detection. Defective covers or covers with spacing superior to 100mm are considered as dangerous and should be repaired/replaced within three (1) days	Yes	Yes
DRAINAGE (Cross Drainage - Culverts)	Obstruction to flow / poor cleaning	Visual inspection	Obstruction shall be less than 10% of the theoretical capacity of the drain.	The affected culverts shall be repaired within seven days (7) from their detection.	Yes	Yes
	Structural damage	Visual inspection	Without any significant damage. No erosion should be found	Damage shall be repaired within seven days (7) from their detection.	Repair under DNP provision	Yes
	Poor visibility of exposed elements / faded.	Visual inspection	Apparent elements shall be clean and white painted with readable markings	The affected culverts shall be white washed within seven days (7)	Yes	Yes

Road signs and Road safety

Maintenance Element	Defect	Description, Measurement, Detection	Allowable level	Delay Standard Dangerous defect	PBM Payment Applicable	
					Year 1&2	Year 3-5
SIGNAGE and ROAD SAFETY	Unclean road marking / poorly visible	Visual inspection	Shall be present and adhere to the surface. Shall be clean	The affected areas shall be repaired within fourteen days (14) from their detection	Repair under DNP provision	Yes
	Poorly visible / defective Road sign	Visual inspection	Shall be present , Signs shall not present with defects, shall be clean and present sufficient reflectivity. Sight of signs shall not be obstructed. Kilometre poles shall be present, readable and painted according the standards.	Non- compliance shall be corrected within seven days (7)	Repair under DNP provision	Yes
	Missing or destroyed signs.	Visual inspection	Replacement	Shall be placed or replaced within two n days (2) Provision of signs is at the charge of the Employer.	Yes	Yes

Section 6 - Employer's Requirements

	Defective security barriers	Visual inspection	Shall be present where required, without damages, painted and visible	Non-compliance shall be corrected within seven days (7). Heavy structural damage is considered as dangerous and corrective measures commenced within two days should be corrected within seven (7) days. Warning signs shall be provided immediately after a dangerous damage / defect is found.	Repair under DNP provision	Yes
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Structures

STRUCTURES	Poorly maintained expansion joints, wing walls, slope protections	Visual inspection	Clean and good condition. No structural damages.	Contractor must immediately notify the Engineer in case of condition which threatens structural integrity of the structure and take remedial measures immediately. Damages and defects must be repaired within 7 days.	Repair under DNP provision	Yes
	Poorly maintained metallic structures	Visual inspection	W Guard rails must be present and not deformed. All metal parts of overall structure shall be painted or otherwise protected and free of corrosion. Drainage system in good condition and fully functional	Contractor must immediately notify the Engineer in case of condition which threatens structural integrity of the structure and take remedial measures immediately.	Repair under DNP provision	Yes
	Poorly maintained parapets	Visual inspection	Shall be present and painted	Parapets with defects shall be replaced within seven (7) days. If parapets are missing, security chain shall be installed immediately until the parapet is repaired.	Repair under DNP provision	Yes
	Obstructed waterway	Visual inspection	Shall allow free flow upstream and downstream over 100 m	Origin of non-conformity shall be corrected within seven days (7) after the water level becomes sufficiently low to allow works.	Yes	Yes

DNP – Defects Notification Period

2. Procedures for measuring monthly service levels

The 'apparent condition characteristics' of the road are those that can be evaluated by uncomplicated means, such as visual inspection and observations or simple procedures that do not require sophisticated equipment (except equipment required for measurement of International Roughness Index (IRI)) to determine the 'apparent' condition of the pavement, shoulders, bridges, drainage, control and signalling devices and road safety. The IRI should be measured at the beginning of the PBM face and thereafter every year. In the last year of PBM IRI should be measured 6 months before end of the PBM period.

2.1 Monthly Compliance Factors (Weightings)

The Contractor is required to submit the Request for Inspection Monthly at a date agreed with the Engineer, this date should not be changed without prior consent of the Engineer and joint inspection shall be carried out within 5 days from that date. During the inspection non-compliances will be noted down and the Contractor will be duly informed by the Engineer. The Contractor shall submit the interim payment application (IPA) on the format determined by the Engineer before expiry of 5 days following the monthly inspection and the Engineer is to prepare the interim payment certificate within 7 days of the receipt of the IPA. The payment due for the month will be calculated subject to adjustment for penalty for non-compliance and reduction for delay.

The Engineer will issue a statement of noncompliance to be rectified with a schedule by which those need to be perfected. A re-inspection request is required to be submitted by the Contractor to check after perfecting those non complied items of the work. All re-inspection shall be completed before next formal monthly inspection.

If for some reason this date of inspection to be postponed such as adverse climatic conditions, emergency maintenance situations where Contractor require few days to comply with the performance levels, Engineer may reasonably accommodate such request. This provision to extend shall not be used to accommodate Contractors inefficiencies.

The measurement of response time may be done without re-inspection before the next scheduled monthly inspections, by means of Photographic evidence, random checking, outsourcing, or by another means as determined appropriate by the Engineer with the consent of Employer.

2.2 Weightings and Flow Chart of Sequence of Work

The weightages shown in the Table 2 will be assigned to determine the overall maintenance compliance at the monthly joint inspection of previous month's maintenance work.

Table 2 - Weightings for Performance Levels (Indicators)

Item No.	Description	Work to be done	Performance Indicators	Weighting	
1	Maintenance of Road Surface including hard shoulder	<ul style="list-style-type: none"> Keeping the road surface clean Rectifying any ruts and depressions, Cracking, Edge break, raveling, bleeding, potholes or any other irregularity 	<ul style="list-style-type: none"> Absence of surface defects Surface clean Edges corrected 	20%	Roadway
2	Maintenance of Road Shoulder	<ul style="list-style-type: none"> Attend to Edge gap Attend to Shoulder higher than surface edge Rectify Erosion gullies 	<ul style="list-style-type: none"> No gap between road way edge and un surfaced shoulder more than 50mm No erosion gullies No vegetation over 150mm height 	15%	Shoulder
3	Maintenance of Drainage	<ul style="list-style-type: none"> Attend to Side drains ,lined and unlined drains, covered lined drains, man holes, opening of culverts ,lead away drains, 	<ul style="list-style-type: none"> No obstruction to free flow of water No siltation or debris No visible damage to lined drains 	15%	Drainage
4	Maintenance of Structures	<ul style="list-style-type: none"> Clear Inlet, out let of culverts, ensure clearly visible, and free of defects in head walls including parapet walls, guard stones. Properly maintained General , expansion joints, bearings and all other components of bridge structures, Retaining walls of all kinds 	<ul style="list-style-type: none"> No cracks or damages All expansion joints and bearing free of silts Free of accumulated silt and dust on the decks Protection measure to ensure safety of traffic and arrest further aggravation of damage, if damage structure exist for whatever reason, until remedial measures are taken. 	15%	Structure
5	Vegetation Control	<ul style="list-style-type: none"> Vegetation control of right of way including embankments, cut slopes, Ensure no danger from Overhanging branches of trees, dead trees and branches 	<ul style="list-style-type: none"> Maintain to less than 150mm-height Maintain free of debris or derelict vehicles, and any other objects other than that exist at the time of taking over 	15%	Right of Way
6	Maintenance of Road signs and Markings	<ul style="list-style-type: none"> Clearly visible Road signs including direction boards, KM stones, Road markings, Signal systems 	<ul style="list-style-type: none"> Clean and visibility within limits All objects constructed or installed should be clearly made visible by repainting 	15%	Signage & Road Safety
7	Maintenance of Other elements not covered specifically stated	<ul style="list-style-type: none"> Ensure Road side guard rails without defects Ensure Approach slabs over side drains are available Free of any other defect identified by the Employer or the Engineer 	Free of defects to serve its function	5%	Other

3. Determination of Payment Reductions

The results of each formal inspection of the service quality levels and other performance criteria shall be recorded by the Engineer/Employer in the form of a report recording the type and location of any non-compliant feature. For each individual case of non-compliance, the Engineer/Employer should determine a date by which the Contractor must have completed the necessary measures in order to remedy the cause of the non-compliance (**Form 2**). A follow-up site visit (**Form 3**) may be necessary at the date specified by the Employer/Engineer, in order to verify that the cause of non-compliance has been remedied by the Contractor.

A penalty shall also be levied for non-compliance of any of the Performance Levels (Indicators) for any sub section of the road.

In the event that the Contractor fails to remedy the cause of any non-compliance feature noted during the inspection, within the response time applicable to the deficiency and recorded in the Monthly Maintenance Report, the payment to the Contractor shall be subject to reductions as detailed hereunder - regardless of any reason given by him for his failure to do so. Noncompliance observed in the intermediate informal inspection also notified to Contractor by the Engineer.

In this case, payment reductions, with respect to any particular cause of non-compliance, shall continue to be imposed on a monthly basis, throughout the duration of non-compliance without limit until compliance is established. The amount of any payment reduction and the formula for subsequent adjustments shall be as follows:

3.1 Payment Reductions for Non-compliance with Service Level Criteria – (First Month)

For any road or road section, the Employer shall reduce the monthly payment by the proportion of non-compliance determined as described earlier in this section. The payment shall therefore be the basic monthly lump-sum amount multiplied by the overall Coefficient of Conformity.

3.2 Penalty for Non-compliance

If any of the Performance Levels (Indicators) for any sub-section of the road is found to be non-complied with, a penalty shall be imposed for that sub-section of the road. The amount of the total penalty will be calculated by multiplying the percentage of monthly average non-compliance by the quoted rate (Km.Mth) and the total length of non complied length of the road.

3.3 Payment Reductions for Delayed Non-compliance Corrections (Subsequent months)

In the event of delays in remedying a non-compliance issue, the monthly fee shall be reduced in accordance with the formula stated under "Procedure for Monthly Evaluation" and shall be deducted from the calculated payments due for the following months until compliance is achieved.

The amount deducted for the delay incurred up to 30 days shall be continued to following months if the non-compliance is not attended.

If non-compliance is rectified before the due date, no payment reductions shall be applied to the next month's payment. Payment Reductions for each type of non-compliance in a particular kilometre (between two consecutive kilometre posts) for periods beyond the period given for completion of repair are calculated based on the following formula:

$$PR_{dly} = f * PR_u * L$$

Where,

- PR_{dly} = Payment reduction for delay
- PR_u = Basic Monthly lump-sum amount quoted by the contractor for one Kilometre of performance based maintenance multiplied by the corresponding percentage Weight Factor
- n is the delay in days beyond compliance date. If $1 < n \leq 7$ then $f = 10\%$; $7 < n \leq 14$ then $f = 20\%$; $14 < n \leq 21$ then $f = 40\%$; $21 < n \leq 30$ then $f = 50\%$;
- L is length of
- non complied sections..

3.4 Roughness – International Roughness Index (IRI)

The maximum IRI for any one km section of Road paved with asphalt must be less than threshold value given below. Measurement be done with calibrated equipment (Bump integrator or any other method decided suitable by the Engineer.. Threshold value; for newly laid Asphalt ,IRI should not exceed 2.5m/km

Before six months of end of PBM phase, the IRI should be measured. This value should not exceed 2.5 m/km. In the event of the noncompliance, the Contractor should carry out rehabilitation work necessary to bring the IRI value within limits specified above in an acceptable method to the Engineer. If Contractor failed to effect such work, Engineer may cause to recover such costs as provided in the conditions of contracts.

4.0 Procedures for Monthly Evaluation

The overall coefficient of conformity for a route or section of a road, during a given month is determined by calculating the simple average of the coefficients of compliance of all sub-sections for that month based on the weightings given in the **Table 2**.

Formally monthly inspections of apparent characteristics of each route or road section shall be made on whole length by 250m sections of each kilometer or fraction there on.

The coefficient of conformity for each 1 km section in detail evaluation will be calculated using the weightage given in **Table 3**. The coefficient of conformity of all 1km sections are summarized in **Table 4** and Monthly % Coefficient of Conformity and Monthly % Coefficient of Non-Conformity are calculated.

If a non-compliance is found in any of the 250m section, that one kilometer section will be considered as non-complied with and a penalty as described in Section 3 will be imposed.

If the Contractor fails to rectify the defects by the time nominated in the **Table 1** for each category, the Contractor shall be subject to further payment reductions for delay, from the following month payment due to contractor.

Payment Reductions are variable over time. If the Contractor fails to rectify a non-compliance for which a payment reduction has already been applied, the amount of the payment reduction will increase by 10% on payment reduction of previous month for that particular non-compliance, without a ceiling being applied, until the compliance is achieved.

A typical form as shown in the **Form 1, Inspection Form**, given below may be used to carry out detail inspections.

If any of the item described in the **Form 1** in any of 250 meter section is found to be non-complied with, that section is marked with "x", if complied marked as "✓" as indicated in the form below.

For instance, the item "Road Surface including hard shoulder" in the 2nd and 4th 250m sections are not complied with then the relevant cages are marked with "x".

. The inspection form may be suitably adjusted to accommodate normal Monthly inspections.

Form 1 – Detail Inspection Form

Second Integrated Road Investment Program

Item No	Description	1 st 250m	2 nd 250m	3 rd 250m	4 th 250m	No of non-complied sections	Weight %	% Non-compliance
						1		
1	Road Surface including hard shoulder	√	x	√	x	2	20	40
2	Road Shoulder		x			1	15	15
3	Drainage	x	x			2	15	30
4	Structures						15	0
5	Vegetation control						15	0
6	Road signs and Markings				x	1	15	15
7	Other		x	x		2	5	10
Percent non compliance coefficient for the 1 km section $\Sigma(\text{non compliance})/4$								27.5
Percent compliance coefficient = 1 - (% non compliance coefficient)								72.5

Rehabilitation/ Improvement to.....

Contract No.....

Report Number Month..... Year.....

Chainage: From 0.0 km to 1.0 km

x – non-complied

Signed:

Employer.....

Contractor.....

Date.....

This inspection shall be continued for the total length of the road.

Coefficient of Conformity for a road or section of a road

Table 4–Percentage of Monthly Average Coefficient of Conformity / Non-conformity Evaluation Form

Monthly Inspection Compliance Record			
Road section (km) inspected	% Compliance Coefficient	Monthly % Coefficient of Conformity (Σ/n)	Monthly % Coefficient of Non-Conformity ($1-\Sigma/n$)
1 st km	72.5%	78.75%	21.25%
2 nd km	50%		
3 rd km	100%		
4 th km (last)	80%		

Road is assumed to be 3.4km long in the example.

4.1 Notification of Non-Compliance

The typical form as given in the **Form 2** below may be used to indicate the non-complying items, location, extent and the due dates before the defects to be attended etc. The dates for attending defects shall be given by the Engineer.

Form 2- Non-compliance items in the 1st km to be rectified

Non Complied Item of work	Chainage (km)	Location	Defect/Extent (Area, Length, Nos etc.)	Defects to be attended before [Date]
Road Surface including hard shoulder	0-1km	2 nd Qtr	Pot holes	Specify
Road Surface including hard shoulder	0-1km	4 th Qtr	Pot holes	specify
Road Shoulder	4 km	2 nd Qtr	Erosion	specify
Drainage	0-1km	1 st Qtr	Lead away	specify
Drainage	0-1km	2 nd Qtr	Siltation	specify

Engineer

Acknowledgment:

The noncompliance report with indication of compliance instruction is acknowledged. Re-inspection is requested to be done on------(date).

Contractor's Representative

4.2 Re-inspection

The **Form 3** given below may be used for re-inspection of the non-complying items intimated to the Contractor by the **Form 2 of previous month**.

Form 3 - Re-inspection Form for attendance of Non-compliance

Non Complied Item of work in the previous month	Location(Road, Chainage)	Extent (Area, Length ,Nos Etc.)	Date on which compliance directed	Complied Yes/No	Number of delay days
Road Surface including hard shoulder	0-1km			Yes	10
Road Shoulder	3-4 km			Yes	4
Drainage-Culvert	0-1km			Yes	0
Drainage-Culvert	0-1km			Yes	0
	1-2km				
	2-3km				
	3-4km				

- No. of delay days are assumed

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4.3 Evaluation of Monthly Payment

Monthly payment is calculated by multiplying the unit rate by monthly compliance coefficient and the length of the road. This amount shall be subjected to deductions for penalty and delays as explained below;

(a) Calculation of Payment Reduction for Delay

In the Form 3 above, the delays incurred for the 3 non-complying Performance Indicator defects in the 1st km are as follows;

- | | | |
|-----------------------------------------|---|---------------------------------|
| 1. Road surface including hard shoulder | - | 10 days (>7 and hence f = 20%) |
| 2. Road shoulder | - | 4 days (<7 and hence f = 10%) |
| 3. Drainage | - | 0 days (f = 0) |

Payment Reduction for Delay is the summation of [PR_{dly}] for each section where section length [L] is considered as 1km.

$$[PR_{dly}] = [f] \times [PR_u] \times [L]$$

$$\text{Total Reduction for Delay} = [PR_{dly}]_{1st\ km} + [PR_{dly}]_{2nd\ km} + [PR_{dly}]_{3rd\ km} + [PR_{dly}]_{4th\ km}$$

$$[PR_{dly}]_{1st\ km} = \{[20\%] \times [40,000 \times 20\%] \times [1]\} + \{[10\%] \times [40,000 \times 15\%] \times [1]\}$$

$$[PR_{dly}] = [1,600] + [600]$$

$$[PR_{dly}] = 2,200\ LKR$$

[PR_{dly}] of other sections are assumed to be zero in this example.

If one of the sub sections is found to be delayed in compliance, then 1 km section will be considered as non-complied with for calculation of payment reduction for delay.

(b) Calculation of Monthly Payment

The amount payable for the month is calculated by deducting payments due for penalty and delay as follows;

$$\left[\begin{matrix} \text{Amount} \\ \text{due for} \\ \text{the} \\ \text{Month} \end{matrix} \right] = \left[\begin{matrix} \text{Road} \\ \text{Length} \\ (km) \end{matrix} \right] \times \left[\begin{matrix} \text{Monthly} \\ \text{Rate} \\ \text{per km} \end{matrix} \right] \times \left[\begin{matrix} \text{Monthly} \\ \text{Coefficient of} \\ \text{Conformity} \end{matrix} \right] - \left[\begin{matrix} \text{Payment} \\ \text{Reduction} \\ \text{for Delay} \end{matrix} \right]$$

$$\left[\begin{matrix} \text{Amount} \\ \text{due for the} \\ \text{Month} \end{matrix} \right] = \left[\begin{matrix} 3.4 \\ (km) \end{matrix} \right] \times \left[\begin{matrix} 40,000 \\ \text{per km} \end{matrix} \right] \times [78.75\%] - [2,200]$$

$$= 107,100 - 2,200 = LKR\ 104,900$$

The amount due for the month is **LKR 104,900**. The amounts deducted shall be forfeited and not released.

5 Evaluation for the Compliance of the Works to release Retention Money

At the end of each maintenance year during PBMC, the Engineer will evaluate the annual compliance of the Work carried out by calculating the Annual Coefficient of the Compliance of the Work (AnCoC).

The retention money to be released will be calculated as follows;

$$\left[\begin{array}{l} \text{Retention money} \\ \text{to be released} \\ \text{for the year under} \\ \text{reference (R)} \end{array} \right] = \left[\begin{array}{l} \text{Retention Money} \\ \text{due for the year} \end{array} \right] \times \left[\begin{array}{l} \text{Average} \\ \text{Monthly Coefficient} \\ \text{of Conformity} \end{array} \right]$$

The non-released Retention Money (Retention Money due for the year –R) will be forfeited and will not be released any more.

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Conditions of Contract for Construction

MULTILATERAL DEVELOPMENT BANK HARMONISED EDITION

GENERAL CONDITIONS

June 2010

For Participating Bank use only

Released 30 June 2010

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APPENDIX: GENERAL CONDITIONS OF DISPUTE BOARD AGREEMENT

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General Conditions

1 General Provisions

1.1 Definitions

In the Conditions of Contract (“these Conditions”), which include Particular Conditions, Parts A and B, and these General Conditions, the following words and expressions shall have the meanings stated. Words indicating persons or parties include corporations and other legal entities, except where the context requires otherwise.

1.1.1 The Contract

- 1.1.1.1 “Contract” means the Contract Agreement, the Letter of Acceptance, the Letter of Tender, these Conditions, the Specification, the Drawings, the Schedules, and the further documents (if any) which are listed in the Contract Agreement or in the Letter of Acceptance.
- 1.1.1.2 “Contract Agreement” means the contract agreement referred to in Sub-Clause 1.6 [Contract Agreement].
- 1.1.1.3 “Letter of Acceptance” means the letter of formal acceptance, signed by the Employer, of the Letter of Tender, including any annexed memoranda comprising agreements between and signed by both Parties. If there is no such letter of acceptance, the expression “Letter of Acceptance” means the Contract Agreement and the date of issuing or receiving the Letter of Acceptance means the date of signing the Contract Agreement.
- 1.1.1.4 “Letter of Tender” means the document entitled letter of tender or letter of bid, which was completed by the Contractor and includes the signed offer to the Employer for the Works.
- 1.1.1.5 “Specification” means the document entitled specification, as included in the Contract, and any additions and modifications to the specification in accordance with the Contract. Such document specifies the Works.
- 1.1.1.6 “Drawings” means the drawings of the Works, as included in the Contract, and any additional and modified drawings issued by (or on behalf of) the Employer in accordance with the Contract.
- 1.1.1.7 “Schedules” means the document(s) entitled schedules, completed by the Contractor and submitted with the Letter of Tender, as included in the Contract. Such document may include the Bill of Quantities, data, lists, and schedules of rates and/or prices.
- 1.1.1.8 “Tender” means the Letter of Tender and all other documents which the Contractor submitted with the Letter of Tender, as included in the Contract.
- 1.1.1.9 “Bill of Quantities”, “Daywork Schedule” and “Schedule of Payment Currencies” mean the documents so named (if any) which are comprised in the Schedules.
- 1.1.1.10 “Contract Data” means the pages completed by the Employer entitled contract data which constitute Part A of the Particular Conditions.

1.1.2 Parties and Persons

- 1.1.2.1 “Party” means the Employer or the Contractor, as the context requires.

- 1.1.2.2 “Employer” means the person named as employer in the Contract Data and the legal successors in title to this person.
- 1.1.2.3 “Contractor” means the person(s) named as contractor in the Letter of Tender accepted by the Employer and the legal successors in title to this person(s).
- 1.1.2.4 “Engineer” means the person appointed by the Employer to act as the Engineer for the purposes of the Contract and named in the Contract Data, or other person appointed from time to time by the Employer and notified to the Contractor under Sub-Clause 3.4 [Replacement of the Engineer].
- 1.1.2.5 “Contractor’s Representative” means the person named by the Contractor in the Contract or appointed from time to time by the Contractor under Sub-Clause 4.3 [Contractor’s Representative], who acts on behalf of the Contractor.
- 1.1.2.6 “Employer’s Personnel” means the Engineer, the assistants referred to in Sub-Clause 3.2 [Delegation by the Engineer] and all other staff, labour and other employees of the Engineer and of the Employer; and any other personnel notified to the Contractor, by the Employer or the Engineer, as Employer’s Personnel.
- 1.1.2.7 “Contractor’s Personnel” means the Contractor’s Representative and all personnel whom the Contractor utilises on Site, who may include the staff, labour and other employees of the Contractor and of each Subcontractor; and any other personnel assisting the Contractor in the execution of the Works.
- 1.1.2.8 “Subcontractor” means any person named in the Contract as a subcontractor, or any person appointed as a subcontractor, for a part of the Works; and the legal successors in title to each of these persons.
- 1.1.2.9 “DB” means the person or three persons appointed under Sub-Clause 20.2 [Appointment of the Dispute Board] or Sub-Clause 20.3 [Failure to Agree on the Composition of the Dispute Board]
- 1.1.2.10 “FIDIC” means the Fédération Internationale des Ingénieurs-Conseils, the international federation of consulting engineers.
- 1.1.2.11 “Bank” means the financing institution (if any) named in the Contract Data.
- 1.1.2.12 “Borrower” means the person (if any) named as the borrower in the Contract Data.

1.1.3 Dates, Tests, Periods and Completion

- 1.1.3.1 “Base Date” means the date 28 days prior to the latest date for submission of the Tender.
- 1.1.3.2 “Commencement Date” means the date notified under Sub-Clause 8.1 [Commencement of Works].
- 1.1.3.3 “Time for Completion” means the time for completing the Works or a Section (as the case may be) under Sub-Clause 8.2 [Time for Completion], as stated in the Contract Data (with any extension under Sub-Clause 8.4 [Extension of Time for Completion]), calculated from the Commencement Date.
- 1.1.3.4 “Tests on Completion” means the tests which are specified in the Contract or agreed by both Parties or instructed as a Variation, and which are carried out under Clause 9 [Tests on Completion] before the Works or a Section (as the case may be) are taken over by the Employer.
- 1.1.3.5 “Taking-Over Certificate” means a certificate issued under Clause 10 [Employer’s Taking Over].

- 1.1.3.6 “Tests after Completion” means the tests (if any) which are specified in the Contract and which are carried out in accordance with the Specification after the Works or a Section (as the case may be) are taken over by the Employer.
- 1.1.3.7 “Defects Notification Period” means the period for notifying defects in the Works or a Section (as the case may be) under Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects], which extends over 365 days except if otherwise stated in the Contract Data (with any extension under Sub-Clause 11.3 [Extension of Defects Notification Period]), calculated from the date on which the Works or Section is completed as certified under Sub-Clause 10.1 [Taking Over of the Works and Sections].
- 1.1.3.8 “Performance Certificate” means the certificate issued under Sub-Clause 11.9 [Performance Certificate].
- 1.1.3.9 “day” means a calendar day and “year” means 365 days.

1.1.4 Money and Payments

- 1.1.4.1 “Accepted Contract Amount” means the amount accepted in the Letter of Acceptance for the execution and completion of the Works and the remedying of any defects.
- 1.1.4.2 “Contract Price” means the price defined in Sub-Clause 14.1 [The Contract Price], and includes adjustments in accordance with the Contract.
- 1.1.4.3 “Cost” means all expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.
- 1.1.4.4 “Final Payment Certificate” means the payment certificate issued under Sub-Clause 14.13 [Issue of Final Payment Certificate].
- 1.1.4.5 “Final Statement” means the statement defined in Sub-Clause 14.11 [Application for Final Payment Certificate].
- 1.1.4.6 “Foreign Currency” means a currency in which part (or all) of the Contract Price is payable, but not the Local Currency.
- 1.1.4.7 “Interim Payment Certificate” means a payment certificate issued under Clause 14 [Contract Price and Payment], other than the Final Payment Certificate.
- 1.1.4.8 “Local Currency” means the currency of the Country.
- 1.1.4.9 “Payment Certificate” means a payment certificate issued under Clause 14 [Contract Price and Payment].
- 1.1.4.10 “Provisional Sum” means a sum (if any) which is specified in the Contract as a provisional sum, for the execution of any part of the Works or for the supply of Plant, Materials or services under Sub-Clause 13.5 [Provisional Sums].
- 1.1.4.11 “Retention Money” means the accumulated retention moneys which the Employer retains under Sub-Clause 14.3 [Application for Interim Payment Certificates] and pays under Sub-Clause 14.9 [Payment of Retention Money].
- 1.1.4.12 “Statement” means a statement submitted by the Contractor as part of an application, under Clause 14 [Contract Price and Payment], for a payment certificate.

1.1.5 Works and Goods

- 1.1.5.1 “Contractor’s Equipment” means all apparatus, machinery, vehicles and other things required for the execution and completion of the Works and the remedying of any defects. However, Contractor’s Equipment excludes Temporary Works, Employer’s Equipment (if any), Plant, Materials and any other things intended to form or forming part of the Permanent Works.
- 1.1.5.2 “Goods” means Contractor’s Equipment, Materials, Plant and Temporary Works, or any of them as appropriate.
- 1.1.5.3 “Materials” means things of all kinds (other than Plant) intended to form or forming part of the Permanent Works, including the supply-only materials (if any) to be supplied by the Contractor under the Contract.
- 1.1.5.4 “Permanent Works” means the permanent works to be executed by the Contractor under the Contract.
- 1.1.5.5 “Plant” means the apparatus, machinery and other equipment intended to form or forming part of the Permanent Works, including vehicles purchased for the Employer and relating to the construction or operation of the Works.
- 1.1.5.6 “Section” means a part of the Works specified in the Contract Data as a Section (if any).
- 1.1.5.7 “Temporary Works” means all temporary works of every kind (other than Contractor’s Equipment) required on Site for the execution and completion of the Permanent Works and the remedying of any defects.
- 1.1.5.8 “Works” mean the Permanent Works and the Temporary Works, or either of them as appropriate.

1.1.6 Other Definitions

- 1.1.6.1 “Contractor’s Documents” means the calculations, computer programs and other software, drawings, manuals, models and other documents of a technical nature (if any) supplied by the Contractor under the Contract.
- 1.1.6.2 “Country” means the country in which the Site (or most of it) is located, where the Permanent Works are to be executed.
- 1.1.6.3 “Employer’s Equipment” means the apparatus, machinery and vehicles (if any) made available by the Employer for the use of the Contractor in the execution of the Works, as stated in the Specification; but does not include Plant which has not been taken over by the Employer.
- 1.1.6.4 “Force Majeure” is defined in Clause 19 [Force Majeure].
- 1.1.6.5 “Laws” means all national (or state) legislation, statutes, ordinances and other laws, and regulations and by-laws of any legally constituted public authority.
- 1.1.6.6 “Performance Security” means the security (or securities, if any) under Sub-Clause 4.2 [Performance Security].
- 1.1.6.7 “Site” means the places where the Permanent Works are to be executed, including storage and working areas, and to which Plant and Materials are to be delivered, and any other places as may be specified in the Contract as forming part of the Site.
- 1.1.6.8 “Unforeseeable” means not reasonably foreseeable by an experienced contractor by the Base Date.
- 1.1.6.9 “Variation” means any change to the Works, which is instructed or approved as a variation under Clause 13 [Variations and Adjustments].

- 1.1.6.10 "Notice of Dissatisfaction" means the notice given by either Party to the other under Sub-Clause 20.4 [Obtaining Dispute Board's Decision] indicating its dissatisfaction and intention to commence arbitration.

1.2 Interpretation

In the Contract, except where the context requires otherwise

- (a) words indicating one gender include all genders;
- (b) words indicating the singular also include the plural and words indicating the plural also include the singular;
- (c) provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing;
- (d) "written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record;
- (e) the word "tender" is synonymous with "bid" and "tenderer" with "bidder" and the words "tender documents" with "bidding documents".

The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.

In these Conditions, provisions including the expression "Cost plus profit" require this profit to be one-twentieth (5%) of this Cost unless otherwise indicated in the Contract Data.

1.3 Communications

Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, these communications shall be:

- (a) in writing and delivered by hand (against receipt), sent by mail or courier, or transmitted using any of the agreed systems of electronic transmission as stated in the Contract Data; and
- (b) delivered, sent or transmitted to the address for the recipient's communications as stated in the Contract Data. However:
 - (i) if the recipient gives notice of another address, communications shall thereafter be delivered accordingly; and
 - (ii) if the recipient has not stated otherwise when requesting an approval or consent, it may be sent to the address from which the request was issued.

Approvals, certificates, consents and determinations shall not be unreasonably withheld or delayed. When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Engineer, a copy shall be sent to the Engineer or the other Party, as the case may be.

1.4 Law and Language

The Contract shall be governed by the law of the country or other jurisdiction stated in the Contract Data.

The ruling language of the Contract shall be that stated in the Contract Data.

The language for communications shall be that stated in the Contract Data. If no language is stated there, the language for communications shall be the ruling language of the Contract.

1.5 Priority of Documents

The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence:

- (a) the Contract Agreement (if any),
- (b) the Letter of Acceptance,
- (c) the Letter of Tender,
- (d) the Particular Conditions – Part A,
- (e) the Particular Conditions – Part B,
- (f) these General Conditions,
- (g) the Specification,
- (h) the Drawings, and
- (i) the Schedules and any other documents forming part of the Contract.

If an ambiguity or discrepancy is found in the documents, the Engineer shall issue any necessary clarification or instruction.

1.6 Contract Agreement

The Parties shall enter into a Contract Agreement within 28 days after the Contractor receives the Letter of Acceptance, unless the Particular Conditions establish otherwise. The Contract Agreement shall be based upon the form annexed to the Particular Conditions. The costs of stamp duties and similar charges (if any) imposed by law in connection with entry into the Contract Agreement shall be borne by the Employer.

1.7 Assignment

Neither Party shall assign the whole or any part of the Contract or any benefit or interest in or under the Contract. However, either Party:

- (a) may assign the whole or any part with the prior agreement of the other Party, at the sole discretion of such other Party, and
- (b) may, as security in favour of a bank or financial institution, assign its right to any moneys due, or to become due, under the Contract.

1.8 Care and Supply of Documents

The Specification and Drawings shall be in the custody and care of the Employer. Unless otherwise stated in the Contract, two copies of the Contract and of each subsequent Drawing shall be supplied to the Contractor, who may make or request further copies at the cost of the Contractor.

Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over by the Employer. Unless otherwise stated in the Contract, the Contractor shall supply to the Engineer six copies of each of the Contractor's Documents.

The Contractor shall keep, on the Site, a copy of the Contract, publications named in the Specification, the Contractor's Documents (if any), the Drawings and Variations and other communications given under the Contract. The Employer's Personnel shall have the right of access to all these documents at all reasonable times.

If a Party becomes aware of an error or defect in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or defect.

1.9 Delayed Drawings or Instructions

The Contractor shall give notice to the Engineer whenever the Works are likely to be delayed or disrupted if any necessary drawing or instruction is not issued to the Contractor within a particular time, which shall be reasonable. The notice shall include details of the necessary drawing or instruction, details of why and by when it should be issued, and the nature and amount of the delay or disruption likely to be suffered if it is late.

If the Contractor suffers delay and/or incurs Cost as a result of a failure of the Engineer to issue the notified drawing or instruction within a time which is reasonable and is specified in the notice with supporting details, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this further notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

However, if and to the extent that the Engineer's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit.

1.10 Employer's Use of Contractor's Documents

As between the Parties, the Contractor shall retain the copyright and other intellectual property rights in the Contractor's Documents and other design documents made by (or on behalf of) the Contractor.

The Contractor shall be deemed (by signing the Contract) to give to the Employer a non-terminable transferable non-exclusive royalty-free licence to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This licence shall:

- (a) apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,
- (b) entitle any person in proper possession of the relevant part of the Works to copy, use and communicate the Contractor's Documents for the purposes of completing, operating, maintaining, altering, adjusting, repairing and demolishing the Works, and
- (c) in the case of Contractor's Documents which are in the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor.

The Contractor's Documents and other design documents made by (or on behalf of) the Contractor shall not, without the Contractor's consent, be used, copied or communicated to a third party by (or on behalf of) the Employer for purposes other than those permitted under this Sub-Clause.

1.11 Contractor's Use of Employer's Documents

As between the Parties, the Employer shall retain the copyright and other intellectual property rights in the Specification, the Drawings and other documents made by (or on behalf of) the Employer. The Contractor may, at his cost, copy, use, and obtain communication of these documents for the purposes of the Contract. They shall not, without the Employer's consent, be copied, used or communicated to a third party by the Contractor, except as necessary for the purposes of the Contract.

1.12 Confidential Details

The Contractor's and the Employer's Personnel shall disclose all such confidential and other information as may be reasonably required in order to verify compliance with the Contract and allow its proper implementation.

Each of them shall treat the details of the Contract as private and confidential, except to the extent necessary to carry out their respective obligations under the Contract or to comply with applicable Laws. Each of them shall not publish or disclose any particulars of the Works prepared by the other Party without the previous agreement of the other Party. However, the Contractor shall be permitted to disclose any publicly available information, or information otherwise required to establish his qualifications to compete for other projects.

1.13 Compliance with Laws

The Contractor shall, in performing the Contract, comply with applicable Laws. Unless otherwise stated in the Particular Conditions:

- (a) the Employer shall have obtained (or shall obtain) the planning, zoning, building permit or similar permission for the Permanent Works, and any other permissions described in the Specification as having been (or to be) obtained by the Employer; and the Employer shall indemnify and hold the Contractor harmless against and from the consequences of any failure to do so; and
- (b) the Contractor shall give all notices, pay all taxes, duties and fees, and obtain all permits, licences and approvals, as required by the Laws in relation to the execution and completion of the Works and the remedying of any defects; and the Contractor shall indemnify and hold the Employer harmless against and from the consequences of any failure to do so, unless the Contractor is impeded to accomplish these actions and shows evidence of its diligence.

1.14 Joint and Several Liability

If the Contractor constitutes (under applicable Laws) a joint venture, consortium or other unincorporated grouping of two or more persons:

- (a) these persons shall be deemed to be jointly and severally liable to the Employer for the performance of the Contract;
- (b) these persons shall notify the Employer of their leader who shall have authority to bind the Contractor and each of these persons; and
- (c) the Contractor shall not alter its composition or legal status without the prior consent of the Employer.

1.15 Inspections and Audit by the Bank

The Contractor shall permit the Bank and/or persons appointed by the Bank to inspect the Site and/or the Contractor's accounts and records relating to the performance of the Contract and to have such accounts and records audited by auditors appointed by the Bank if required by the Bank.

2 The Employer

2.1 Right of Access to the Site

The Employer shall give the Contractor right of access to, and possession of, all parts of the Site within the time (or times) stated in the Contract Data. The right and possession may not be exclusive to the Contractor. If, under the Contract, the Employer is required to give (to the Contractor) possession of any foundation, structure, plant or means of access, the Employer shall do so in the time and manner stated in the Specification. However, the Employer may withhold any such right or possession until the Performance Security has been received.

If no such time is stated in the Contract Data, the Employer shall give the Contractor right of access to, and possession of, the Site within such times as required to enable the Contractor to proceed without disruption in accordance with the programme submitted under Sub-Clause 8.3 [Programme].

If the Contractor suffers delay and/or incurs Cost as a result of a failure by the Employer to give any such right or possession within such time, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

However, if and to the extent that the Employer's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time, Cost or profit.

2.2 Permits, Licences or Approvals

The Employer shall provide, at the request of the Contractor, such reasonable assistance as to allow the Contractor to obtain properly:

- (a) copies of the Laws of the Country which are relevant to the Contract but are not readily available, and
- (b) any permits, licences or approvals required by the Laws of the Country:
 - (i) which the Contractor is required to obtain under Sub-Clause 1.13 [Compliance with Laws],
 - (ii) for the delivery of Goods, including clearance through customs, and
 - (iii) for the export of Contractor's Equipment when it is removed from the Site.

2.3 Employer's Personnel

The Employer shall be responsible for ensuring that the Employer's Personnel and the Employer's other contractors on the Site:

- (a) co-operate with the Contractor's efforts under Sub-Clause 4.6 [Co-operation], and

- (b) take actions similar to those which the Contractor is required to take under sub-paragraphs (a), (b) and (c) of Sub-Clause 4.8 [Safety Procedures] and under Sub-Clause 4.18 [Protection of the Environment].

2.4 Employer's Financial Arrangements

The Employer shall submit, before the Commencement Date and thereafter within 28 days after receiving any request from the Contractor, reasonable evidence that financial arrangements have been made and are being maintained which will enable the Employer to pay the Contract Price punctually (as estimated at that time) in accordance with Clause 14 [Contract Price and Payment]. Before the Employer makes any material change to his financial arrangements, the Employer shall give notice to the Contractor with detailed particulars.

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 his notice of the extent to which such funds will be available.

2.5 Employer's Claims

If the Employer considers himself to be entitled to any payment under any Clause of these Conditions or otherwise in connection with the Contract, and/or to any extension of the Defects Notification Period, the Employer or the Engineer shall give notice and particulars to the Contractor. However, notice is not required for payments due under Sub-Clause 4.19 [Electricity, Water and Gas], under Sub-Clause 4.20 [Employer's Equipment and Free-Issue Materials], or for other services requested by the Contractor.

The notice shall be given as soon as practicable and no longer than 28 days after the Employer became aware, or should have become aware, of the event or circumstances giving rise to the claim. A notice relating to any extension of the Defects Notification Period shall be given before the expiry of such period.

The particulars shall specify the Clause or other basis of the claim, and shall include substantiation of the amount and/or extension to which the Employer considers himself to be entitled in connection with the Contract. The Engineer shall then proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the amount (if any) which the Employer is entitled to be paid by the Contractor, and/or (ii) the extension (if any) of the Defects Notification Period in accordance with Sub-Clause 11.3 [Extension of Defects Notification Period].

This amount may be included as a deduction in the Contract Price and Payment Certificates. The Employer shall only be entitled to set off against or make any deduction from an amount certified in a Payment Certificate, or to otherwise claim against the Contractor, in accordance with this Sub-Clause.

3 The Engineer

3.1 Engineer's Duties and Authority

The Employer shall appoint the Engineer who shall carry out the duties assigned to him in the Contract. The Engineer's staff shall include suitably qualified engineers and other professionals who are competent to carry out these duties.

The Engineer shall have no authority to amend the Contract.

The Engineer may exercise the authority attributable to the Engineer as specified in or necessarily to be implied from the Contract. If the Engineer is required to obtain the approval of the Employer before exercising a specified authority, the requirements shall be as stated in the Particular Conditions. The Employer shall promptly inform the Contractor of any change to the authority attributed to the Engineer.

However, whenever the Engineer exercises a specified authority for which the Employer's approval is required, then (for the purposes of the Contract) the Employer shall be deemed to have given approval.

Except as otherwise stated in these Conditions:

- (a) whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Engineer shall be deemed to act for the Employer;
- (b) the Engineer has no authority to relieve either Party of any duties, obligations or responsibilities under the Contract;
- (c) any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Engineer (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies and non-compliances; and
- (d) any act by the Engineer in response to a Contractor's request except as otherwise expressly specified shall be notified in writing to the Contractor within 28 days of receipt.

The following provisions shall apply:

The Engineer shall obtain the specific approval of the Employer before taking action under the following Sub-Clauses of these Conditions:

- (A) Sub-Clause 4.12: agreeing or determining an extension of time and/or additional cost.
- (B) Sub-Clause 13.1: instructing a Variation, except;
 - (i) in an emergency situation as determined by the Engineer, or
 - (ii) if such a Variation would increase the Accepted Contract Amount by less than the percentage specified in the Contract Data.
- (C) Sub-Clause 13.3: approving a proposal for Variation submitted by the Contractor in accordance with Sub Clause 13.1 or 13.2.
- (D) Sub-Clause 13.4: specifying the amount payable in each of the applicable currencies

Notwithstanding the obligation, as set out above, to obtain approval, if, in the opinion of the Engineer, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he 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 approval of the Employer, with any such instruction of the Engineer. The Engineer shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 13 and shall notify the Contractor accordingly, with a copy to the Employer.

3.2 Delegation by the Engineer

The Engineer may from time to time assign duties and delegate authority to assistants, and may also revoke such assignment or delegation. These assistants may include a resident engineer, and/or independent inspectors appointed to inspect and/or test items of Plant and/or Materials. The assignment, delegation or revocation shall be in writing and shall not take effect until copies have been received by both Parties. However, unless otherwise agreed by both Parties, the Engineer shall not delegate the authority to determine any matter in accordance with Sub-Clause 3.5 [Determinations].

Assistants shall be suitably qualified persons, who are competent to carry out these duties and exercise this authority, and who are fluent in the language for communications defined in Sub-Clause 1.4 [Law and Language].

Each assistant, to whom duties have been assigned or authority has been delegated, shall only be authorised to issue instructions to the Contractor to the extent defined by the delegation. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by an assistant, in accordance with the delegation, shall have the same effect as though the act had been an act of the Engineer. However:

- (a) any failure to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the Engineer to reject the work, Plant or Materials;
- (b) if the Contractor questions any determination or instruction of an assistant, the Contractor may refer the matter to the Engineer, who shall promptly confirm, reverse or vary the determination or instruction.

3.3 Instructions of the Engineer

The Engineer may issue to the Contractor (at any time) instructions and additional or modified Drawings which may be necessary for the execution of the Works and the remedying of any defects, all in accordance with the Contract. The Contractor shall only take instructions from the Engineer, or from an assistant to whom the appropriate authority has been delegated under this Clause. If an instruction constitutes a Variation, Clause 13 [Variations and Adjustments] shall apply.

The Contractor shall comply with the instructions given by the Engineer or delegated assistant, on any matter related to the Contract. Whenever practicable, their instructions shall be given in writing. If the Engineer or a delegated assistant:

- (a) gives an oral instruction,
- (b) receives a written confirmation of the instruction, from (or on behalf of) the Contractor, within two working days after giving the instruction, and
- (c) does not reply by issuing a written rejection and/or instruction within two working days after receiving the confirmation,

then the confirmation shall constitute the written instruction of the Engineer or delegated assistant (as the case may be).

3.4 Replacement of the Engineer

If the Employer intends to replace the Engineer, the Employer shall, not less than 21 days before the intended date of replacement, give notice to the Contractor of the name, address and relevant experience of the intended replacement Engineer. If the Contractor considers the intended replacement Engineer to be unsuitable, he has the right to raise objection against him by notice to the Employer, with supporting particulars, and the Employer shall give full and fair consideration to this objection.

3.5 Determinations

Whenever these Conditions provide that the Engineer shall proceed in accordance with this Sub-Clause 3.5 to agree or determine any matter, the Engineer shall consult with each Party in an endeavour to reach agreement. If agreement is not achieved, the Engineer shall make a fair determination in accordance with the Contract, taking due regard of all relevant circumstances.

The Engineer shall give notice to both Parties of each agreement or determination, with supporting particulars, within 28 days from the receipt of the corresponding claim or request except when otherwise specified. Each Party shall give effect to each agreement or determination unless and until revised under Clause 20 [Claims, Disputes and Arbitration].

4 The Contractor

4.1 Contractor's General Obligations

The Contractor shall design (to the extent specified in the Contract), execute and complete the Works in accordance with the Contract and with the Engineer's instructions, and shall remedy any defects in the Works.

The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of defects.

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 Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of construction. Except to the extent specified in the Contract, the Contractor (i) shall be responsible for all Contractor's Documents, Temporary Works, and such design of each item of Plant and Materials as is required for the item to be in accordance with the Contract, and (ii) shall not otherwise be responsible for the design or specification of the Permanent Works.

The Contractor shall, whenever required by the Engineer, submit details of the arrangements and methods which the Contractor proposes to adopt for the execution of the Works. No significant alteration to these arrangements and methods shall be made without this having previously been notified to the Engineer.

If the Contract specifies that the Contractor shall design any part of the Permanent Works, then unless otherwise stated in the Particular Conditions:

- (a) the Contractor shall submit to the Engineer the Contractor's Documents for this part in accordance with the procedures specified in the Contract;
- (b) these Contractor's Documents shall be in accordance with the Specification and Drawings, shall be written in the language for communications defined in Sub-Clause 1.4 [Law and Language], and shall include additional information required by the Engineer to add to the Drawings for co-ordination of each Party's designs;
- (c) the Contractor shall be responsible for this part and it shall, when the Works are completed, be fit for such purposes for which the part is intended as are specified in the Contract; and
- (d) prior to the commencement of the Tests on Completion, the Contractor shall submit to the Engineer the "as-built" documents and, if applicable, operation and maintenance manuals in accordance with the Specification and in sufficient detail for the Employer to operate, maintain, dismantle, reassemble, adjust and repair this part of the Works. Such part shall not be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections] until these documents and manuals have been submitted to the Engineer.

4.2 Performance Security

The Contractor shall obtain (at his cost) a Performance Security for proper performance, in the amount 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 an amount is not stated in the Contract Data, this Sub-Clause shall not apply.

The Contractor shall deliver the 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 Contractor shall ensure that the Performance Security is valid and enforceable until the Contractor has executed and completed the Works and remedied any defects. If the terms of the Performance Security specify its expiry date, and the Contractor has not become entitled to receive the Performance Certificate by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the Performance Security until the Works have been completed and any defects have been remedied.

The Employer shall not make a claim under the Performance Security, except for amounts to which the Employer is entitled under the Contract.

The Employer shall indemnify and hold the Contractor harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from a claim under the Performance Security to the extent to which the Employer was not entitled to make the claim.

The Employer shall return the Performance Security to the Contractor within 21 days after receiving a copy of the Performance Certificate.

Without limitation to the provisions of the rest of this Sub-Clause, whenever the Engineer determines an addition or a reduction to the Contract Price as a result of a change in cost and/or legislation, or as a result of a Variation, amounting to more than 25 percent of the portion of the Contract Price payable in a specific currency, the Contractor shall at the Engineer's request promptly increase, or may decrease, as the case may be, the value of the Performance Security in that currency by an equal percentage.

4.3 Contractor's Representative

The Contractor shall appoint the Contractor's Representative and shall give him all authority necessary to act on the Contractor's behalf under the Contract.

Unless the Contractor's Representative is named in the Contract, the Contractor shall, prior to the Commencement Date, submit to the Engineer for consent the name and particulars of the person the Contractor proposes to appoint as Contractor's Representative. If consent is withheld or subsequently revoked in terms of Sub-Clause 6.9 [Contractor's Personnel], or if the appointed person fails to act as Contractor's Representative, the Contractor shall similarly submit the name and particulars of another suitable person for such appointment.

The Contractor shall not, without the prior consent of the Engineer, revoke the appointment of the Contractor's Representative or appoint a replacement.

The whole time of the Contractor's Representative shall be given to directing the Contractor's performance of the Contract. If the Contractor's Representative is to be temporarily absent from the Site during the execution of the Works, a suitable replacement person shall be appointed, subject to the Engineer's prior consent, and the Engineer shall be notified accordingly.

The Contractor's Representative shall, on behalf of the Contractor, receive instructions under Sub-Clause 3.3 [Instructions of the Engineer].

The Contractor's Representative may delegate any powers, functions and authority to any competent person, and may at any time revoke the delegation. Any delegation or revocation shall not take effect until the Engineer has received prior notice signed by the Contractor's Representative, naming the person and specifying the powers, functions and authority being delegated or revoked.

The Contractor's Representative shall be fluent in the language for communications defined in Sub-Clause 1.4 [Law and Language]. If the Contractor's Representative's delegates are not fluent in the said language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer.

4.4 Subcontractors

The Contractor shall not subcontract the whole of the Works.

The Contractor shall be responsible for the acts or defaults of any Subcontractor, his agents or employees, as if they were the acts or defaults of the Contractor. Unless otherwise stated in the Particular Conditions:

- (a) the Contractor shall not be required to obtain consent to suppliers solely of Materials, or to a subcontract for which the Subcontractor is named in the Contract;
- (b) the prior consent of the Engineer shall be obtained to other proposed Subcontractors;
- (c) the Contractor shall give the Engineer not less than 28 days' notice of the intended date of the commencement of each Subcontractor's work, and of the commencement of such work on the Site; and
- (d) each subcontract shall include provisions which would entitle the Employer to require the subcontract to be assigned to the Employer under Sub-Clause 4.5 [Assignment of Benefit of Subcontract] (if or when applicable) or in the event of termination under Sub-Clause 15.2 [Termination by Employer].

The Contractor shall ensure that the requirements imposed on the Contractor by Sub-Clause 1.12 [Confidential Details] apply equally to each Subcontractor.

Where practicable, the Contractor shall give fair and reasonable opportunity for contractors from the Country to be appointed as Subcontractors.

4.5 Assignment of Benefit of Subcontract

If a Subcontractor's obligations extend beyond the expiry date of the relevant Defects Notification Period and the Engineer, prior to this date, instructs the Contractor to assign the benefit of such obligations to the Employer, then the Contractor shall do so. Unless otherwise stated in the assignment, the Contractor shall have no liability to the Employer for the work carried out by the Subcontractor after the assignment takes effect.

4.6 Co-operation

The Contractor shall, as specified in the Contract or as instructed by the Engineer, allow appropriate opportunities for carrying out work to:

- (a) the Employer's Personnel,
- (b) any other contractors employed by the Employer, and
- (c) the personnel of any legally constituted public authorities,

who may be employed in the execution on or near the Site of any work not included in the Contract.

Any such instruction shall constitute a Variation if and to the extent that it causes the Contractor to suffer delays and/or to incur Unforeseeable Cost. Services for these personnel and other contractors may include the use of Contractor's Equipment, Temporary Works or access arrangements which are the responsibility of the Contractor.

If, under the Contract, the Employer is required to give to the Contractor possession of any foundation, structure, plant or means of access in accordance with Contractor's Documents, the Contractor shall submit such documents to the Engineer in the time and manner stated in the Specification.

4.7 Setting Out

The Contractor shall set out the Works in relation to original points, lines and levels of reference specified in the Contract or notified by the Engineer. The Contractor shall be responsible for the correct positioning of all parts of the Works, and shall rectify any error in the positions, levels, dimensions or alignment of the Works.

The Employer shall be responsible for any errors in these specified or notified items of reference, but the Contractor shall use reasonable efforts to verify their accuracy before they are used.

If the Contractor suffers delay and/or incurs Cost from executing work which was necessitated by an error in these items of reference, and an experienced contractor could not reasonably have discovered such error and avoided this delay and/or Cost, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent the error could not reasonably have been discovered, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent.

4.8 Safety Procedures

The Contractor shall:

- (a) comply with all applicable safety regulations,
- (b) take care for the safety of all persons entitled to be on the Site,
- (c) use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons,
- (d) provide fencing, lighting, guarding and watching of the Works until completion and taking over under Clause 10 [Employer's Taking Over], and
- (e) provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land.

4.9 Quality Assurance

The Contractor shall institute a quality assurance system to demonstrate compliance with the requirements of the Contract. The system shall be in accordance with the details stated in the Contract. The Engineer shall be entitled to audit any aspect of the system.

Details of all procedures and compliance documents shall be submitted to the Engineer for information before each design and execution stage is commenced. When any document of a technical nature is issued to the Engineer, evidence of the prior approval by the Contractor himself shall be apparent on the document itself.

Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract.

4.10 Site Data

The Employer shall have made available to the Contractor for his information, prior to the Base Date, all relevant data in the Employer's possession on sub-surface and hydrological conditions at the Site, including environmental aspects. The Employer shall similarly make available to the Contractor all such data which come into the Employer's possession after the Base Date. The Contractor shall be responsible for interpreting all such data.

To the extent which was practicable (taking account of cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Tender or Works. To the same extent, the Contractor shall be deemed to have inspected and examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Tender as to all relevant matters, including (without limitation):

- (a) the form and nature of the Site, including sub-surface conditions,
- (b) the hydrological and climatic conditions,
- (c) the extent and nature of the work and Goods necessary for the execution and completion of the Works and the remedying of any defects,
- (d) the Laws, procedures and labour practices of the Country, and
- (e) the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.

4.11 Sufficiency of the Accepted Contract Amount

The Contractor shall be deemed to:

- (a) have satisfied himself as to the correctness and sufficiency of the Accepted Contract Amount, and
- (b) have based the Accepted Contract Amount on the data, interpretations, necessary information, inspections, examinations and satisfaction as to all relevant matters referred to in Sub-Clause 4.10 [Site Data].

Unless otherwise stated in the Contract, the Accepted Contract Amount covers all the Contractor's obligations under the Contract (including those under Provisional Sums, if any) and all things necessary for the proper execution and completion of the Works and the remedying of any defects.

4.12 Unforeseeable Physical Conditions

In this Sub-Clause, "physical conditions" means natural physical conditions and man-made and other physical obstructions and pollutants, which the Contractor encounters at the Site when executing the Works, including sub-surface and hydrological conditions but excluding climatic conditions.

If the Contractor encounters adverse physical conditions which he considers to have been Unforeseeable, the Contractor shall give notice to the Engineer as soon as practicable.

This notice shall describe the physical conditions, so that they can be inspected by the Engineer, and shall set out the reasons why the Contractor considers them to be Unforeseeable. The Contractor shall continue executing the Works, using such proper and reasonable measures as are appropriate for the physical conditions, and shall comply with any instructions which the Engineer may give. If an instruction constitutes a Variation, Clause 13 [Variations and Adjustments] shall apply.

If and to the extent that the Contractor encounters physical conditions which are Unforeseeable, gives such a notice, and suffers delay and/or incurs Cost due to these conditions, the Contractor shall be entitled subject to notice under Sub-Clause 20.1 [Contractor's Claims] to:

(a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and

(b) payment of any such Cost, which shall be included in the Contract Price.

Upon receiving such notice and inspecting and/or investigating these physical conditions, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) whether and (if so) to what extent these physical conditions were Unforeseeable, and (ii) the matters described in sub-paragraphs (a) and (b) above related to this extent.

However, before additional Cost is finally agreed or determined under sub-paragraph (ii), the Engineer may also review whether other physical conditions in similar parts of the Works (if any) were more favourable than could reasonably have been foreseen when the Contractor submitted the Tender. If and to the extent that these more favourable conditions were encountered, the Engineer may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the reductions in Cost which were due to these conditions, which may be included (as deductions) in the Contract Price and Payment Certificates. However, the net effect of all adjustments under sub-paragraph (b) and all these reductions, for all the physical conditions encountered in similar parts of the Works, shall not result in a net reduction in the Contract Price.

The Engineer shall take account of any evidence of the physical conditions foreseen by the Contractor when submitting the Tender, which shall be made available by the Contractor, but shall not be bound by the Contractor's interpretation of any such evidence.

4.13 Rights of Way and Facilities

Unless otherwise specified in the Contract the Employer shall provide effective access to and possession of the Site including special and/or temporary rights-of-way which are necessary for the Works. The Contractor shall obtain, at his risk and cost, any additional rights of way or facilities outside the Site which he may require for the purposes of the Works.

4.14 Avoidance of Interference

The Contractor shall not interfere unnecessarily or improperly with:

- (a) the convenience of the public, or
- (b) the access to and use and occupation of all roads and footpaths, irrespective of whether they are public or in the possession of the Employer or of others.

The Contractor shall indemnify and hold the Employer harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.

4.15 Access Route

The Contractor shall be deemed to have been satisfied as to the suitability and availability of access routes to the Site at Base Date. The Contractor shall use reasonable efforts to prevent any road or bridge from being damaged by the Contractor's traffic or by the Contractor's Personnel. These efforts shall include the proper use of appropriate vehicles and routes.

Except as otherwise stated in these Conditions:

- (a) the Contractor shall (as between the Parties) be responsible for any maintenance which may be required for his use of access routes;

- (b) the Contractor shall provide all necessary signs or directions along access routes, and shall obtain any permission which may be required from the relevant authorities for his use of routes, signs and directions;
- (c) the Employer shall not be responsible for any claims which may arise from the use or otherwise of any access route;
- (d) the Employer does not guarantee the suitability or availability of particular access routes; and
- (e) Costs due to non-suitability or non-availability, for the use required by the Contractor, of access routes shall be borne by the Contractor.

4.16 Transport of Goods

Unless otherwise stated in the Particular Conditions:

- (a) the Contractor shall give the Engineer not less than 21 days' notice of the date on which any Plant or a major item of other Goods will be delivered to the Site;
- (b) the Contractor shall be responsible for packing, loading, transporting, receiving, unloading, storing and protecting all Goods and other things required for the Works; and
- (c) the Contractor shall indemnify and hold the Employer harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from the transport of Goods, and shall negotiate and pay all claims arising from their transport.

4.17 Contractor's Equipment

The Contractor shall be responsible for all Contractor's Equipment. When brought on to the Site, Contractor's Equipment shall be deemed to be exclusively intended for the execution of the Works. The Contractor shall not remove from the Site any major items of Contractor's Equipment without the consent of the Engineer. However, consent shall not be required for vehicles transporting Goods or Contractor's Personnel off Site.

4.18 Protection of the Environment

The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations.

The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values stated in the Specification or prescribed by applicable Laws.

4.19 Electricity, Water and Gas

The Contractor shall, except as stated below, be responsible for the provision of all power, water and other services he may require for his construction activities and to the extent defined in the Specifications, for the tests.

The Contractor shall be entitled to use for the purposes of the Works such supplies of electricity, water, gas and other services as may be available on the Site and of which details and prices are given in the Specification. The Contractor shall, at his risk and cost, provide any apparatus necessary for his use of these services and for measuring the quantities consumed.

The quantities consumed and the amounts due (at these prices) for such services shall be agreed or determined by the Engineer in accordance with Sub-Clause 2.5 [Employer's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Employer.

4.20 Employer's Equipment and Free-Issue Materials

The Employer shall make the Employer's Equipment (if any) available for the use of the Contractor in the execution of the Works in accordance with the details, arrangements and prices stated in the Specification. Unless otherwise stated in the Specification:

- (a) the Employer shall be responsible for the Employer's Equipment, except that
- (b) the Contractor shall be responsible for each item of Employer's Equipment whilst any of the Contractor's Personnel is operating it, driving it, directing it or in possession or control of it.

The appropriate quantities and the amounts due (at such stated prices) for the use of Employer's Equipment shall be agreed or determined by the Engineer in accordance with Sub-Clause 2.5 [Employer's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the Employer.

The Employer shall supply, free of charge, the "free-issue materials" (if any) in accordance with the details stated in the Specification. The Employer shall, at his risk and cost, provide these materials at the time and place specified in the Contract. The Contractor shall then visually inspect them, and shall promptly give notice to the Engineer of any shortage, defect or default in these materials. Unless otherwise agreed by both Parties, the Employer shall immediately rectify the notified shortage, defect or default.

After this visual inspection, the free-issue 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 for any shortage, defect or default not apparent from a visual inspection.

4.21 Progress Reports

Unless otherwise stated in the Particular Conditions, monthly progress reports shall be prepared by the Contractor and submitted to the Engineer in six copies. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 days after the last day of the period to which it relates.

Reporting shall continue until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.

Each report shall include:

- (a) charts and detailed descriptions of progress, including each stage of design (if any), Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),
- (b) photographs showing the status of manufacture and of progress on the Site;
- (c) for the manufacture of each main item of Plant and Materials, the name of the manufacturer, manufacture location, percentage progress, and the actual or expected dates of:
 - (i) commencement of manufacture,
 - (ii) Contractor's inspections,
 - (iii) tests, and
 - (iv) shipment and arrival at the Site;
- (d) the details described in Sub-Clause 6.10 [Records of Contractor's Personnel and Equipment];
- (e) copies of quality assurance documents, test results and certificates of Materials;

- (f) list of notices given under Sub-Clause 2.5 [Employer's Claims] and notices given under Sub-Clause 20.1 [Contractor's Claims];
- (g) safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and
- (h) comparisons of actual and planned progress, with details of any events or circumstances which may jeopardise the completion in accordance with the Contract, and the measures being (or to be) adopted to overcome delays.

4.22 Security of the Site

Unless otherwise stated in the Particular Conditions:

- (a) the Contractor shall be responsible for keeping unauthorised persons off the Site, and
- (b) authorised persons shall be limited to the Contractor's Personnel and the Employer's Personnel; and to any other personnel notified to the Contractor, by the Employer or the Engineer, as authorised personnel of the Employer's other contractors on the Site.

4.23 Contractor's Operations on Site

The Contractor shall confine his operations to the Site, and to any additional areas which may be obtained by the Contractor and agreed by the Engineer as additional working areas. The Contractor shall take all necessary precautions to keep Contractor's Equipment and Contractor's Personnel within the Site and these additional areas, and to keep them off adjacent land.

During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction, and shall store or dispose of any Contractor's Equipment or surplus materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and Temporary Works which are no longer required.

Upon the issue of a Taking-Over Certificate, the Contractor shall clear away and remove, from that part of the Site and Works to which the Taking-Over Certificate refers, all Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works. The Contractor shall leave that part of the Site and the Works in a clean and safe condition. However, the Contractor may retain on Site, during the Defects Notification Period, such Goods as are required for the Contractor to fulfil obligations under the Contract.

4.24 Fossils

All fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the Site shall be placed under the care and authority of the Employer. The Contractor shall take reasonable precautions to prevent Contractor's Personnel or other persons from removing or damaging any of these findings.

The Contractor shall, upon discovery of any such finding, promptly give notice to the Engineer, who shall issue instructions for dealing with it. If the Contractor suffers delay and/or incurs Cost from complying with the instructions, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this further notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

5 Nominated Subcontractors

5.1 Definition of “nominated Subcontractor”

In the Contract, “nominated Subcontractor” means a Subcontractor:

- (a) who is stated in the Contract as being a nominated Subcontractor, or
- (b) whom the Engineer, under Clause 13 [Variations and Adjustments], instructs the Contractor to employ as a Subcontractor subject to Sub-Clause 5.2 [Objection to Notification].

5.2 Objection to Nomination

The Contractor shall not be under any obligation to employ a nominated Subcontractor against whom the Contractor raises reasonable objection by notice to the Engineer as soon as practicable, with supporting particulars. An objection shall be deemed reasonable if it arises from (among other things) any of the following matters, unless the Employer agrees in writing to indemnify the Contractor against and from the consequences of the matter:

- (a) there are reasons to believe that the Subcontractor does not have sufficient competence, resources or financial strength;
- (b) the nominated Subcontractor does not accept to indemnify the Contractor against and from any negligence or misuse of Goods by the nominated Subcontractor, his agents and employees; or
- (c) the nominated Subcontractor does not accept to enter into a subcontract which specifies that, for the subcontracted work (including design, if any), the nominated Subcontractor shall:
 - (i) undertake to the Contractor such obligations and liabilities as will enable the Contractor to discharge his obligations and liabilities under the Contract,
 - (ii) indemnify the Contractor against and from all obligations and liabilities arising under or in connection with the Contract and from the consequences of any failure by the Subcontractor to perform these obligations or to fulfil these liabilities, and
 - (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 5.3 [Payment to nominated Subcontractors].

5.3 Payments to nominated Subcontractors

The Contractor shall pay to the nominated Subcontractor the amounts shown on the nominated Subcontractor's invoices approved by the Contractor which the Engineer certifies to be due in accordance with the subcontract. These amounts plus other charges shall be included in the Contract Price in accordance with sub-paragraph (b) of Sub-Clause 13.5 [Provisional Sums], except as stated in Sub-Clause 5.4 [Evidence of Payments].

5.4 Evidence of Payments

Before issuing a Payment Certificate which includes an amount payable to a nominated Subcontractor, the Engineer may request the Contractor to supply reasonable evidence that the nominated Subcontractor has received all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor:

- (a) submits this reasonable evidence to the Engineer, or

- (b) (i) satisfies the Engineer in writing that the Contractor is reasonably entitled to withhold or refuse to pay these amounts, and
- (ii) submits to the Engineer reasonable evidence that the nominated Subcontractor has been notified of the Contractor's entitlement,

then the Employer may (at his sole discretion) pay, direct to the nominated Subcontractor, part or all of such amounts previously certified (less applicable deductions) as are due to the nominated Subcontractor and for which the Contractor has failed to submit the evidence described in sub-paragraphs (a) or (b) above. The Contractor shall then repay, to the Employer, the amount which the nominated Subcontractor was directly paid by the Employer.

6 Staff and Labour

6.1 Engagement of Staff and Labour

Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labour, local or otherwise, and for their payment, feeding, transport and, when appropriate, housing.

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.

6.2 Rates of Wages and Conditions of Labour

The Contractor shall pay rates of wages, and observe conditions of labour, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor.

The Contractor shall inform the Contractor's Personnel about 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, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.

6.3 Persons in the Service of Employer

The Contractor shall not recruit, or attempt to recruit, staff and labour from amongst the Employer's Personnel.

6.4 Labour Laws

The Contractor shall comply with all the relevant labour Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.

The Contractor shall require his employees to obey all applicable Laws, including those concerning safety at work.

6.5 Working Hours

No work shall be carried out on the Site on locally recognised days of rest, or outside the normal working hours stated in the Contract Data, unless:

- (a) otherwise stated in the Contract,
- (b) the Engineer gives consent, or
- (c) the work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer.

6.6 Facilities for Staff and Labour

Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Employer's Personnel as stated in the Specification.

The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.

6.7 Health and Safety

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

The Contractor shall send, to the Engineer, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Engineer may reasonably require.

HIV-AIDS Prevention. The Contractor shall conduct an HIV-AIDS awareness programme via an approved service provider, and shall undertake such other measures as are specified in this Contract to reduce the risk of the transfer of the HIV virus between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals.

The Contractor shall throughout the contract (including the Defects Notification Period): (i) conduct Information, Education and Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labour (including all the Contractor's employees, all Subcontractors and any other Contractor's or Employer's personnel employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behaviour with respect to, of Sexually Transmitted Diseases (STD) - or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labour as appropriate; and (iii) provide for STI and HIV/AIDS screening, diagnosis, counselling and referral to a dedicated national STI and HIV/AIDS programme, (unless otherwise agreed) of all Site staff and labour.

The Contractor shall include in the programme to be submitted for the execution of the Works under Sub-Clause 8.3 an alleviation programme for Site staff and labour and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation programme shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the programme shall detail the resources to be provided or utilised and any related sub-contracting proposed. The programme shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation this programme shall not exceed the Provisional Sum dedicated for this purpose.

6.8 Contractor's Superintendence

Throughout the execution of the Works, and as long thereafter as is necessary to fulfil the Contractor's obligations, the Contractor shall provide all necessary superintendence to plan, arrange, direct, manage, inspect and test the work.

Superintendence shall be given by a sufficient number of persons having adequate knowledge of the language for communications (defined in Sub-Clause 1.4 [Law and Language]) and of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents), for the satisfactory and safe execution of the Works.

6.9 Contractor's Personnel

The Contractor's Personnel shall be appropriately qualified, skilled and experienced 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 if applicable, who:

- (a) persists in any misconduct or lack of care,
- (b) carries out duties incompetently or negligently,
- (c) fails to conform with any provisions of the Contract, or
- (d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment.

If appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person.

6.10 Records of Contractor's Personnel and Equipment

The Contractor shall submit, to the Engineer, details showing the number of each class of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Engineer, until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.

6.11 Disorderly Conduct

The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel, and to preserve peace and protection of persons and property on and near the Site.

6.12 Foreign Personnel

The Contractor may bring in to 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 his best endeavours 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.

6.13 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.

6.14 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.

6.15 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.

6.16 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 thereof by Contractor's Personnel.

6.17 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.

6.18 Festivals and Religious Customs

The Contractor shall respect the Country's recognized festivals, days of rest and religious or other customs.

6.19 Funeral Arrangements

The Contractor shall be responsible, to the extent required by local regulations, for making any funeral arrangements for any of his local employees who may die while engaged upon the Works.

6.20 Forced Labour

The Contractor shall not employ forced labour, which 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.

6.21 Child Labour

The Contractor shall not employ children in a manner that is economically exploitative, or is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. Where the relevant labour laws of the Country have provisions for employment of minors, the Contractor shall follow those laws applicable to the Contractor. Children below the age of 18 years shall not be employed in dangerous work.

6.22 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 summarized 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].

6.23 Workers' Organisations

In countries where the relevant labour laws recognise workers' rights to form and to join workers' organisations of their choosing without interference and to bargain collectively, the Contractor shall comply with such laws. 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. In either case described above, and where the relevant labour laws are silent, the Contractor shall not discourage the Contractor's Personnel from forming or joining workers' organisations of their choosing or from bargaining collectively, and shall not discriminate or retaliate against the Contractor's Personnel who participate, or seek to participate, in such organisations and bargain collectively. The Contractor shall engage with such workers' representatives. Workers' organisations are expected to fairly represent the workers in the workforce.

6.24 Non-Discrimination and Equal Opportunity

The Contractor shall not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. The Contractor shall base the employment relationship on the principle of equal opportunity and fair treatment, and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, promotion, termination of employment or retirement, and discipline. In countries where the relevant labour laws provide for non-discrimination in employment, the Contractor shall comply with such laws. When the relevant labour laws are silent on non-discrimination in employment, the Contractor shall meet this Sub-Clause's requirements. Special measures of protection or assistance to remedy past discrimination or selection for a particular job based on the inherent requirements of the job shall not be deemed discrimination.

7 Plant, Materials and Workmanship

7.1 Manner of Execution

The Contractor shall carry out the manufacture of Plant, the production and manufacture of Materials, and all other execution of the Works:

- (a) in the manner (if any) specified in the Contract,
- (b) in a proper workmanlike and careful manner, in accordance with recognised good practice, and
- (c) with properly equipped facilities and non-hazardous Materials, except as otherwise specified in the Contract.

7.2 Samples

The Contractor shall submit the following samples of Materials, and relevant information, to the Engineer for consent prior to using the Materials in or for the Works:

- (a) manufacturer's standard samples of Materials and samples specified in the Contract, all at the Contractor's cost, and
- (b) additional samples instructed by the Engineer as a Variation.

Each sample shall be labelled as to origin and intended use in the Works.

7.3 Inspection

The Employer's Personnel shall at all reasonable times:

- (a) have full access to all parts of the Site and to all places from which natural Materials are being obtained, and
- (b) during production, manufacture and construction (at the Site and elsewhere), be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of manufacture of Plant and production and manufacture of Materials.

The Contractor shall give the Employer's Personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or responsibility.

The Contractor shall give notice to the Engineer whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport. The Engineer shall then either carry out the examination, inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor that the Engineer does not require to do so. If the Contractor fails to give the notice, he shall, if and when required by the Engineer, uncover the work and thereafter reinstate and make good, all at the Contractor's cost.

7.4 Testing

This Sub-Clause shall apply to all tests specified in the Contract, other than the Tests after Completion (if any).

Except as otherwise specified in the Contract, the Contractor shall provide all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments, labour, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently. The Contractor shall agree, with the Engineer, the time and place for the specified testing of any Plant, Materials and other parts of the Works.

The Engineer may, under Clause 13 [Variations and Adjustments], vary the location or details of specified tests, or instruct the Contractor to carry out additional tests. If these varied or additional tests show that the tested Plant, Materials or workmanship is not in accordance with the Contract, the cost of carrying out this Variation shall be borne by the Contractor, notwithstanding other provisions of the Contract.

The Engineer shall give the Contractor not less than 24 hours' notice of the Engineer's intention to attend the tests. If the Engineer does not attend at the time and place agreed, the Contractor may proceed with the tests, unless otherwise instructed by the Engineer, and the tests shall then be deemed to have been made in the Engineer's presence.

If the Contractor suffers delay and/or incurs Cost from complying with these instructions or as a result of a delay for which the Employer is responsible, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

The Contractor shall promptly forward to the Engineer duly certified reports of the tests. When the specified tests have been passed, the Engineer shall endorse the Contractor's test certificate, or issue a certificate to him, to that effect. If the Engineer has not attended the tests, he shall be deemed to have accepted the readings as accurate.

7.5 Rejection

If, as a result of an examination, inspection, measurement or testing, any Plant, Materials or workmanship is found to be defective or otherwise not in accordance with the Contract, the Engineer may reject the Plant, Materials or workmanship by giving notice to the Contractor, with reasons. The Contractor shall then promptly make good the defect and ensure that the rejected item complies with the Contract.

If the Engineer requires this Plant, Materials or workmanship to be retested, the tests shall be repeated under the same terms and conditions. If the rejection and retesting cause the Employer to incur additional costs, the Contractor shall subject to Sub-Clause 2.5 [Employer's Claims] pay these costs to the Employer.

7.6 Remedial Work

Notwithstanding any previous test or certification, the Engineer may instruct the Contractor to:

- (a) remove from the Site and replace any Plant or Materials which is not in accordance with the Contract,
- (b) remove and re-execute any other work which is not in accordance with the Contract, and
- (c) execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseeable event or otherwise.

The Contractor shall comply with the instruction within a reasonable time, which shall be the time (if any) specified in the instruction, or immediately if urgency is specified under sub-paragraph (c).

If the Contractor fails to comply with the instruction, the Employer shall be entitled to employ and pay other persons to carry out the work. Except to the extent that the Contractor would have been entitled to payment for the work, the Contractor shall subject to Sub-Clause 2.5 [Employer's Claims] pay to the Employer all costs arising from this failure.

7.7 Ownership of Plant and Materials

Except as otherwise provided in the Contract, each item of Plant and Materials shall, to the extent consistent with the Laws of the Country, become the property of the Employer at whichever is the earlier of the following times, free from liens and other encumbrances:

- (a) when it is incorporated in the Works;
- (b) when the Contractor is paid the corresponding value of the Plant and Materials under Sub-Clause 8.10 [Payment for Plant and Materials in Event of Suspension].

7.8 Royalties

Unless otherwise stated in the Specification, the Contractor shall pay all royalties, rents and other payments for:

- (a) natural Materials obtained from outside the Site, and
- (b) the disposal of material from demolitions and excavations and of other surplus material (whether natural or man-made), except to the extent that disposal areas within the Site are specified in the Contract.

8 Commencement, Delays and Suspension

8.1 Commencement of Works

Except as otherwise specified in the Particular Conditions of Contract, the Commencement Date shall be the date at which the following precedent conditions have all been fulfilled and the Engineer's notification recording the agreement of both Parties on such fulfilment and instructing to commence the Work is received by the Contractor:

- (a) signature of the Contract Agreement by both Parties, and if required, approval of the Contract by relevant authorities of the Country;
- (b) delivery to the Contractor of reasonable evidence of the Employer's financial arrangements (under Sub-Clause 2.4 [Employer's Financial Arrangements]);
- (c) 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;
- (d) 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.

If the said Engineer's instruction is not received by the Contractor within 180 days from his receipt of the Letter of Acceptance, the Contractor shall be entitled to terminate the Contract under Sub-Clause 16.2 [Termination by Contractor].

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.

8.2 Time for Completion

The Contractor shall complete the whole of the Works, and each Section (if any), within the Time for Completion for the Works or Section (as the case may be), including:

- (a) achieving the passing of the Tests on Completion, and
- (b) completing all work which is stated in the Contract as being required for the Works or Section to be considered to be completed for the purposes of taking-over under Sub-Clause 10.1 [Taking Over of the Works and Sections].

8.3 Programme

The Contractor shall submit a detailed time programme to the Engineer within 28 days after receiving the notice under Sub-Clause 8.1 [Commencement of Works]. The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations. Each programme shall include:

- (a) the order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design (if any), Contractor's Documents, procurement, manufacture of Plant, delivery to Site, construction, erection and testing,
- (b) each of these stages for work by each nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]),
- (c) the sequence and timing of inspections and tests specified in the Contract, and
- (d) a supporting report which includes:
 - (i) a general description of the methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and
 - (ii) details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment, required on the Site for each major stage.

Unless the Engineer, within 21 days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Employer's Personnel shall be entitled to rely upon the programme when planning their activities.

The Contractor shall promptly give notice to the Engineer of specific probable future events or circumstances which may adversely affect the work, increase the Contract Price or delay the execution of the Works. The Engineer may require the Contractor to submit an estimate of the anticipated effect of the future event or circumstances, and/or a proposal under Sub-Clause 13.3 [Variation Procedure].

If, at any time, the Engineer gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contract or to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Engineer in accordance with this Sub-Clause.

8.4 Extension of Time for Completion

The Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to an extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause 10.1 [Taking Over of the Works and Sections] is or will be delayed by any of the following causes:

- (a) a Variation (unless an adjustment to the Time for Completion has been agreed under Sub-Clause 13.3 [Variation Procedure]) or other substantial change in the quantity of an item of work included in the Contract,
- (b) a cause of delay giving an entitlement to extension of time under a Sub-Clause of these Conditions,
- (c) exceptionally adverse climatic conditions,
- (d) Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or governmental actions, or
- (e) any delay, impediment or prevention caused by or attributable to the Employer, the Employer's Personnel, or the Employer's other contractors.

If the Contractor considers himself to be entitled to an extension of the Time for Completion, the Contractor shall give notice to the Engineer in accordance with Sub-Clause 20.1 [Contractor's Claims]. When determining each extension of time under Sub-Clause 20.1, the Engineer shall review previous determinations and may increase, but shall not decrease, the total extension of time.

8.5 Delays Caused by Authorities

If the following conditions apply, namely:

- (a) the Contractor has diligently followed the procedures laid down by the relevant legally constituted public authorities in the Country,
- (b) these authorities delay or disrupt the Contractor's work, and
- (c) the delay or disruption was Unforeseeable,

then this delay or disruption will be considered as a cause of delay under sub-paragraph (b) of Sub-Clause 8.4 [Extension of Time for Completion].

8.6 Rate of Progress

If, at any time:

- (a) actual progress is too slow to complete within the Time for Completion, and/or
- (b) progress has fallen (or will fall) behind the current programme under Sub-Clause 8.3 [Programme],

other than as a result of a cause listed in Sub-Clause 8.4 [Extension of Time for Completion], then the Engineer may instruct the Contractor to submit, under Sub-Clause 8.3 [Programme], a revised programme and supporting report describing the revised methods which the Contractor proposes to adopt in order to expedite progress and complete within the Time for Completion.

Unless the Engineer notifies otherwise, the Contractor shall adopt these revised methods, which may require increases in the working hours and/or in the numbers of Contractor's Personnel and/or Goods, at the risk and cost of the Contractor. If these revised methods cause the Employer to incur additional costs, the Contractor shall subject to notice under Sub-Clause 2.5 [Employer's Claims] pay these costs to the Employer, in addition to delay damages (if any) under Sub-Clause 8.7 below.

Additional costs of revised methods including acceleration measures, instructed by the Engineer to reduce delays resulting from causes listed under Sub-Clause 8.4 [Extension of Time for Completion] shall be paid by the Employer, without generating, however, any other additional payment benefit to the Contractor.

8.7 Delay Damages

If the Contractor fails to comply with Sub-Clause 8.2 [Time for Completion], the Contractor shall subject to notice under Sub-Clause 2.5 [Employer's Claims] pay delay damages to the Employer for this default. These delay damages shall be the sum stated in the Contract Data, which shall be paid for every day which shall elapse between the relevant Time for Completion and the date stated in the Taking-Over Certificate. However, the total amount due under this Sub-Clause shall not exceed the maximum amount of delay damages (if any) stated in the Contract Data.

These delay damages shall be the only damages due from the Contractor for such default, other than in the event of termination under Sub-Clause 15.2 [Termination by Employer] prior to completion of the Works. These damages shall not relieve the Contractor from his obligation to complete the Works, or from any other duties, obligations or responsibilities which he may have under the Contract.

8.8 Suspension of Work

The Engineer may at any time instruct the Contractor to suspend progress of part or all of the Works. During such suspension, the Contractor shall protect, store and secure such part or the Works against any deterioration, loss or damage.

The Engineer may also notify the cause for the suspension. If and to the extent that the cause is notified and is the responsibility of the Contractor, the following Sub-Clauses 8.9, 8.10 and 8.11 shall not apply.

8.9 Consequences of Suspension

If the Contractor suffers delay and/or incurs Cost from complying with the Engineer's instructions under Sub-Clause 8.8 [Suspension of Work] and/or from resuming the work, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

The Contractor shall not be entitled to an extension of time for, or to payment of the Cost incurred in, making good the consequences of the Contractor's faulty design, workmanship or materials, or of the Contractor's failure to protect, store or secure in accordance with Sub-Clause 8.8 [Suspension of Work].

8.10 Payment for Plant and Materials in Event of Suspension

The Contractor shall be entitled to payment of the value (as at the date of suspension) of Plant and/or Materials which have not been delivered to Site, if:

- (a) the work on Plant or delivery of Plant and/or Materials has been suspended for more than 28 days, and
- (b) the Contractor has marked the Plant and/or Materials as the Employer's property in accordance with the Engineer's instructions.

8.11 Prolonged Suspension

If the suspension under Sub-Clause 8.8 [Suspension of Work] has continued for more than 84 days, the Contractor may request the Engineer's permission to proceed. If the Engineer does not give permission within 28 days after being requested to do so, the Contractor may, by giving notice to the Engineer, treat the suspension as an omission under Clause 13 [Variations and Adjustments] of the affected part of the Works. If the suspension affects the whole of the Works, the Contractor may give notice of termination under Sub-Clause 16.2 [Termination by Contractor].

8.12 Resumption of Work

After the permission or instruction to proceed is given, the Contractor and the Engineer shall jointly examine the Works and the Plant and Materials affected by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Works or Plant or Materials, which has occurred during the suspension after receiving from the Engineer an instruction to this effect under Clause 13 [Variations and Adjustments].

9 Tests on Completion

9.1 Contractor's Obligations

The Contractor shall carry out the Tests on Completion in accordance with this Clause and Sub-Clause 7.4 [Testing], after providing the documents in accordance with sub-paragraph (d) of Sub-Clause 4.1 [Contractor's General Obligations].

The Contractor shall give to the Engineer not less than 21 days' notice of the date after which the Contractor will be ready to carry out each of the Tests on Completion. Unless otherwise agreed, Tests on Completion shall be carried out within 14 days after this date, on such day or days as the Engineer shall instruct.

In considering the results of the Tests on Completion, the Engineer shall make allowances for the effect of any use of the Works by the Employer on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed any Tests on Completion, the Contractor shall submit a certified report of the results of these Tests to the Engineer.

9.2 Delayed Tests

If the Tests on Completion are being unduly delayed by the Employer, Sub-Clause 7.4 [Testing] (fifth paragraph) and/or Sub-Clause 10.3 [Interference with Tests on Completion] shall be applicable.

If the Tests on Completion are being unduly delayed by the Contractor, the Engineer may by notice require the Contractor to carry out the Tests within 21 days after receiving the notice. The Contractor shall carry out the Tests on such day or days within that period as the Contractor may fix and of which he shall give notice to the Engineer.

If the Contractor fails to carry out the Tests on Completion within the period of 21 days, the Employer's Personnel may proceed with the Tests at the risk and cost of the Contractor. The Tests on Completion shall then be deemed to have been carried out in the presence of the Contractor and the results of the Tests shall be accepted as accurate.

9.3 Retesting

If the Works, or a Section, fail to pass the Tests on Completion, Sub-Clause 7.5 [Rejection] shall apply, and the Engineer or the Contractor may require the failed Tests, and Tests on Completion on any related work, to be repeated under the same terms and conditions.

9.4 Failure to Pass Tests on Completion

If the Works, or a Section, fail to pass the Tests on Completion repeated under Sub-Clause 9.3 [Retesting], the Engineer shall be entitled to:

- (a) order further repetition of Tests on Completion under Sub-Clause 9.3;
- (b) if the failure deprives the Employer of substantially the whole benefit of the Works or Section, reject the Works or Section (as the case may be), in which event the Employer shall have the same remedies as are provided in sub-paragraph (c) of Sub-Clause 11.4 [Failure to Remedy Defects]; or
- (c) issue a Taking-Over Certificate, if the Employer so requests.

In the event of sub-paragraph (c), the Contractor shall proceed in accordance with all other obligations under the Contract, and the Contract Price shall be reduced by such amount as shall be appropriate to cover the reduced value to the Employer as a result of this failure. Unless the relevant reduction for this failure is stated (or its method of calculation is defined) in the Contract, the Employer may require the reduction to be (i) agreed by both Parties (in full satisfaction of this failure only) and paid before this Taking-Over Certificate is issued, or (ii) determined and paid under Sub-Clause 2.5 [Employer's Claims] and Sub-Clause 3.5 [Determinations].

10 Employer's Taking Over

10.1 Taking Over of the Works and Sections

Except as stated in Sub-Clause 9.4 [Failure to Pass Tests on Completion], the Works shall be taken over by the Employer when (i) the Works have been completed in accordance with the Contract, including the matters described in Sub-Clause 8.2 [Time for Completion] and except as allowed in sub-paragraph (a) below, and (ii) a Taking-Over Certificate for the Works has been issued, or is deemed to have been issued in accordance with this Sub-Clause.

The Contractor may apply by notice to the Engineer for a Taking-Over Certificate not earlier than 14 days before the Works will, in the Contractor's opinion, be complete and ready for taking over. If the Works are divided into Sections, the Contractor may similarly apply for a Taking-Over Certificate for each Section.

The Engineer shall, within 28 days after receiving the Contractor's application:

- (a) issue the Taking-Over Certificate to the Contractor, stating the date on which the Works or Section were completed in accordance with the Contract, except for any minor outstanding work and defects which will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these defects are remedied); or
- (b) reject the application, giving reasons and specifying the work required to be done by the Contractor to enable the Taking-Over Certificate to be issued. The Contractor shall then complete this work before issuing a further notice under this Sub-Clause.

If the Engineer fails either to issue the Taking-Over Certificate or to reject the Contractor's application within the period of 28 days, and if the Works or Section (as the case may be) are substantially in accordance with the Contract, the Taking-Over Certificate shall be deemed to have been issued on the last day of that period.

10.2 Taking Over of Parts of the Works

The Engineer may, at the sole discretion of the Employer, issue a Taking-Over Certificate for any part of the Permanent Works.

The Employer shall not use any part of the Works (other than as a temporary measure which is either specified in the Contract or agreed by both Parties) unless and until the Engineer has issued a Taking-Over Certificate for this part. However, if the Employer does use any part of the Works before the Taking-Over Certificate is issued:

- (a) the part which is used shall be deemed to have been taken over as from the date on which it is used,
- (b) the Contractor shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the Employer, and
- (c) if requested by the Contractor, the Engineer shall issue a Taking-Over Certificate for this part.

After the Engineer has issued a Taking-Over Certificate for a part of the Works, the Contractor shall be given the earliest opportunity to take such steps as may be necessary to carry out any outstanding Tests on Completion. The Contractor shall carry out these Tests on Completion as soon as practicable before the expiry date of the relevant Defects Notification Period.

If the Contractor incurs Cost as a result of the Employer taking over and/or using a part of the Works, other than such use as is specified in the Contract or agreed by the Contractor, the Contractor shall (i) give notice to the Engineer and (ii) be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to payment of any such Cost plus profit, which shall be included in the Contract Price. After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this Cost and profit.

If a Taking-Over Certificate has been issued for a part of the Works (other than a Section), the delay damages thereafter for completion of the remainder of the Works shall be reduced. Similarly, the delay damages for the remainder of the Section (if any) in which this part is included shall also be reduced. For any period of delay after the date stated in this Taking-Over Certificate, the proportional reduction in these delay damages shall be calculated as the proportion which the value of the part so certified bears to the value of the Works or Section (as the case may be) as a whole. The Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these proportions. The provisions of this paragraph shall only apply to the daily rate of delay damages under Sub-Clause 8.7 [Delay Damages], and shall not affect the maximum amount of these damages.

10.3 Interference with Tests on Completion

If the Contractor is prevented, for more than 14 days, from carrying out the Tests on Completion by a cause for which the Employer is responsible, the Employer shall be deemed to have taken over the Works or Section (as the case may be) on the date when the Tests on Completion would otherwise have been completed.

The Engineer shall then issue a Taking-Over Certificate accordingly, and the Contractor shall carry out the Tests on Completion as soon as practicable, before the expiry date of the Defects Notification Period. The Engineer shall require the Tests on Completion to be carried out by giving 14 days' notice and in accordance with the relevant provisions of the Contract.

If the Contractor suffers delay and/or incurs Cost as a result of this delay in carrying out the Tests on Completion, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

10.4 Surfaces Requiring Reinstatement

Except as otherwise stated in a Taking-Over Certificate, a certificate for a Section or part of the Works shall not be deemed to certify completion of any ground or other surfaces requiring reinstatement.

11 Defects Liability

11.1 Completion of Outstanding Work and Remedying Defects

In order that the Works and Contractor's Documents, and each Section, shall be in the condition required by the Contract (fair wear and tear excepted) by the expiry date of the relevant Defects Notification Period or as soon as practicable thereafter, the Contractor shall:

- (a) complete any work which is outstanding on the date stated in a Taking-Over Certificate, within such reasonable time as is instructed by the Engineer, and
- (b) execute all work required to remedy defects or damage, as may be notified by (or on behalf of) the Employer on or before the expiry date of the Defects Notification Period for the Works or Section (as the case may be).

If a defect appears or damage occurs, the Contractor shall be notified accordingly, by (or on behalf of) the Employer.

11.2 Cost of Remedying Defects

All work referred to in sub-paragraph (b) of Sub-Clause 11.1 [Completion of Outstanding Work and Remedying Defects] shall be executed at the risk and cost of the Contractor, if and to the extent that the work is attributable to:

- (a) any design for which the Contractor is responsible,
- (b) Plant, Materials or workmanship not being in accordance with the Contract, or
- (c) failure by the Contractor to comply with any other obligation.

If and to the extent that such work is attributable to any other cause, the Contractor shall be notified promptly by (or on behalf of) the Employer, and Sub-Clause 13.3 [Variation Procedure] shall apply.

11.3 Extension of Defects Notification Period

The Employer shall be entitled subject to Sub-Clause 2.5 [Employer's Claims] to an extension of the Defects Notification Period for the Works or a Section if and to the extent that the Works, Section or a major item of Plant (as the case may be, and after taking over) cannot be used for the purposes for which they are intended by reason of a defect or by reason of damage attributable to the Contractor. However, a Defects Notification Period shall not be extended by more than two years.

If delivery and/or erection of Plant and/or Materials was suspended under Sub-Clause 8.8 [Suspension of Work] or Sub-Clause 16.1 [Contractor's Entitlement to Suspend Work], the Contractor's obligations under this Clause shall not apply to any defects or damage occurring more than two years after the Defects Notification Period for the Plant and/or Materials would otherwise have expired.

11.4 Failure to Remedy Defects

If the Contractor fails to remedy any defect or damage within a reasonable time, a date may be fixed by (or on behalf of) the Employer, on or by which the defect or damage is to be remedied. The Contractor shall be given reasonable notice of this date.

If the Contractor fails to remedy the defect or damage by this notified date and this remedial work was to be executed at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Employer may (at his option):

- (a) carry out the work himself or by others, in a reasonable manner and at the Contractor's cost, but the Contractor shall have no responsibility for this work; and the Contractor shall subject to Sub-Clause 2.5 [Employer's Claims] pay to the Employer the costs reasonably incurred by the Employer in remedying the defect or damage;
- (b) require the Engineer to agree or determine a reasonable reduction in the Contract Price in accordance with Sub-Clause 3.5 [Determinations]; or
- (c) if the defect or damage deprives the Employer of substantially the whole benefit of the Works or any major part of the Works, terminate the Contract as a whole, or in respect of such major part which cannot be put to the intended use. Without prejudice to any other rights, under the Contract or otherwise, the Employer shall then be entitled to recover all sums paid for the Works or for such part (as the case may be), plus financing costs and the cost of dismantling the same, clearing the Site and returning Plant and Materials to the Contractor.

11.5 Removal of Defective Work

If the defect or damage cannot be remedied expeditiously on the Site and the Employer gives consent, the Contractor may remove from the Site for the purposes of repair such items of Plant as are defective or damaged. This consent may require the Contractor to increase the amount of the Performance Security by the full replacement cost of these items, or to provide other appropriate security.

11.6 Further Tests

If the work of remedying of any defect or damage may affect the performance of the Works, the Engineer may require the repetition of any of the tests described in the Contract. The requirement shall be made by notice within 28 days after the defect or damage is remedied.

These tests shall be carried out in accordance with the terms applicable to the previous tests, except that they shall be carried out at the risk and cost of the Party liable, under Sub-Clause 11.2 [Cost of Remedying Defects], for the cost of the remedial work.

11.7 Right of Access

Until the Performance Certificate has been issued, the Contractor shall have such right of access to the Works as is reasonably required in order to comply with this Clause, except as may be inconsistent with the Employer's reasonable security restrictions.

11.8 Contractor to Search

The Contractor shall, if required by the Engineer, search for the cause of any defect, under the direction of the Engineer. Unless the defect is to be remedied at the cost of the Contractor under Sub-Clause 11.2 [Cost of Remedying Defects], the Cost of the search plus profit shall be agreed or determined by the Engineer in accordance with Sub-Clause 3.5 [Determinations] and shall be included in the Contract Price.

11.9 Performance Certificate

Performance of the Contractor's obligations shall not be considered to have been completed until the Engineer has issued the Performance Certificate to the Contractor, stating the date on which the Contractor completed his obligations under the Contract.

The Engineer shall issue the Performance Certificate within 28 days after the latest of the expiry dates of the Defects Notification Periods, or as soon thereafter as the Contractor has supplied all the Contractor's Documents and completed and tested all the Works, including remedying any defects. A copy of the Performance Certificate shall be issued to the Employer.

Only the Performance Certificate shall be deemed to constitute acceptance of the Works.

11.10 Unfulfilled Obligations

After the Performance Certificate has been issued, each Party shall remain liable for the fulfilment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of unperformed obligations, the Contract shall be deemed to remain in force.

11.11 Clearance of Site

Upon receiving the Performance Certificate, the Contractor shall remove any remaining Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works from the Site.

If all these items have not been removed within 28 days after receipt by the Contractor of the Performance Certificate, the Employer may sell or otherwise dispose of any remaining items. The Employer shall be entitled to be paid the costs incurred in connection with, or attributable to, such sale or disposal and restoring the Site.

Any balance of the moneys from the sale shall be paid to the Contractor. If these moneys are less than the Employer's costs, the Contractor shall pay the outstanding balance to the Employer.

12 Measurement and Evaluation

12.1 Works to be Measured

The Works shall be measured, and valued for payment, in accordance with this Clause. The Contractor shall show in each application under Sub-Clauses 14.3 [Application for Interim Payment Certificates], 14.10 [Statement on Completion] and 14.11 [Application for Final Payment Certificate] the quantities and other particulars detailing the amounts which he considers to be entitled under the Contract.

Whenever the Engineer requires any part of the Works to be measured, reasonable notice shall be given to the Contractor's Representative, who shall:

- (a) promptly either attend or send another qualified representative to assist the Engineer in making the measurement, and
- (b) supply any particulars requested by the Engineer.

If the Contractor fails to attend or send a representative, the measurement made by (or on behalf of) the Engineer shall be accepted as accurate.

Except as otherwise stated in the Contract, wherever any Permanent Works are to be measured from records, these shall be prepared by the Engineer. The Contractor shall, as and when requested, attend to examine and agree the records with the Engineer, and shall sign the same when agreed. If the Contractor does not attend, the records shall be accepted as accurate.

If the Contractor examines and disagrees the records, and/or does not sign them as agreed, then the Contractor shall give notice to the Engineer of the respects in which the records are asserted to be inaccurate. After receiving this notice, the Engineer shall review the records and either confirm or vary them and certify the payment of the undisputed part. If the Contractor does not so give notice to the Engineer within 14 days after being requested to examine the records, they shall be accepted as accurate.

12.2 Method of Measurement

Except as otherwise stated in the Contract and notwithstanding local practice:

- (a) measurement shall be made of the net actual quantity of each item of the Permanent Works, and
- (b) the method of measurement shall be in accordance with the Bill of Quantities or other applicable Schedules.

12.3 Evaluation

Except as otherwise stated in the Contract, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the Contract Price by evaluating each item of work, applying the measurement agreed or determined in accordance with the above Sub-Clauses 12.1 and 12.2 and the appropriate rate or price for the item.

For each item of work, the appropriate rate or price for the item shall be the rate or price specified for such item in the Contract or, if there is no such item, specified for similar work.

Any item of work included in the Bill of Quantities for which no rate or price was specified shall be considered as included in other rates and prices in the Bill of Quantities and will not be paid for separately.

However, a new rate or price shall be appropriate for an item of work if:

- (a)
 - (i) the measured quantity of the item is changed by more than 25% from the quantity of this item in the Bill of Quantities or other Schedule,
 - (ii) this change in quantity multiplied by such specified rate for this item exceeds 0.25% of the Accepted Contract Amount,
 - (iii) this change in quantity directly changes the Cost per unit quantity of this item by more than 1%, and
 - (iv) this item is not specified in the Contract as a "fixed rate item";
- or
- (b)
 - (i) the work is instructed under Clause 13 [Variations and Adjustments],
 - (ii) no rate or price is specified in the Contract for this item, and
 - (iii) no specified rate or price is appropriate because the item of work is not of similar character, or is not executed under similar conditions, as any item in the Contract.

Each new rate or price shall be derived from any relevant rates or prices in the Contract, with reasonable adjustments to take account of the matters described in sub-paragraph (a) and/or (b), as applicable. If no rates or prices are relevant for the derivation of a new rate or price, it shall be derived from the reasonable Cost of executing the work, together with profit, taking account of any other relevant matters.

Until such time as an appropriate rate or price is agreed or determined, the Engineer shall determine a provisional rate or price for the purposes of Interim Payment Certificates as soon as the concerned work commences.

12.4 Omissions

Whenever the omission of any work forms part (or all) of a Variation, the value of which has not been agreed, if:

- (a) the Contractor will incur (or has incurred) cost which, if the work had not been omitted, would have been deemed to be covered by a sum forming part of the Accepted Contract Amount;
- (b) the omission of the work will result (or has resulted) in this sum not forming part of the Contract Price; and
- (c) this cost is not deemed to be included in the evaluation of any substituted work;

then the Contractor shall give notice to the Engineer accordingly, with supporting particulars. Upon receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this cost, which shall be included in the Contract Price.

13 Variations and Adjustments

13.1 Right to Vary

Variations may be initiated by the Engineer at any time prior to issuing the Taking-Over Certificate for the Works, either by an instruction or by a request for the Contractor to submit a proposal.

The Contractor shall execute and be bound by each Variation, unless the Contractor promptly gives notice to the Engineer stating (with supporting particulars) that (i) the Contractor cannot readily obtain the Goods required for the Variation, or (ii) such Variation triggers a substantial change in the sequence or progress of the Works. Upon receiving this notice, the Engineer shall cancel, confirm or vary the instruction.

Each Variation may include:

- (a) changes to the quantities of any item of work included in the Contract (however, such changes do not necessarily constitute a Variation),
- (b) changes to the quality and other characteristics of any item of work,
- (c) changes to the levels, positions and/or dimensions of any part of the Works,
- (d) omission of any work unless it is to be carried out by others,
- (e) any additional work, Plant, Materials or services necessary for the Permanent Works, including any associated Tests on Completion, boreholes and other testing and exploratory work, or
- (f) changes to the sequence or timing of the execution of the Works.

The Contractor shall not make any alteration and/or modification of the Permanent Works, unless and until the Engineer instructs or approves a Variation.

13.2 Value Engineering

The Contractor may, at any time, submit to the Engineer a written proposal which (in the Contractor's opinion) will, if adopted, (i) accelerate completion, (ii) reduce the cost to the Employer of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Employer of the completed Works, or (iv) otherwise be of benefit to the Employer.

The proposal shall be prepared at the cost of the Contractor and shall include the items listed in Sub-Clause 13.3 [Variation Procedure].

If a proposal, which is approved by the Engineer, includes a change in the design of part of the Permanent Works, then unless otherwise agreed by both Parties:

- (a) the Contractor shall design this part,
- (b) sub-paragraphs (a) to (d) of Sub-Clause 4.1 [Contractor's General Obligations] shall apply, and
- (c) if this change results in a reduction in the contract value of this part, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine a fee, which shall be included in the Contract Price. This fee shall be half (50%) of the difference between the following amounts:
 - (i) such reduction in contract value, resulting from the change, excluding adjustments under Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost], and
 - (ii) the reduction (if any) in the value to the Employer of the varied works, taking account of any reductions in quality, anticipated life or operational efficiencies.

However, if amount (i) is less than amount (ii), there shall not be a fee.

13.3 Variation Procedure

If the Engineer requests a proposal, prior to instructing a Variation, the Contractor shall respond in writing as soon as practicable, either by giving reasons why he cannot comply (if this is the case) or by submitting:

- (a) a description of the proposed work to be performed and a programme for its execution,
- (b) the Contractor's proposal for any necessary modifications to the programme according to Sub-Clause 8.3 [Programme] and to the Time for Completion, and
- (c) the Contractor's proposal for evaluation of the Variation.

The Engineer shall, as soon as practicable after receiving such proposal (under Sub-Clause 13.2 [Value Engineering] or otherwise), respond with approval, disapproval or comments. The Contractor shall not delay any work whilst awaiting a response.

Each instruction to execute a Variation, with any requirements for the recording of Costs, shall be issued by the Engineer to the Contractor, who shall acknowledge receipt.

Each Variation shall be evaluated in accordance with Clause 12 [Measurement and Evaluation], unless the Engineer instructs or approves otherwise in accordance with this Clause.

13.4 Payment in Applicable Currencies

If the Contract provides for payment of the Contract Price in more than one currency, then whenever an adjustment is agreed, approved or determined as stated above, the amount payable in each of the applicable currencies shall be specified. For this purpose, reference shall be made to the actual or expected currency proportions of the Cost of the varied work, and to the proportions of various currencies specified for payment of the Contract Price.

13.5 Provisional Sums

Each Provisional Sum shall only be used, in whole or in part, in accordance with the Engineer's instructions, and the Contract Price shall be adjusted accordingly. The total sum paid to the Contractor shall include only such amounts, for the work, supplies or services to which the Provisional Sum relates, as the Engineer shall have instructed. For each Provisional Sum, the Engineer may instruct:

- (a) work to be executed (including Plant, Materials or services to be supplied) by the Contractor and valued under Sub-Clause 13.3 [Variation Procedure]; and/or
- (b) Plant, Materials or services to be purchased by the Contractor, from a nominated Subcontractor (as defined in Clause 5 [Nominated Subcontractors]) or otherwise; and for which there shall be included in the Contract Price:
 - (i) the actual amounts paid (or due to be paid) by the Contractor, and
 - (ii) a sum for overhead charges and profit, calculated as a percentage of these actual amounts by applying the relevant percentage rate (if any) stated in the appropriate Schedule. If there is no such rate, the percentage rate stated in the Contract Data shall be applied.

The Contractor shall, when required by the Engineer, produce quotations, invoices, vouchers and accounts or receipts in substantiation.

13.6 Daywork

For work of a minor or incidental nature, the Engineer may instruct that a Variation shall be executed on a daywork basis. The work shall then be valued in accordance with the Daywork Schedule included in the Contract, and the following procedure shall apply. If a Daywork Schedule is not included in the Contract, this Sub-Clause shall not apply.

Before ordering Goods for the work, the Contractor shall submit quotations to the Engineer. When applying for payment, the Contractor shall submit invoices, vouchers and accounts or receipts for any Goods.

Except for any items for which the Daywork Schedule specifies that payment is not due, the Contractor shall deliver each day to the Engineer accurate statements in duplicate which shall include the following details of the resources used in executing the previous day's work:

- (a) the names, occupations and time of Contractor's Personnel,
- (b) the identification, type and time of Contractor's Equipment and Temporary Works, and
- (c) the quantities and types of Plant and Materials used.

One copy of each statement will, if correct, or when agreed, be signed by the Engineer and returned to the Contractor. The Contractor shall then submit priced statements of these resources to the Engineer, prior to their inclusion in the next Statement under Sub-Clause 14.3 [Application for Interim Payment Certificates].

13.7 Adjustments for Changes in Legislation

The Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in the Laws of the Country (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws, made after the Base Date, which affect the Contractor in the performance of obligations under the Contract.

If the Contractor suffers (or will suffer) delay and/or incurs (or will incur) additional Cost as a result of these changes in the Laws or in such interpretations, made after the Base Date, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

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 13.8 [Adjustments for Changes in Cost].

13.8 Adjustments for Changes in Cost

In this Sub-Clause, "table of adjustment data" means the completed table of adjustment data for local and foreign currencies included in the Schedules. If there is no such table of adjustment data, this Sub-Clause shall not apply.

If this Sub-Clause applies, the amounts payable to the Contractor shall be adjusted for rises or falls in the cost of labour, Goods and other inputs to the Works, by the addition or deduction of the amounts determined by the formulae prescribed in this Sub-Clause. To the extent that full compensation for any rise or fall in Costs is not covered by the provisions of this or other Clauses, the Accepted Contract Amount shall be deemed to have included amounts to cover the contingency of other rises and falls in costs.

The adjustment to be applied to the amount otherwise payable to the Contractor, as valued in accordance with the appropriate Schedule and certified in Payment Certificates, shall be determined from formulae for each of the currencies in which the Contract Price is payable. No adjustment is to be applied to work valued on the basis of Cost or current prices. The formulae shall be of the following general type:

$$P_n = a + b L_n / L_o + c E_n / E_o + d M_n / M_o + \dots$$

where:

"P_n" 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;

"L_n", "E_n", "M_n", ... 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

"L_o", "E_o", "M_o", ... 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 for the purposes of clarification of the source; although these dates (and thus these values) may not correspond to the base cost indices.

In cases where the "currency of index" is not the relevant currency of payment, each index shall be converted into the relevant currency of payment at the selling rate, established by the central bank of the Country, of this relevant currency on the above date for which the index is required to be applicable

Until such time as each current cost index is available, the Engineer shall determine a provisional index for the issue of Interim Payment Certificates. When a current cost index is available, the adjustment shall be recalculated accordingly.

If the Contractor fails to complete the Works within the Time for Completion, adjustment of prices thereafter shall be made using either (i) each index or price applicable on the date 49 days prior to the expiry of the Time for Completion of the Works, or (ii) the current index or price, whichever is more favourable to the Employer.

The weightings (coefficients) for each of the factors of cost stated in the table(s) of adjustment data shall only be adjusted if they have been rendered unreasonable, unbalanced or inapplicable, as a result of Variations.

14 Contract Price and Payment

14.1 The Contract Price

Unless otherwise stated in the Particular Conditions:

- (a) the Contract Price shall be agreed or determined under Sub-Clause 12.3 [Evaluation] and be subject to adjustments in accordance with the Contract;

- (b) the Contractor shall pay all taxes, duties and fees required to be paid by him under the Contract, and the Contract Price shall not be adjusted for any of these costs except as stated in Sub-Clause 13.7 [Adjustments for Changes in Legislation];
- (c) any quantities which may be set out in the Bill of Quantities or other Schedule are estimated quantities and are not to be taken as the actual and correct quantities:
 - (i) of the Works which the Contractor is required to execute, or
 - (ii) for the purposes of Clause 12 [Measurement and Evaluation]; and
- (d) the Contractor shall submit to the Engineer, within 28 days after the Commencement Date, a proposed breakdown of each lump sum price in the Schedules. The Engineer may take account of the breakdown when preparing Payment Certificates, but shall not be bound by it.

Notwithstanding the provisions of sub-paragraph (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.

14.2 Advance Payment

The Employer shall make an advance payment, as an interest-free loan for mobilisation and cash flow support, when the Contractor submits a guarantee in accordance with this Sub-Clause. The total advance payment, the number and timing of instalments (if more than one), and the applicable currencies and proportions, shall be as stated in the Contract Data.

Unless and until the Employer receives this guarantee, or if the total advance payment is not stated in the Contract Data, this Sub-Clause shall not apply.

The Engineer shall deliver to the Employer and to the Contractor an Interim Payment Certificate for the advance payment or its first instalment after receiving a Statement (under Sub-Clause 14.3 [Application for Interim Payment Certificates]) and after the Employer receives (i) the Performance Security in accordance with Sub-Clause 4.2 [Performance Security] and (ii) a guarantee in amounts and currencies equal to the advance payment. This guarantee 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 or in another form approved by the Employer.

The Contractor shall ensure that the guarantee is valid and enforceable until the advance payment has been repaid, but its amount shall be progressively reduced by the amount repaid by the Contractor as indicated in the Payment Certificates. If the terms of the guarantee specify its expiry date, and the advance payment has not been repaid by the date 28 days prior to the expiry date, the Contractor shall extend the validity of the guarantee until the advance payment has been repaid.

Unless stated otherwise in the Contract Data, the advance payment shall be repaid through percentage deductions from the interim payments determined by the Engineer in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates], as follows:

- (a) deductions shall commence in the next interim Payment Certificate following that in which the total of all certified interim payments (excluding the advance payment and deductions and repayments of retention) exceeds 30 percent (30%) of the Accepted Contract Amount less Provisional Sums; and
- (b) deductions shall be made at the amortisation rate stated in the Contract Data of the amount of each Interim Payment Certificate (excluding the advance payment and deductions for its repayments as well as deductions for retention money) in the currencies and proportions of the advance payment until such time as the advance payment has been repaid; provided that the advance payment shall be completely repaid prior to the time when 90 percent (90%) of the Accepted Contract Amount less Provisional Sums has been certified for payment.

If the advance payment has not been repaid prior to the issue of the Taking-Over Certificate for the Works or prior to termination under Clause 15 [Termination by Employer], Clause 16 [Suspension and Termination by Contractor] or Clause 19 [Force Majeure] (as the case may be), the whole of the balance then outstanding shall immediately become due and in case of termination under Clause 15 [Termination by Employer], except for Sub-Clause 15.5 [Employer's Entitlement to Termination for Convenience], payable by the Contractor to the Employer.

14.3 Application for Interim Payment Certificates

The Contractor shall submit a Statement in six copies to the Engineer after the end of each month, in a form approved by the Engineer, showing in detail the amounts to which the Contractor considers himself to be entitled, together with supporting documents which shall include the report on the progress during this month in accordance with Sub-Clause 4.21 [Progress Reports].

The Statement shall include the following items, as applicable, which shall be expressed in the various currencies in which the Contract Price is payable, in the sequence listed:

- (a) the estimated contract value of the Works executed and the Contractor's Documents produced up to the end of the month (including Variations but excluding items described in sub-paragraphs (b) to (g) below);
- (b) any amounts to be added and deducted for changes in legislation and changes in cost, in accordance with Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost];
- (c) any amount to be deducted for retention, calculated by applying the percentage of retention stated in the Contract Data to the total of the above amounts, until the amount so retained by the Employer reaches the limit of Retention Money (if any) stated in the Contract Data;
- (d) any amounts to be added for the advance payment (if more than one instalment) and to be deducted for its repayments in accordance with Sub-Clause 14.2 [Advance Payment];
- (e) any amounts to be added and deducted for Plant and Materials in accordance with Sub-Clause 14.5 [Plant and Materials intended for the Works];
- (f) any other additions or deductions which may have become due under the Contract or otherwise, including those under Clause 20 [Claims, Disputes and Arbitration]; and
- (g) the deduction of amounts certified in all previous Payment Certificates.

14.4 Schedule of Payments

If the Contract includes a schedule of payments specifying the instalments in which the Contract Price will be paid, then unless otherwise stated in this schedule:

- (a) the instalments quoted in this schedule of payments shall be the estimated contract values for the purposes of sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates];
- (b) Sub-Clause 14.5 [Plant and Materials intended for the Works] shall not apply; and
- (c) if these instalments are not defined by reference to the actual progress achieved in executing the Works, and if actual progress is found to be less or more than that on which this schedule of payments was based, then the Engineer may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine revised instalments, which shall take account of the extent to which progress is less or more than that on which the instalments were previously based.

If the Contract does not include a schedule of payments, the Contractor shall submit non-binding estimates of the payments which he expects to become due during each quarterly period. The first estimate shall be submitted within 42 days after the Commencement Date. Revised estimates shall be submitted at quarterly intervals, until the Taking-Over Certificate has been issued for the Works.

14.5 Plant and Materials intended for the Works

If this Sub-Clause applies, Interim Payment Certificates shall include, under sub-paragraph (e) of Sub-Clause 14.3, (i) an amount for Plant and Materials which have been sent to the Site for incorporation in the Permanent Works, and (ii) a reduction when the contract value of such Plant and Materials is included as part of the Permanent Works under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates].

If the lists referred to in sub-paragraphs (b)(i) or (c)(i) below are not included in the Schedules this Sub-Clause shall not apply.

The Engineer shall determine and certify each addition if the following conditions are satisfied:

(a) the Contractor has:

- (i) kept satisfactory records (including the orders, receipts, Costs and use of Plant and Materials) which are available for inspection, and
- (ii) submitted a statement of the Cost of acquiring and delivering the Plant and Materials to the Site, supported by satisfactory evidence;

and either:

(b) the relevant Plant and Materials:

- (i) are those listed in the Schedules for payment when shipped,
- (ii) have been shipped to the Country, en route to the Site, in accordance with the Contract; and
- (iii) are described in a clean shipped bill of lading or other evidence of shipment, which has been submitted to the Engineer together with evidence of payment of freight and insurance, any other documents reasonably required, and a bank guarantee in a form and issued by an entity approved by the Employer in amounts and currencies equal to the amount due under this Sub-Clause: this guarantee may be in a similar form to the form referred to in Sub-Clause 14.2 [Advance Payment] and shall be valid until the Plant and Materials are properly stored on Site and protected against loss, damage or deterioration;

or

(c) the relevant Plant and Materials:

- (i) are those listed in the Schedules for payment when delivered to the Site, and
- (ii) have been delivered to and are properly stored on the Site, are protected against loss, damage or deterioration, and appear to be in accordance with the Contract.

The additional amount to be certified shall be the equivalent of eighty percent (80%) of the Engineer's determination of the cost of the Plant and Materials (including delivery to Site), taking account of the documents mentioned in this Sub-Clause and of the contract value of the Plant and Materials.

The currencies for this additional amount shall be the same as those in which payment will become due when the contract value is included under sub-paragraph (a) of Sub-Clause 14.3 [Application for Interim Payment Certificates]. At that time, the Payment Certificate shall include the applicable reduction which shall be equivalent to, and in the same currencies and proportions as, this additional amount for the relevant Plant and Materials

14.6 Issue of Interim Payment Certificates

No amount will be certified or paid until the Employer has received and approved the Performance Security. Thereafter, the Engineer shall, within 28 days after receiving a Statement and supporting documents, deliver to the Employer and to the Contractor an Interim Payment Certificate which shall state the amount which the Engineer fairly determines to be due, with all supporting particulars for any reduction or withholding made by the Engineer on the Statement if any.

However, prior to issuing the Taking-Over Certificate for the Works, the Engineer shall not be bound to issue an Interim Payment Certificate in an amount which would (after retention and other deductions) be less than the minimum amount of Interim Payment Certificates (if any) stated in the Contract Data. In this event, the Engineer shall give notice to the Contractor accordingly.

An Interim Payment Certificate shall not be withheld for any other reason, although:

- (a) if any thing supplied or work done by the Contractor is not in accordance with the Contract, the cost of rectification or replacement may be withheld until rectification or replacement has been completed; and/or
- (b) if the Contractor was or is failing to perform any work or obligation in accordance with the Contract, and had been so notified by the Engineer, the value of this work or obligation may be withheld until the work or obligation has been performed.

The Engineer may in any Payment Certificate make any correction or modification that should properly be made to any previous Payment Certificate. A Payment Certificate shall not be deemed to indicate the Engineer's acceptance, approval, consent or satisfaction.

14.7 Payment

The Employer shall pay to the Contractor:

- (a) the first instalment of the advance payment within 42 days after issuing the Letter of Acceptance or within 21 days after receiving the documents in accordance with Sub-Clause 4.2 [Performance Security] and Sub-Clause 14.2 [Advance Payment], whichever is later;
- (b) the amount certified in each Interim Payment Certificate within 56 days after the Engineer receives the Statement and supporting documents; 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 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
- (c) the amount certified in the Final Payment Certificate within 56 days after the Employer receives this Payment Certificate; 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].

Payment of the amount due in each currency shall be made into the bank account, nominated by the Contractor, in the payment country (for this currency) specified in the Contract.

14.8 Delayed Payment

If the Contractor does not receive payment in accordance with Sub-Clause 14.7 [Payment], the Contractor shall be entitled to receive financing charges compounded monthly on the amount unpaid during the period of delay. This period shall be deemed to commence on the date for payment specified in Sub-Clause 14.7 [Payment], irrespective (in the case of its sub-paragraph (b)) of the date on which any Interim Payment Certificate is issued.

Unless otherwise stated in the Particular Conditions, these financing charges shall be calculated at the annual rate of three percentage points above the discount rate of the central bank in the country of the currency of payment, or if not available, the interbank offered rate, and shall be paid in such currency.

The Contractor shall be entitled to this payment without formal notice or certification, and without prejudice to any other right or remedy.

14.9 Payment of Retention Money

When the Taking-Over Certificate has been issued for the Works, the first half of the Retention Money shall be certified by the Engineer for payment to the Contractor. If a Taking-Over Certificate is issued for a Section or part of the Works, a proportion of the Retention Money shall be certified and paid. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section or part, by the estimated final Contract Price.

Promptly after the latest of the expiry dates of the Defects Notification Periods, the outstanding balance of the Retention Money shall be certified by the Engineer for payment to the Contractor. If a Taking-Over Certificate was issued for a Section, a proportion of the second half of the Retention Money shall be certified and paid promptly after the expiry date of the Defects Notification Period for the Section. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section by the estimated final Contract Price.

However, if any work remains to be executed under Clause 11 [Defects Liability], the Engineer shall be entitled to withhold certification of the estimated cost of this work until it has been executed.

When calculating these proportions, no account shall be taken of any adjustments under Sub-Clause 13.7 [Adjustments for Changes in Legislation] and Sub-Clause 13.8 [Adjustments for Changes in Cost].

Unless otherwise stated in the Particular Conditions, 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 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 under the second paragraph of this Sub-Clause. The Employer shall return the guarantee to the Contractor within 21 days after receiving a copy of the Performance Certificate.

If the Performance Security required under Sub-Clause 4.2 is in the form of a demand guarantee, and the amount guaranteed under it 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 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.

14.10 Statement at Completion

Within 84 days after receiving the Taking-Over Certificate for the Works, the Contractor shall submit to the Engineer six copies of a Statement at completion with supporting documents, in accordance with Sub-Clause 14.3 [Application for Interim Payment Certificates], showing:

- (a) the value of all work done in accordance with the Contract up to the date stated in the Taking-Over Certificate for the Works,
- (b) any further sums which the Contractor considers to be due, and

- (c) an estimate of any other amounts which the Contractor considers will become due to him under the Contract. Estimated amounts shall be shown separately in this Statement at completion.

The Engineer shall then certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates].

14.11 Application for Final Payment Certificate

Within 56 days after receiving the Performance Certificate, the Contractor shall submit, to the Engineer, six copies of a draft final statement with supporting documents showing in detail in a form approved by the Engineer:

- (a) the value of all work done in accordance with the Contract, and
- (b) any further sums which the Contractor considers to be due to him under the Contract or otherwise.

If the Engineer disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Engineer may reasonably require within 28 days from receipt of said draft and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Engineer the final statement as agreed. This agreed statement is referred to in these Conditions as the "Final Statement".

However if, following discussions between the Engineer and the Contractor and any changes to the draft final statement which are agreed, it becomes evident that a dispute exists, the Engineer shall deliver to the Employer (with a copy to the Contractor) an Interim Payment Certificate for the agreed parts of the draft final statement. Thereafter, if the dispute is finally resolved under Sub-Clause 20.4 [Obtaining Dispute Board's Decision] or Sub-Clause 20.5 [Amicable Settlement], the Contractor shall then prepare and submit to the Employer (with a copy to the Engineer) a Final Statement.

14.12 Discharge

When submitting the Final Statement, the Contractor shall submit a discharge which confirms that the total of the Final Statement represents full and final settlement of all moneys due to the Contractor under or in connection with the Contract. This discharge may state that it becomes effective when the Contractor has received the Performance Security and the outstanding balance of this total, in which event the discharge shall be effective on such date.

14.13 Issue of Final Payment Certificate

Within 28 days after receiving the Final Statement and discharge in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Engineer shall deliver, to the Employer and to the Contractor, the Final Payment Certificate which shall state:

- (a) the amount which he fairly determines is finally due, and
- (b) after giving credit to the Employer for all amounts previously paid by the Employer and for all sums to which the Employer is entitled, the balance (if any) due from the Employer to the Contractor or from the Contractor to the Employer, as the case may be.

If the Contractor has not applied for a Final Payment Certificate in accordance with Sub-Clause 14.11 [Application for Final Payment Certificate] and Sub-Clause 14.12 [Discharge], the Engineer shall request the Contractor to do so. If the Contractor fails to submit an application within a period of 28 days, the Engineer shall issue the Final Payment Certificate for such amount as he fairly determines to be due.

14.14 Cessation of Employer's Liability

The Employer shall not be liable to the Contractor for any matter or thing under or in connection with the Contract or execution of the Works, except to the extent that the Contractor shall have included an amount expressly for it:

- (a) in the Final Statement and also
- (b) (except for matters or things arising after the issue of the Taking-Over Certificate for the Works) in the Statement at completion described in Sub-Clause 14.10 [Statement at Completion].

However, this Sub-Clause shall not limit the Employer's liability under his indemnification obligations, or the Employer's liability in any case of fraud, deliberate default or reckless misconduct by the Employer.

14.15 Currencies of Payment

The Contract Price shall be paid in the currency or currencies named in the Schedule of Payment Currencies. If more than one currency is so named, payments shall be made as follows:

- (a) if the Accepted Contract Amount was expressed in Local Currency only:
 - (i) the proportions or amounts of the Local and Foreign Currencies, and the fixed rates of exchange to be used for calculating the payments, shall be as stated in the Schedule of Payment Currencies, except as otherwise agreed by both Parties;
 - (ii) payments and deductions under Sub-Clause 13.5 [Provisional Sums] and Sub-Clause 13.7 [Adjustments for Changes in Legislation] shall be made in the applicable currencies and proportions; and
 - (iii) other payments and deductions under sub-paragraphs (a) to (d) of Sub-Clause 14.3 [Application for Interim Payment Certificates] shall be made in the currencies and proportions specified in sub-paragraph (a)(i) above;
- (b) payment of the damages specified in the Contract Data shall be made in the currencies and proportions specified in the Schedule of Payment Currencies;
- (c) other payments to the Employer by the Contractor shall be made in the currency in which the sum was expended by the Employer, or in such currency as may be agreed by both Parties;
- (d) if any amount payable by the Contractor to the Employer in a particular currency exceeds the sum payable by the Employer to the Contractor in that currency, the Employer may recover the balance of this amount from the sums otherwise payable to the Contractor in other currencies; and
- (e) if no rates of exchange are stated in the Schedule of Payment Currencies, they shall be those prevailing on the Base Date and determined by the central bank of the Country.

15 Termination by Employer

15.1 Notice to Correct

If the Contractor fails to carry out any obligation under the Contract, the Engineer may by notice require the Contractor to make good the failure and to remedy it within a specified reasonable time.

15.2 Termination by Employer

The Employer shall be entitled to terminate the Contract if the Contractor:

- (a) fails to comply with Sub-Clause 4.2 [Performance Security] or with a notice under Sub-Clause 15.1 [Notice to Correct],
- (b) abandons the Works or otherwise plainly demonstrates the intention not to continue performance of his obligations under the Contract,
- (c) without reasonable excuse fails:
 - (i) to proceed with the Works in accordance with Clause 8 [Commencement, Delays and Suspension], or
 - (ii) to comply with a notice issued under Sub-Clause 7.5 [Rejection] or Sub-Clause 7.6 [Remedial Work], within 28 days after receiving it,
- (d) subcontracts the whole of the Works or assigns the Contract without the required agreement,
- (e) becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events, or
- (f) gives or offers to give (directly or indirectly) to any person any bribe, gift, gratuity, commission or other thing of value, as an inducement or reward:
 - (i) for doing or forbearing to do any action in relation to the Contract, or
 - (ii) for showing or forbearing to show favour or disfavour to any person in relation to the Contract,

or if any of the Contractor's Personnel, agents or Subcontractors gives or offers to give (directly or indirectly) to any person any such inducement or reward as is described in this sub-paragraph (f). However, lawful inducements and rewards to Contractor's Personnel shall not entitle termination.

In any of these events or circumstances, the Employer may, upon giving 14 days' notice to the Contractor, terminate the Contract and expel the Contractor from the Site. However, in the case of sub-paragraph (e) or (f), the Employer may by notice terminate the Contract immediately.

The Employer's election to terminate the Contract shall not prejudice any other rights of the Employer, under the Contract or otherwise.

The Contractor shall then leave the Site and deliver any required Goods, all Contractor's Documents, and other design documents made by or for him, to the Engineer. However, the Contractor shall use his best efforts to comply immediately with any reasonable instructions included in the notice (i) for the assignment of any subcontract, and (ii) for the protection of life or property or for the safety of the Works.

After termination, the Employer may complete the Works and/or arrange for any other entities to do so. The Employer and these entities may then use any Goods, Contractor's Documents and other design documents made by or on behalf of the Contractor.

The Employer shall then give notice that the Contractor's Equipment and Temporary Works will be released to the Contractor at or near the Site. The Contractor shall promptly arrange their removal, at the risk and cost of the Contractor. However, if by this time the Contractor has failed to make a payment due to the Employer, these items may be sold by the Employer in order to recover this payment. Any balance of the proceeds shall then be paid to the Contractor.

15.3 Valuation at Date of Termination

As soon as practicable after a notice of termination under Sub-Clause 15.2 [Termination by Employer] has taken effect, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the value of the Works, Goods and Contractor's Documents, and any other sums due to the Contractor for work executed in accordance with the Contract.

15.4 Payment after Termination

After a notice of termination under Sub-Clause 15.2 [Termination by Employer] has taken effect, the Employer may:

- (a) proceed in accordance with Sub-Clause 2.5 [Employer's Claims],
- (b) withhold further payments to the Contractor until the costs of execution, completion and remedying of any defects, damages for delay in completion (if any), and all other costs incurred by the Employer, have been established, and/or
- (c) recover from the Contractor any losses and damages incurred by the Employer and any extra costs of completing the Works, after allowing for any sum due to the Contractor under Sub-Clause 15.3 [Valuation at Date of Termination]. After recovering any such losses, damages and extra costs, the Employer shall pay any balance to the Contractor.

15.5 Employer's Entitlement to Termination for Convenience

The Employer shall be entitled to terminate the Contract, at any time for the Employer's convenience, by giving notice of such termination to the Contractor. The termination shall take effect 28 days after the later of the dates on which the Contractor receives this notice or the Employer returns the Performance Security. The Employer shall not terminate the Contract under this Sub-Clause in order to execute the Works himself or to arrange for the Works to be executed by another contractor or to avoid a termination of the Contract by the Contractor under Clause 16.2 [Termination by Contractor].

After this termination, the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment] and shall be paid in accordance with Sub-Clause 16.4 [Payment on Termination].

15.6 Corrupt or Fraudulent Practices

If the Employer determines, based on reasonable evidence, that the Contractor has engaged in corrupt, fraudulent, collusive or coercive practices, in competing for or in executing the Contract, then the Employer may, after giving 14 days notice to the Contractor, terminate the Contract and expel him from the Site, and the provisions of Clause 15 shall apply as if such termination had been made under Sub-Clause 15.2 [Termination by Employer].

Should any employee of the Contractor be determined, based on reasonable evidence, to have engaged in corrupt, fraudulent or coercive practice during the execution of the work then that employee shall be removed in accordance with Sub-Clause 6.9 [Contractor's Personnel].

[For contracts financed by the African Development Bank]

For the purposes of this Sub-Clause:

- (a) "corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in the Contract execution; and
- (b) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of the Contract to the detriment of the Borrower, and includes collusive practice among Bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive the Borrower of the benefits of free and open competition.

[For contracts financed by the Asian Development Bank]

For the purposes of this Sub-Clause:

- (a) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party;
- (b) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
- (c) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- (d) "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party.

[For contracts financed by the Black Sea Trade and Development Bank and by the European Bank for Reconstruction and Development]

For the purposes of this Sub-Clause, the Bank defines, for the purposes of this provision, the terms set forth below as follows:

- (a) "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value to influence a person, or the threatening of injury to person, property or reputation, in connection with the procurement process or in contract execution in order to obtain or retain business or other improper advantage in the conduct of international business;
- (b) "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the client, and includes collusive practices among tenderers (prior to or after tender submission) designed to establish tender prices at artificial, non-competitive levels and to deprive the client of the benefits of free and open competition.

[For contracts financed by the Caribbean Development Bank:]

For the purposes of this Sub-Clause:

- (a) "corrupt practice" means the offering, giving, receiving or soliciting, directly or indirectly, of any thing of value to influence the action of a public official in the procurement process or in the Contract execution;
- (b) "fraudulent practice" means a misrepresentation or omission of facts in order to influence a procurement process or the execution of the Contract;
- (c) "collusive practice" means a scheme or arrangement between two or more bidders, with or without the knowledge of the Borrower, designed to establish bid prices at artificial, non-competitive levels;
- (d) "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract.

[For contracts financed by the Inter-American Development Bank]

For the purposes of this Sub-Clause:

The Bank requires that all Contractors adhere to the Bank's Policies for the Procurement of Works and Goods financed by the Bank. In particular, the Bank requires that all Borrowers (including grant beneficiaries), the executing agencies and contracting agencies, as well as all firms, entities and individuals bidding for or participating in a Bank-financed project, including, inter alia, applicants, bidders, contractors, consulting firms and individual consultants (including their respective officers, employees and agents) adhere to the highest ethical standards, and report to the Bank all suspected acts of fraud or corruption of which it has knowledge or becomes aware, during the Bidding Process and throughout the negotiation or execution of a Contract. Fraud and corruption are prohibited.

Fraud and corruption include acts of:

- (a) bribery,
- (b) extortion or coercion,
- (c) fraud, and
- (d) collusion.

The definitions of actions set forth below cover the most common types of corrupt practices, but are not exhaustive. For this reason, the Bank shall also take action in the event of any similar deed or complaint involving alleged acts of corruption, even when these are not specified in the following list. The Bank shall in all cases proceed in accordance with Sub-Clause 15.6.

In pursuance of this policy:

- (a) the Bank defines the terms set forth below as follows:
 - (i) "bribery" meaning the offering or giving of anything of value to influence the actions or decisions of third parties or the receiving or soliciting of any benefit in exchange for actions or omissions related to the performance of duties;
 - (ii) "extortion" or "coercion" meaning the act of obtaining something, compelling an action or influencing a decision through intimidation, threat or the use of force, where potential or actual injury may befall upon a person, his/her reputation or property;
 - (ii) "fraud" meaning any action or omission intended to misrepresent the truth so as to induce others to act in reliance thereof, with the purpose of obtaining some unjust advantage or causing damage to others; and
 - (iv) "collusion" meaning a secret agreement between two or more parties to defraud or cause damage to a person or entity or to obtain an unlawful purpose;
- (b) if the Bank, in accordance with its administrative procedures, demonstrates that any firm, entity or individual bidding for or participating in a Bank-financed project including, inter alia, applicants, bidders, contractors, consulting firms, individual consultants, borrowers (including grant beneficiaries), purchasers, executing agencies and contracting agency (including their respective officers, employees and agents) engaged in an act of fraud or corruption in connection with Bank-financed projects, the Bank may:
 - (i) decide not to finance any proposal to award a contract or a contract awarded financed by the Bank;
 - (ii) suspend disbursement of the operation if it is determined at any stage that evidence is sufficient to support a finding that an employee, agent or representative of the Borrower, Executing Agency or Contracting Agency has engaged in an act of fraud or corruption;
 - (iii) cancel and/or accelerate the payment of, the portion of a loan or grant earmarked for a contract, when there is evidence that the representative of the Borrower, or Beneficiary of a grant, has not taken the adequate remedial measures within a time period which the Bank considers reasonable, and in accordance with the due process guarantees of the Borrowing country's legislation;
 - (iv) issue a reprimand in the form of a formal letter of censure of the firm, entity or individual's behaviour;
 - (v) issue a declaration that an individual, entity or firm is ineligible, either permanently or for a stated period of time, to be awarded contracts under Bank-financed projects except under such conditions as the Bank deems to be appropriate;
 - (v) refer the matter to appropriate law enforcement authorities; and/or;

- (vii) may impose other sanctions that it deems to be appropriate under the circumstances, including the imposition of fines representing reimbursement of the Bank for costs associated with investigations and proceedings. Such other sanctions may be imposed in addition to or in lieu of other sanctions;
- (c) the Bank has established administrative procedures for cases of allegations of fraud and corruption within the procurement process or the execution of a contract financed by the Bank which are available at the Bank's website (www.iadb.org), as updated from time to time. To that effect any complaint shall be submitted to the Bank's Office of Institutional Integrity (OI) for the appropriate investigation. Allegations may be presented confidentially or anonymously;
- (d) payments are expressly conditional upon the claimant's participation in the procurement process conformed with all applicable Bank policies on Fraud and Corruption described in this Sub-Clause 15.5; and
- (e) the imposition of any sanction referred to paragraph (b) of this Sub-Clause will be public;

The Bank will have the right to require that a Contractor permit the Bank to inspect their accounts and records and other documents relating to the submission of bids and contract performance and to have them audited by auditors appointed by the Bank. The Bank will have the right to require that Contractors to:

- (a) maintain all documents and records related to the Bank-financed project for five (5) years after completion of the work; and
- (b) require the delivery of any document necessary for the investigation of allegations of fraud or corruption and the availability of employees or agents of the contractor with knowledge of the Bank-financed project to respond to questions from the Bank.

If the Contractor refuses to comply with the Bank's request, the Bank, in its sole discretion, may take appropriate action against the Contractor.

The Contractor represents and warrants:

- (a) that they have read and understood the Bank's prohibition against fraud and corruption and agrees to abide by the applicable rules;
- (b) that they have not engaged in any violation of policies on fraud and corruption described herein;
- (c) that they have not misrepresented or concealed any material facts during the procurement or contract negotiation processes or performance of the contract;
- (d) that neither they nor any of their directors, officers or principal shareholders have been declared ineligible to be awarded Bank-financed contracts or have been convicted of a crime involving fraud or corruption;
- (e) that none of their directors, officers or principal shareholders has been a director, officer or principal shareholder of any other company or entity that has been declared ineligible to be awarded a Bank-financed contract or has been convicted of a crime involving fraud or corruption;
- (f) that all commissions, agents' fees, facilitating payments or revenue-sharing agreements related to the Bank-financed contract or consulting agreement have been disclosed;
- (g) that they acknowledge that the breach of any of these warranties constitute a basis for the imposition of any or a combination of the measures described in this Sub-Clause.

[For contracts financed by the World Bank]

In pursuance of this policy, the Bank:

- (a) defines, for the purposes of this provision, the terms set forth below as follows:

- (i) “corrupt practice” is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;

In this context, “another party” refers to a public official acting in relation to the procurement process or contract execution]. In this context, “public official” includes World Bank staff and employees of other organisations taking or reviewing procurement decisions.

- (ii) “fraudulent practice” is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

In this context, “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

- (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;

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

- (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;

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

- (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, harassing 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.

In this context, “party” refers to a participant in the procurement process or contract execution.

16 Suspension and Termination by Contractor

16.1 Contractor’s Entitlement to Suspend Work

If the Engineer fails to certify in accordance with Sub-Clause 14.6 [Issue of Interim Payment Certificates] or the Employer fails to comply with Sub-Clause 2.4 [Employer’s Financial Arrangements] or Sub-Clause 14.7 [Payment], the Contractor may, after giving not less than 21 days’ notice to the Employer, suspend work (or reduce the rate of work) unless and until the Contractor has received the Payment Certificate, reasonable evidence or payment, as the case may be and as described in the notice.

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.

The Contractor’s action shall not prejudice his entitlements to financing charges under Sub-Clause 14.8 [Delayed Payment] and to termination under Sub-Clause 16.2 [Termination by Contractor].

If the Contractor subsequently receives such Payment Certificate, evidence or payment (as described in the relevant Sub-Clause and in the above notice) before giving a notice of termination, the Contractor shall resume normal working as soon as is reasonably practicable.

If the Contractor suffers delay and/or incurs Cost as a result of suspending work (or reducing the rate of work) in accordance with this Sub-Clause, the Contractor shall give notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost plus profit, which shall be included in the Contract Price.

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

16.2 Termination by Contractor

The Contractor shall be entitled to terminate the Contract if:

- (a) the Contractor does not receive the reasonable evidence within 42 days after giving notice under Sub-Clause 16.1 [Contractor's Entitlement to Suspend Work] in respect of a failure to comply with Sub-Clause 2.4 [Employer's Financial Arrangements],
- (b) the Engineer fails, within 56 days after receiving a Statement and supporting documents, to issue the relevant Payment Certificate,
- (c) the Contractor does not receive the amount due under an Interim Payment Certificate within 42 days after the expiry of the time stated in Sub-Clause 14.7 [Payment] within which payment is to be made (except for deductions in accordance with Sub-Clause 2.5 [Employer's Claims]),
- (d) the Employer substantially fails to perform his obligations under the Contract in such manner as to materially and adversely affect the economic balance of the Contract and/or the ability of the Contractor to perform the Contract,
- (e) the Employer fails to comply with Sub-Clause 1.6 [Contract Agreement] or Sub-Clause 1.7 [Assignment],
- (f) a prolonged suspension affects the whole of the Works as described in Sub-Clause 8.11 [Prolonged Suspension],
- (g) the Employer becomes bankrupt or insolvent, goes into liquidation, has a receiving or administration order made against him, compounds with his creditors, or carries on business under a receiver, trustee or manager for the benefit of his creditors, or if any act is done or event occurs which (under applicable Laws) has a similar effect to any of these acts or events,
- (h) the Contractor does not receive the Engineer's instruction recording the agreement of both Parties on the fulfilment of the conditions for the Commencement of Works under Sub-Clause 8.1 [Commencement of Works].

In any of these events or circumstances, the Contractor may, upon giving 14 days' notice to the Employer, terminate the Contract. However, in the case of sub-paragraph (f) or (g), the Contractor may by notice terminate the Contract immediately.

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.

The Contractor's election to terminate the Contract shall not prejudice any other rights of the Contractor, under the Contract or otherwise.

16.3 Cessation of Work and Removal of Contractor's Equipment

After a notice of termination under Sub-Clause 15.5 [Employer's Entitlement to Termination for Convenience], Sub-Clause 16.2 [Termination by Contractor] or Sub-Clause 19.6 [Optional Termination, Payment and Release] has taken effect, the Contractor shall promptly:

- (a) cease all further work, except for such work as may have been instructed by the Engineer for the protection of life or property or for the safety of the Works,
- (b) hand over Contractor's Documents, Plant, Materials and other work, for which the Contractor has received payment, and
- (c) remove all other Goods from the Site, except as necessary for safety, and leave the Site.

16.4 Payment on Termination

After a notice of termination under Sub-Clause 16.2 [Termination by Contractor] has taken effect, the Employer shall promptly:

- (a) return the Performance Security to the Contractor,
- (b) pay the Contractor in accordance with Sub-Clause 19.6 [Optional Termination, Payment and Release], and
- (c) pay to the Contractor the amount of any loss or damage sustained by the Contractor as a result of this termination.

17 Risk and Responsibility

17.1 Indemnities

The Contractor shall indemnify and hold harmless the Employer, the Employer's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:

- (a) bodily injury, sickness, disease or death, of any person whatsoever arising out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, or any of their respective agents, and
- (b) damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any defects, unless and to the extent that any such damage or loss is attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, their respective agents, or anyone directly or indirectly employed by any of them.

The Employer shall indemnify and hold harmless the Contractor, the Contractor's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of (1) bodily injury, sickness, disease or death, which is attributable to any negligence, wilful act or breach of the Contract by the Employer, the Employer's Personnel, or any of their respective agents, and (2) the matters for which liability may be excluded from insurance cover, as described in sub-paragraphs (d)(i), (ii) and (iii) of Sub-Clause 18.3 [Insurance Against Injury to Persons and Damage to Property].

17.2 Contractor's Care of the Works

The Contractor shall take full responsibility for the care of the Works and Goods from the Commencement Date until the Taking-Over Certificate is issued (or is deemed to be issued under Sub-Clause 10.1 [Taking Over of the Works and Sections]) for the Works, when responsibility for the care of the Works shall pass to the Employer. If a Taking-Over Certificate is issued (or is so deemed to be issued) for any Section or part of the Works, responsibility for the care of the Section or part shall then pass to the Employer.

After responsibility has accordingly passed to the Employer, the Contractor shall take responsibility for the care of any work which is outstanding on the date stated in a Taking-Over Certificate, until this outstanding work has been completed.

If any loss or damage happens to the Works, Goods or Contractor's Documents during the period when the Contractor is responsible for their care, from any cause not listed in Sub-Clause 17.3 [Employer's Risks], the Contractor shall rectify the loss or damage at the Contractor's risk and cost, so that the Works, Goods and Contractor's Documents conform with the Contract.

The Contractor shall be liable for any loss or damage caused by any actions performed by the Contractor after a Taking-Over Certificate has been issued. The Contractor shall also be liable for any loss or damage which occurs after a Taking-Over Certificate has been issued and which arose from a previous event for which the Contractor was liable.

17.3 Employer's Risks

The risks referred to in Sub-Clause 17.4 [Consequences of Employer's Risks] below, insofar as they directly affect the execution of the Works in the Country, are:

- (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
- (b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war, within the Country,
- (c) riot, commotion or disorder within the Country by persons other than the Contractor's Personnel,
- (d) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, within the Country, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity,
- (e) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,
- (f) use or occupation by the Employer of any part of the Permanent Works, except as may be specified in the Contract,
- (g) design of any part of the Works by the Employer's Personnel or by others for whom the Employer is responsible, and
- (h) any operation of the forces of nature which is Unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventive precautions.

17.4 Consequences of Employer's Risks

If and to the extent that any of the risks listed in Sub-Clause 17.3 above results in loss or damage to the Works, Goods or Contractor's Documents, the Contractor shall promptly give notice to the Engineer and shall rectify this loss or damage to the extent required by the Engineer.

If the Contractor suffers delay and/or incurs Cost from rectifying this loss or damage, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) payment of any such Cost, which shall be included in the Contract Price. In the case of subparagraphs (f) and (g) of Sub-Clause 17.3 [Employer's Risks], Cost plus profit shall be payable.

After receiving this further notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

17.5 Intellectual and Industrial Property Rights

In this Sub-Clause, "infringement" means an infringement (or alleged infringement) of any patent, registered design, copyright, trade mark, trade name, trade secret or other intellectual or industrial property right relating to the Works; and "claim" means a claim (or proceedings pursuing a claim) alleging an infringement.

Whenever a Party does not give notice to the other Party of any claim within 28 days of receiving the claim, the first Party shall be deemed to have waived any right to indemnity under this Sub-Clause.

The Employer shall indemnify and hold the Contractor harmless against and from any claim alleging an infringement which is or was:

- (a) an unavoidable result of the Contractor's compliance with the Contract, or
- (b) a result of any Works being used by the Employer:
 - (i) for a purpose other than that indicated by, or reasonably to be inferred from, the Contract, or
 - (ii) in conjunction with any thing not supplied by the Contractor, unless such use was disclosed to the Contractor prior to the Base Date or is stated in the Contract.

The Contractor shall indemnify and hold the Employer harmless against and from any other claim which arises out of or in relation to (i) the manufacture, use, sale or import of any Goods, or (ii) any design for which the Contractor is responsible.

If a Party is entitled to be indemnified under this Sub-Clause, the indemnifying Party may (at its cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it. The other Party shall, at the request and cost of the indemnifying Party, assist in contesting the claim. This other Party (and its Personnel) shall not make any admission which might be prejudicial to the indemnifying Party, unless the indemnifying Party failed to take over the conduct of any negotiations, litigation or arbitration upon being requested to do so by such other Party.

17.6 Limitation of Liability

Neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contract or for any indirect or consequential loss or damage which may be suffered by the other Party in connection with the Contract, other than as specifically provided in Sub-Clause 8.7 [Delay Damages]; Sub-Clause 11.2 [Cost of Remedying Defects]; Sub-Clause 15.4 [Payment after Termination]; Sub-Clause 16.4 [Payment on Termination]; Sub-Clause 17.1 [Indemnities]; Sub-Clause 17.4(b) [Consequences of Employer's Risks] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights].

The total liability of the Contractor to the Employer, under or in connection with the Contract other than under Sub-Clause 4.19 [Electricity, Water and Gas], Sub-Clause 4.20 [Employer's Equipment and Free-Issue Materials], Sub-Clause 17.1 [Indemnities] and Sub-Clause 17.5 [Intellectual and Industrial Property Rights], shall not exceed the sum resulting from the application of a multiplier (less or greater than one) to the Accepted Contract Amount, as stated in the Contract Data, or (if such multiplier or other sum is not so stated) the Accepted Contract Amount.

This Sub-Clause shall not limit liability in any case of fraud, deliberate default or reckless misconduct by the defaulting Party.

17.7 Use of Employer's Accommodation/Facilities

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 his own cost, rectify the loss or damage to the satisfaction of the Engineer.

18 Insurance

18.1 General Requirements for Insurances

In this Clause, "insuring Party" means, for each type of insurance, the Party responsible for effecting and maintaining the insurance specified in the relevant Sub-Clause.

Wherever the Contractor is the insuring Party, each insurance shall be effected with insurers and in terms approved by the Employer. These terms shall be consistent with any terms 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

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 any terms 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.

If a policy is required to indemnify joint insured, the cover shall apply separately to each insured as though a separate policy had been issued for each of the joint insured. If a policy indemnifies additional joint insured, namely in addition to the insured specified in this Clause, (i) the Contractor shall act under the policy on behalf of these additional joint insured except that the Employer shall act for Employer's Personnel, (ii) additional joint insured shall not be entitled to receive payments directly from the insurer or to have any other direct dealings with the insurer, and (iii) the insuring Party shall require all additional joint insured to comply with the conditions stipulated in the policy.

Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify the loss or damage. Payments received from insurers shall be used for the rectification of the loss or damage.

The relevant insuring Party shall, within the respective periods stated in the Contract Data (calculated from the Commencement Date), submit to the other Party:

- (a) evidence that the insurances described in this Clause have been effected, and
- (b) copies of the policies for the insurances described in Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment] and Sub-Clause 18.3 [Insurance against Injury to Persons and Damage to Property].

When each premium is paid, the insuring Party shall submit evidence of payment to the other Party. Whenever evidence or policies are submitted, the insuring Party shall also give notice to the Engineer.

Each Party shall comply with the conditions stipulated in each of the insurance policies. The insuring Party shall keep the insurers informed of any relevant changes to the execution of the Works and ensure that insurance is maintained in accordance with this Clause.

Neither Party shall make any material alteration to the terms of any insurance without the prior approval of the other Party. If an insurer makes (or attempts to make) any alteration, the Party first notified by the insurer shall promptly give notice to the other Party.

If the insuring Party fails to effect and keep in force any of the insurances it is required to effect and maintain under the Contract, or fails to provide satisfactory evidence and copies of policies in accordance with this Sub-Clause, the other Party may (at its option and without prejudice to any other right or remedy) effect insurance for the relevant coverage and pay the premiums due. The insuring Party shall pay the amount of these premiums to the other Party, and the Contract Price shall be adjusted accordingly.

Nothing in this Clause limits the obligations, liabilities or responsibilities of the Contractor or the Employer, under the other terms of the Contract or otherwise. Any amounts not insured or not recovered from the insurers shall be borne by the Contractor and/or the Employer in accordance with these obligations, liabilities or responsibilities. However, if the insuring Party fails to effect and keep in force an insurance which is available and which it is required to effect and maintain under the Contract, and the other Party neither approves the omission nor effects insurance for the coverage relevant to this default, any moneys which should have been recoverable under this insurance shall be paid by the insuring Party.

Payments by one Party to the other Party shall be subject to Sub-Clause 2.5 [Employer's Claims] or Sub-Clause 20.1 [Contractor's Claims], as applicable.

The Contractor shall be entitled to place all insurance relating to the Contract (including, but not limited to the insurance referred to Clause 18) with insurers from any eligible source country.

18.2 Insurance for Works and Contractor's Equipment

The insuring Party shall insure the Works, Plant, Materials and Contractor's Documents for not less than the full reinstatement cost including the costs of demolition, removal of debris and professional fees and profit. This insurance shall be effective from the date by which the evidence is to be submitted under sub-paragraph (a) of Sub-Clause 18.1 [General Requirements for Insurances], until the date of issue of the Taking-Over Certificate for the Works.

The insuring Party shall maintain this insurance to provide cover until the date of issue of the Performance Certificate, for loss or damage for which the Contractor is liable arising from a cause occurring prior to the issue of the Taking-Over Certificate, and for loss or damage caused by the Contractor in the course of any other operations (including those under Clause 11 [Defects Liability]).

The insuring Party shall insure the Contractor's Equipment for not less than the full replacement value, including delivery to Site. For each item of Contractor's Equipment, the insurance shall be effective while it is being transported to the Site and until it is no longer required as Contractor's Equipment.

Unless otherwise stated in the Particular Conditions, insurances under this Sub-Clause:

- (a) shall be effected and maintained by the Contractor as insuring Party,
- (b) shall be in the joint names of the Parties, who shall be jointly entitled to receive payments from the insurers, payments being held or allocated to the Party actually bearing the costs of rectifying the loss or damage,
- (c) shall cover all loss and damage from any cause not listed in Sub-Clause 17.3 [Employer's Risks],
- (d) shall also cover, to the extent specifically required in the bidding documents of the Contract, loss or damage to a part of the Works which is attributable to the use or occupation by the Employer of another part of the Works, and loss or damage from the risks listed in sub-paragraphs (c), (g) and (h) of Sub-Clause 17.3 [Employer's Risks], excluding (in each case) risks which are not insurable at commercially reasonable terms, with deductibles per occurrence of not more than the amount stated in the Contract Data (if an amount is not so stated, this sub-paragraph (d) shall not apply), and
- (e) may however exclude loss of, damage to, and reinstatement of:

- (i) a part of the Works which is in a defective condition due to a defect in its design, materials or workmanship (but cover shall include any other parts which are lost or damaged as a direct result of this defective condition and not as described in sub-paragraph (ii) below),
- (ii) a part of the Works which is lost or damaged in order to reinstate any other part of the Works if this other part is in a defective condition due to a defect in its design, materials or workmanship,
- (iii) a part of the Works which has been taken over by the Employer, except to the extent that the Contractor is liable for the loss or damage, and
- (iv) Goods while they are not in the Country, subject to Sub-Clause 14.5 [Plant and Materials intended for the Works].

If, more than one year after the Base Date, the cover described in sub-paragraph (d) above ceases to be available at commercially reasonable terms, the Contractor shall (as insuring Party) give notice to the Employer, with supporting particulars. The Employer shall then (i) be entitled subject to Sub-Clause 2.5 [Employer's Claims] to payment of an amount equivalent to such commercially reasonable terms as the Contractor should have expected to have paid for such cover, and (ii) be deemed, unless he obtains the cover at commercially reasonable terms, to have approved the omission under Sub-Clause 18.1 [General Requirements for Insurances].

18.3 Insurance against Injury to Persons and Damage to Property

The insuring Party shall insure against each Party's liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment]) or to any person (except persons insured under Sub-Clause 18.4 [Insurance for Contractor's Personnel]), which may arise out of the Contractor's performance of the Contract and occurring before the issue of the Performance Certificate.

This insurance shall be for a limit per occurrence of not less than the amount stated in the Contract Data, with no limit on the number of occurrences. If an amount is not stated in the Contract Data, this Sub-Clause shall not apply.

Unless otherwise stated in the Particular Conditions, the insurances specified in this Sub-Clause:

- (a) shall be effected and maintained by the Contractor as insuring Party,
- (b) shall be in the joint names of the Parties,
- (c) shall be extended to cover liability for all loss and damage to the Employer's property (except things insured under Sub-Clause 18.2) arising out of the Contractor's performance of the Contract, and
- (d) may however exclude liability to the extent that it arises from:
 - (i) the Employer's right to have the Permanent Works executed on, over, under, in or through any land, and to occupy this land for the Permanent Works,
 - (ii) damage which is an unavoidable result of the Contractor's obligations to execute the Works and remedy any defects, and
 - (iii) a cause listed in Sub-Clause 17.3 [Employer's Risks], except to the extent that cover is available at commercially reasonable terms.

18.4 Insurance for Contractor's Personnel

The Contractor shall effect and maintain 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.

The insurance shall cover the Employer and the Engineer 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.

The insurance shall be maintained in full force and effect during the whole time that these personnel are assisting in the execution of the Works. For a Subcontractor's employees, the insurance may be effected by the Subcontractor, but the Contractor shall be responsible for compliance with this Clause.

19 Force Majeure

19.1 Definition of Force Majeure

In this Clause, "Force Majeure" means an exceptional event or circumstance:

- (a) which is beyond a Party's control,
- (b) which such Party could not reasonably have provided against before entering into the Contract,
- (c) which, having arisen, such Party could not reasonably have avoided or overcome, and
- (d) which is not substantially attributable to the other Party.

Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

- (i) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
- (ii) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,
- (iii) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel,
- (iv) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and
- (v) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.

19.2 Notice of Force Majeure

If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.

The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.

Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract

19.3 Duty to Minimise Delay

Each Party shall at all times use all reasonable endeavours to minimise any delay in the performance of the Contract as a result of Force Majeure.

A Party shall give notice to the other Party when it ceases to be affected by the Force Majeure.

19.4 Consequences of Force Majeure

If the Contractor is prevented from performing his substantial obligations under the Contract by Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], and suffers delay and/or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled subject to Sub-Clause 20.1 [Contractor's Claims] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [Extension of Time for Completion], and
- (b) if the event or circumstance is of the kind described in sub-paragraphs (i) to (iv) of Sub-Clause 19.1 [Definition of Force Majeure] and, in sub-paragraphs (ii) to (iv), occurs in the Country, payment of any such Cost, including the costs of rectifying or replacing the Works and/or Goods damaged or destroyed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in Sub-Clause 18.2 [Insurance for Works and Contractor's Equipment].

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.

19.5 Force Majeure Affecting Subcontractor

If any Subcontractor is entitled under any contract or agreement relating to the Works to relief from force majeure on terms additional to or broader than those specified in this Clause, such additional or broader force majeure events or circumstances shall not excuse the Contractor's non-performance or entitle him to relief under this Clause.

19.6 Optional Termination, Payment and Release

If the execution of substantially all the Works in progress is prevented for a continuous period of 84 days by reason of Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], or for multiple periods which total more than 140 days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 7 days after the notice is given, and the Contractor shall proceed in accordance with Sub-Clause 16.3 [Cessation of Work and Removal of Contractor's Equipment].

Upon such termination, the Engineer shall determine the value of the work done and issue a Payment Certificate which shall include:

- (a) the amounts payable for any work carried out for which a price is stated in the Contract;
- (b) the Cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the Contractor is liable to accept delivery: this Plant and Materials shall become the property of (and be at the risk of) the Employer when paid for by the Employer, and the Contractor shall place the same at the Employer's disposal;
- (c) other Cost or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works;
- (d) the Cost of removal of Temporary Works and Contractor's Equipment from the Site and the return of these items to the Contractor's works in his country (or to any other destination at no greater cost); and

- (e) the Cost of repatriation of the Contractor's staff and labour employed wholly in connection with the Works at the date of termination.

19.7 Release from Performance

Notwithstanding any other provision of this Clause, if any event or circumstance outside the control of the Parties (including, but not limited to, Force Majeure) arises which makes it impossible or unlawful for either or both Parties to fulfil its or their contractual obligations or which, under the law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance:

- (a) the Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract, and
- (b) the sum payable by the Employer to the Contractor shall be the same as would have been payable under Sub-Clause 19.6 [Optional Termination, Payment and Release] if the Contract had been terminated under Sub-Clause 19.6.

20 Claims, Disputes and Arbitration

20.1 Contractor's Claims

If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give notice to the Engineer, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance.

If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub-Clause shall apply.

The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.

The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Engineer. Without admitting the Employer's liability, the Engineer may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Engineer to inspect all these records, and shall (if instructed) submit copies to the Engineer.

Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Engineer, the Contractor shall send to the Engineer a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:

- (a) this fully detailed claim shall be considered as interim;
- (b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Engineer may reasonably require; and
- (c) the Contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Engineer.

Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Engineer and approved by the Contractor, the Engineer shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within the above defined time period.

Within the above defined period of 42 days, the Engineer shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with Sub-Clause 8.4 [Extension of Time for Completion], and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.

Each Payment Certificate shall include such additional payment for any claim as has been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.

If the Engineer does not respond within the timeframe defined in this Clause, either Party may consider that the claim is rejected by the Engineer and any of the Parties may refer to the Dispute Board in accordance with Sub-Clause 20.4 [Obtaining Dispute Board's Decision].

The requirements of this Sub-Clause are in addition to those of any other Sub-Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.

20.2 Appointment of the Dispute Board

Disputes shall be referred to a DB for decision in accordance with Sub-Clause 20.4 [Obtaining Dispute Board's Decision]. The Parties shall appoint a DB by the date stated in the Contract Data.

The DB shall comprise, as stated in the Contract Data, either one or three suitably qualified persons ("the members"), each of whom shall be fluent in the language for communication defined in the Contract and shall be a professional experienced in the type of construction involved in the Works and with the interpretation of contractual documents. If the number is not so stated and the Parties do not agree otherwise, the DB shall comprise three persons.

If the Parties have not jointly appointed the DB 21 days before the date stated in the Contract Data and the DB is to comprise three persons, each Party shall nominate one member for the approval of the other Party. The first two members shall recommend and the Parties shall agree upon the third member, who shall act as chairman.

However, if a list of potential members has been agreed by the Parties and is included in the Contract, the members shall be selected from those on the list, other than anyone who is unable or unwilling to accept appointment to the DB.

The agreement between the Parties and either the sole member or each of the three members shall incorporate by reference the General Conditions of Dispute Board Agreement contained in the Appendix to these General Conditions, with such amendments as are agreed between them.

The terms of the remuneration of either the sole member or each of the three members, including the remuneration of any expert whom the DB consults, shall be mutually agreed upon by the Parties when agreeing the terms of appointment. Each Party shall be responsible for paying one-half of this remuneration.

If at any time the Parties so agree, they may jointly refer a matter to the DB for it to give its opinion. Neither Party shall consult the DB on any matter without the agreement of the other Party.

If a member declines to act or is unable to act as a result of death, disability, resignation or termination of appointment, a replacement shall be appointed in the same manner as the replaced person was required to have been nominated or agreed upon, as described in this Sub-Clause.

The appointment of any member may be terminated by mutual agreement of both Parties, but not by the Employer or the Contractor acting alone. Unless otherwise agreed by both Parties, the appointment of the DB (including each member) shall expire when the discharge referred to in Sub-Clause 14.12 [Discharge] shall have become effective.

20.3 Failure to Agree on the Composition of the Dispute Board

If any of the following conditions apply, namely:

- (a) the Parties fail to agree upon the appointment of the sole member of the DB by the date stated in the first paragraph of Sub-Clause 20.2, [Appointment of the Dispute Board]
- (b) either Party fails to nominate a member (for approval by the other Party), or fails to approve a member nominated by the other Party, of a DB of three persons by such date,
- (c) the Parties fail to agree upon the appointment of the third member (to act as chairman) of the DB by such date, or
- (d) the Parties fail to agree upon the appointment of a replacement person within 42 days after the date on which the sole member or one of the three members declines to act or is unable to act as a result of death, disability, resignation or termination of appointment,

then the appointing entity or official named in the Contract Data shall, upon the request of either or both of the Parties and after due consultation with both Parties, appoint this member of the DB. This appointment shall be final and conclusive. Each Party shall be responsible for paying one-half of the remuneration of the appointing entity or official.

20.4 Obtaining Dispute Board's Decision

If a dispute (of any kind whatsoever) arises between the Parties in connection with, or arising out of, the Contract or the execution of the Works, including any dispute as to any certificate, determination, instruction, opinion or valuation of the Engineer, either Party may refer the dispute in writing to the DB for its decision, with copies to the other Party and the Engineer. Such reference shall state that it is given under this Sub-Clause.

For a DB of three persons, the DB shall be deemed to have received such reference on the date when it is received by the chairman of the DB.

Both Parties shall promptly make available to the DB all such additional information, further access to the Site, and appropriate facilities, as the DB may require for the purposes of making a decision on such dispute. The DB shall be deemed to be not acting as arbitrator(s).

Within 84 days after receiving such reference, or within such other period as may be proposed by the DB and approved by both Parties, the DB shall give its decision, which shall be reasoned and shall state that it is given under this Sub-Clause. The decision shall be binding on both Parties, who shall promptly give effect to it unless and until it shall be revised in an amicable settlement or an arbitral award as described below. Unless the Contract has already been abandoned, repudiated or terminated, the Contractor shall continue to proceed with the Works in accordance with the Contract.

If either Party is dissatisfied with the DB's decision, then either Party may, within 28 days after receiving the decision, give a Notice of Dissatisfaction to the other Party indicating its dissatisfaction and intention to commence arbitration. If the DB fails to give its decision within the period of 84 days (or as otherwise approved) after receiving such reference, then either Party may, within 28 days after this period has expired, give a Notice of Dissatisfaction to the other Party.

In either event, this Notice of Dissatisfaction shall state that it is given under this Sub-Clause, and shall set out the matter in dispute and the reason(s) for dissatisfaction. Except as stated in Sub-Clause 20.7 [Failure to Comply with Dispute Board's Decision] and Sub-Clause 20.8 [Expiry of Dispute Board's Appointment], neither Party shall be entitled to commence arbitration of a dispute unless a Notice of Dissatisfaction has been given in accordance with this Sub-Clause.

If the DB has given its decision as to a matter in dispute to both Parties, and no Notice of Dissatisfaction has been given by either Party within 28 days after it received the DB's decision, then the decision shall become final and binding upon both Parties.

20.5 Amicable Settlement

Where a Notice of Dissatisfaction has been given under Sub-Clause 20.4 above, both Parties shall attempt to settle the dispute amicably before the commencement of arbitration. However, unless both Parties agree otherwise, the Party giving a Notice of Dissatisfaction in accordance with Sub-Clause 20.4 above should move to commence arbitration after the fifty-sixth day from the day on which a Notice of Dissatisfaction was given, even if no attempt at an amicable settlement has been made.

20.6 Arbitration

Any dispute between the Parties arising out of or in connection with the Contract not settled amicably in accordance with Sub-Clause 20.5 above and in respect of which the DB's decision (if any) has not become final and binding shall be finally settled by arbitration. Arbitration shall be conducted as follows:

(a) if the contract is with foreign contractors,

(i) for contracts financed by all participating Banks except under sub-paragraph (a) (2) below:

international arbitration (1) with proceedings administered by the arbitration institution designated in the Contract Data, and conducted under the rules of arbitration of such institution; or, if so specified in the Contract Data, (2) international arbitration in accordance with the arbitration rules of the United Nations Commission on International Trade Law (UNCITRAL); or (3) if neither an arbitration institution nor UNCITRAL arbitration rules are specified in the Contract Data, with proceedings administered by the International Chamber of Commerce (ICC) and conducted under the ICC Rules of Arbitration; by one or more arbitrators appointed in accordance with said arbitration rules.

(ii) for contracts financed by the Asian Development Bank:

international arbitration (1) with proceedings administered by the arbitration institution specified in the Contract Data and conducted under the rules of arbitration of such institution unless it is specified in the Contract Data that the arbitration shall be conducted under the rules of the United Nations Commission on International Trade Law (UNCITRAL) and if UNCITRAL Rules are so specified then the named arbitration institution shall be the appointing authority and shall administer the arbitration); or (2) if an arbitration institution is not specified in the Contract Data, with proceedings administered by the Singapore International Arbitration Centre (SIAC) and conducted under the SIAC Rules, by one or more arbitrators appointed in accordance with the said arbitration rules.

(b) if the Contract is with domestic contractors, arbitration with proceedings conducted in accordance with the laws of the Employer's country.

The place of arbitration shall be the neutral location specified in the Contract Data; and the arbitration shall be conducted in the language for communications defined in Sub-Clause 1.4 [Law and Language].

The arbitrators shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Engineer, and any decision of the DB, relevant to the dispute. Nothing shall disqualify representatives of the Parties and the Engineer from being called as a witness and giving evidence before the arbitrators on any matter whatsoever relevant to the dispute.

Neither Party shall be limited in the proceedings before the arbitrators to the evidence or arguments previously put before the DB to obtain its decision, or to the reasons for dissatisfaction given in its Notice of Dissatisfaction. Any decision of the DB shall be admissible in evidence in the arbitration.

Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties, the Engineer and the DB shall not be altered by reason of any arbitration being conducted during the progress of the Works.

20.7 Failure to Comply with Dispute Board's Decision

In the event that a Party fails to comply with a final and binding DB decision, then the other Party may, without prejudice to any other rights it may have, refer the failure itself to arbitration under Sub-Clause 20.6 [Arbitration]. Sub-Clause 20.4 [Obtaining Dispute Board's Decision] and Sub-Clause 20.5 [Amicable Settlement] shall not apply to this reference.

20.8 Expiry of Dispute Board's Appointment

If a dispute arises between the Parties in connection with, or arising out of, the Contract or the execution of the Works and there is no DB in place, whether by reason of the expiry of the DB's appointment or otherwise:

- (a) Sub-Clause 20.4 [Obtaining Dispute Board's Decision] and Sub-Clause 20.5 [Amicable Settlement] shall not apply, and
- (b) the dispute may be referred directly to arbitration under Sub-Clause 20.6 [Arbitration].

APPENDIX

A General Conditions of Dispute Board Agreement

1 Definitions

Each "Dispute Board Agreement" is a tripartite agreement by and between:

- (a) the "Employer";
- (b) the "Contractor"; and
- (c) the "Member" who is defined in the Dispute Board Agreement as being:
 - (i) the sole member of the "DB" and, where this is the case, all references to the "Other Members" do not apply, or
 - (ii) one of the three persons who are jointly called the "DB" (or "Dispute Board") and, where this is the case, the other two persons are called the "Other Members".

The Employer and the Contractor have entered (or intend to enter) into a contract, which is called the "Contract" and is defined in the Dispute Board Agreement, which incorporates this Appendix. In the Dispute Board Agreement, words and expressions which are not otherwise defined shall have the meanings assigned to them in the Contract.

2 General Provisions

Unless otherwise stated in the Dispute Board Agreement, it shall take effect on the latest of the following dates:

- (a) the Commencement Date defined in the Contract,

- (b) when the Employer, the Contractor and the Member have each signed the Dispute Board Agreement, or
- (c) when the Employer, the Contractor and each of the Other Members (if any) have respectively each signed a dispute board agreement.

This employment of the Member is a personal appointment. At any time, the Member may give not less than 70 days' notice of resignation to the Employer and to the Contractor, and the Dispute Board Agreement shall terminate upon the expiry of this period.

3 Warranties

The Member warrants and agrees that he/she is and shall be impartial and independent of the Employer, the Contractor and the Engineer. The Member shall promptly disclose, to each of them and to the Other Members (if any), any fact or circumstance which might appear inconsistent with his/her warranty and agreement of impartiality and independence.

When appointing the Member, the Employer and the Contractor relied upon the Member's representations that he/she is:

- (a) experienced in the work which the Contractor is to carry out under the Contract,
- (b) experienced in the interpretation of contract documentation, and
- (c) fluent in the language for communications defined in the Contract.

4 General Obligations of the Member

The Member shall:

- (a) have no interest financial or otherwise in the Employer, the Contractor or Engineer, nor any financial interest in the Contract except for payment under the Dispute Board Agreement;
- (b) not previously have been employed as a consultant or otherwise by the Employer, the Contractor or the Engineer, except in such circumstances as were disclosed in writing to the Employer and the Contractor before they signed the Dispute Board Agreement;
- (c) have disclosed in writing to the Employer, the Contractor and the Other Members (if any), before entering into the Dispute Board Agreement and to his/her best knowledge and recollection, any professional or personal relationships with any director, officer or employee of the Employer, the Contractor or the Engineer, and any previous involvement in the overall project of which the Contract forms part;
- (d) not, for the duration of the Dispute Board Agreement, be employed as a consultant or otherwise by the Employer, the Contractor or the Engineer, except as may be agreed in writing by the Employer, the Contractor and the Other Members (if any);
- (e) comply with the annexed procedural rules and with Sub-Clause 20.4 of the Conditions of Contract;
- (f) not give advice to the Employer, the Contractor, the Employer's Personnel or the Contractor's Personnel concerning the conduct of the Contract, other than in accordance with the annexed procedural rules;
- (g) not while a Member enter into discussions or make any agreement with the Employer, the Contractor or the Engineer regarding employment by any of them, whether as a consultant or otherwise, after ceasing to act under the Dispute Board Agreement;
- (h) ensure his/her availability for all site visits and hearings as are necessary;

- (i) become conversant with the Contract and with the progress of the Works (and of any other parts of the project of which the Contract forms part) by studying all documents received which shall be maintained in a current working file;
- (j) treat the details of the Contract and all the DB's activities and hearings as private and confidential, and not publish or disclose them without the prior written consent of the Employer, the Contractor and the Other Members (if any); and
- (k) be available to give advice and opinions, on any matter relevant to the Contract when requested by both the Employer and the Contractor, subject to the agreement of the Other Members (if any).

5 General Obligations of the Employer and the Contractor

The Employer, the Contractor, the Employer's Personnel and the Contractor's Personnel shall not request advice from or consultation with the Member regarding the Contract, otherwise than in the normal course of the DB's activities under the Contract and the Dispute Board Agreement. The Employer and the Contractor shall be responsible for compliance with this provision, by the Employer's Personnel and the Contractor's Personnel respectively.

The Employer and the Contractor undertake to each other and to the Member that the Member shall not, except as otherwise agreed in writing by the Employer, the Contractor, the Member and the Other Members (if any):

- (a) be appointed as an arbitrator in any arbitration under the Contract;
- (b) be called as a witness to give evidence concerning any dispute before arbitrator(s) appointed for any arbitration under the Contract; or
- (c) be liable for any claims for anything done or omitted in the discharge or purported discharge of the Member's functions, unless the act or omission is shown to have been in bad faith.

The Employer and the Contractor hereby jointly and severally indemnify and hold the Member harmless against and from claims from which he is relieved from liability under the preceding paragraph.

Whenever the Employer or the Contractor refers a dispute to the DB under Sub-Clause 20.4 of the Conditions of Contract, which will require the Member to make a site visit and attend a hearing, the Employer or the Contractor shall provide appropriate security for a sum equivalent to the reasonable expenses to be incurred by the Member. No account shall be taken of any other payments due or paid to the Member.

6 Payment

The Member shall be paid as follows, in the currency named in the Dispute Board Agreement:

- (a) a retainer fee per calendar month, which shall be considered as payment in full for:
 - (i) being available on 28 days' notice for all Site visits and hearings;
 - (ii) becoming and remaining conversant with all project developments and maintaining relevant files;
 - (iii) all office and overhead expenses including secretarial services, photocopying and office supplies incurred in connection with his duties; and
 - (iv) all services performed hereunder except those referred to in sub-paragraphs (b) and (c) of this Clause.

The retainer fee shall be paid with effect from the last day of the calendar month in which the Dispute Board Agreement becomes effective; until the last day of the calendar month in which the Taking-Over Certificate is issued for the whole of the Works.

With effect from the first day of the calendar month following the month in which the Taking-Over Certificate is issued for the whole of the Works, the retainer fee shall be reduced by one third. This reduced fee shall be paid until the first day of the calendar month in which the Member resigns or the Dispute Board Agreement is otherwise terminated.

- (b) a daily fee which shall be considered as payment in full for:
- (i) each day or part of a day up to a maximum of two days' travel time in each direction for the journey between the Member's home and the Site, or another location of a meeting with the Other Members (if any);
 - (ii) each working day on Site visits, hearings or preparing decisions; and
 - (iii) each day spent reading submissions in preparation for a hearing.
- (c) all reasonable expenses including necessary travel expenses (air fare in less than first class, hotel and subsistence and other direct travel expenses) incurred in connection with the Member's duties, as well as the cost of telephone calls, courier charges, faxes and telexes: a receipt shall be required for each item in excess of five percent of the daily fee referred to in sub-paragraph (b) of this Clause;
- (d) any taxes properly levied in the Country on payments made to the Member (unless a national or permanent resident of the Country) under this Clause 6.

The retainer and daily fees shall be as specified in the Dispute Board Agreement. Unless it specifies otherwise, these fees shall remain fixed for the first 24 calendar months, and shall thereafter be adjusted by agreement between the Employer, the Contractor and the Member, at each anniversary of the date on which the Dispute Board Agreement became effective.

If the parties fail to agree on the retainer fee or the daily fee, the appointing entity or official named in the Contract Data shall determine the amount of the fees to be used.

The Member shall submit invoices for payment of the monthly retainer and air fares quarterly in advance. Invoices for other expenses and for daily fees shall be submitted following the conclusion of a Site visit or hearing. All invoices shall be accompanied by a brief description of activities performed during the relevant period and shall be addressed to the Contractor.

The Contractor shall pay each of the Member's invoices in full within 56 calendar days after receiving each invoice and shall apply to the Employer (in the Statements under the Contract) for reimbursement of one-half of the amounts of these invoices. The Employer shall then pay the Contractor in accordance with the Contract.

If the Contractor fails to pay to the Member the amount to which he/she is entitled under the Dispute Board Agreement, the Employer shall pay the amount due to the Member and any other amount which may be required to maintain the operation of the DB; and without prejudice to the Employer's rights or remedies. In addition to all other rights arising from this default, the Employer shall be entitled to reimbursement of all sums paid in excess of one-half of these payments, plus all costs of recovering these sums and financing charges calculated at the rate specified in Sub-Clause 14.8 of the Conditions of Contract.

If the Member does not receive payment of the amount due within 70 days after submitting a valid invoice, the Member may (i) suspend his/her services (without notice) until the payment is received, and/or (ii) resign his/her appointment by giving notice under Clause 7.

7 Termination

At any time: (i) the Employer and the Contractor may jointly terminate the Dispute Board Agreement by giving 42 days' notice to the Member; or (ii) the Member may resign as provided for in Clause 2.

If the Member fails to comply with the Dispute Board Agreement, the Employer and the Contractor may, without prejudice to their other rights, terminate it by notice to the Member. The notice shall take effect when received by the Member.

If the Employer or the Contractor fails to comply with the Dispute Board Agreement, the Member may, without prejudice to his other rights, terminate it by notice to the Employer and the Contractor. The notice shall take effect when received by them both.

Any such notice, resignation and termination shall be final and binding on the Employer, the Contractor and the Member. However, a notice by the Employer or the Contractor, but not by both, shall be of no effect.

8 Default of the Member

If the Member fails to comply with any of his obligations under Clause 4 (a) - (d) above, he shall not be entitled to any fees or expenses hereunder and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses received by the Member and the Other Members (if any), for proceedings or decisions (if any) of the DB which are rendered void or ineffective by the said failure to comply.

If the Member fails to comply with any of his obligations under Clause 4 (e) - (k) above, he shall not be entitled to any fees or expenses hereunder from the date and to the extent of the non-compliance and shall, without prejudice to their other rights, reimburse each of the Employer and the Contractor for any fees and expenses already received by the Member, for proceedings or decisions (if any) of the DB which are rendered void or ineffective by the said failure to comply.

9 Disputes

Any dispute or claim arising out of or in connection with this Dispute Board Agreement, or the breach, termination or invalidity thereof, shall be finally settled by institutional arbitration. If no other arbitration institute is agreed, the arbitration shall be conducted under the Rules of Arbitration of the International Chamber of Commerce by one arbitrator appointed in accordance with these Rules of Arbitration.

PROCEDURAL RULES

- 1 Unless otherwise agreed by the Employer and the Contractor, the DB shall visit the Site at intervals of not more than 140 days, including times of critical construction events, at the request of either the Employer or the Contractor. Unless otherwise agreed by the Employer, the Contractor and the DB, the period between consecutive visits shall not be less than 70 days, except as required to convene a hearing as described below.
- 2 The timing of and agenda for each Site visit shall be as agreed jointly by the DB, the Employer and the Contractor, or in the absence of agreement, shall be decided by the DB. The purpose of Site visits is to enable the DB to become and remain acquainted with the progress of the Works and of any actual or potential problems or claims, and, as far as reasonable, to endeavour to prevent potential problems or claims from becoming disputes.
- 3 Site visits shall be attended by the Employer, the Contractor and the Engineer and shall be co-ordinated by the Employer in co-operation with the Contractor. The Employer shall ensure the provision of appropriate conference facilities and secretarial and copying services. At the conclusion of each Site visit and before leaving the site, the DB shall prepare a report on its activities during the visit and shall send copies to the Employer and the Contractor.
- 4 The Employer and the Contractor shall furnish to the DB one copy of all documents which the DB may request, including Contract documents, progress reports, variation instructions, certificates and other documents pertinent to the performance of the Contract. All communications between the DB and the Employer or the Contractor shall be copied to the other Party. If the DB comprises three persons, the Employer and the Contractor shall send copies of these requested documents and these communications to each of these persons.

- 5 If any dispute is referred to the DB in accordance with Sub-Clause 20.4 of the Conditions of Contract, the DB shall proceed in accordance with Sub-Clause 20.4 and these Rules. Subject to the time allowed to give notice of a decision and other relevant factors, the DB shall:
- (a) act fairly and impartially as between the Employer and the Contractor, giving each of them a reasonable opportunity of putting his case and responding to the other's case, and
 - (b) adopt procedures suitable to the dispute, avoiding unnecessary delay or expense.
- 6 The DB may conduct a hearing on the dispute, in which event it will decide on the date and place for the hearing and may request that written documentation and arguments from the Employer and the Contractor be presented to it prior to or at the hearing.
- 7 Except as otherwise agreed in writing by the Employer and the Contractor, the DB shall have power to adopt an inquisitorial procedure, to refuse admission to hearings or audience at hearings to any persons other than representatives of the Employer, the Contractor and the Engineer, and to proceed in the absence of any party who the DB is satisfied received notice of the hearing; but shall have discretion to decide whether and to what extent this power may be exercised.
- 8 The Employer and the Contractor empower the DB, among other things, to:
- (a) establish the procedure to be applied in deciding a dispute,
 - (b) decide upon the DB's own jurisdiction, and as to the scope of any dispute referred to it,
 - (c) conduct any hearing as it thinks fit, not being bound by any rules or procedures other than those contained in the Contract and these Rules.
 - (d) take the initiative in ascertaining the facts and matters required for a decision,
 - (e) make use of its own specialist knowledge, if any,
 - (f) decide upon the payment of financing charges in accordance with the Contract,
 - (g) decide upon any provisional relief such as interim or conservatory measures, and
 - (h) open up, review and revise any certificate, decision, determination, instruction, opinion or valuation of the Engineer, relevant to the dispute.
- 9 The DB shall not express any opinions during any hearing concerning the merits of any arguments advanced by the Parties. Thereafter, the DB shall make and give its decision in accordance with Sub-Clause 20.4, or as otherwise agreed by the Employer and the Contractor in writing. If the DB comprises three persons:
- (a) it shall convene in private after a hearing, in order to have discussions and prepare its decision;
 - (b) it shall endeavour to reach a unanimous decision: if this proves impossible the applicable decision shall be made by a majority of the Members, who may require the minority Member to prepare a written report for submission to the Employer and the Contractor; and
 - (c) if a Member fails to attend a meeting or hearing, or to fulfil any required function, the other two Members may nevertheless proceed to make a decision, unless:
 - (i) either the Employer or the Contractor does not agree that they do so, or
 - (ii) the absent Member is the chairman and he/she instructs the other Members to not make a decision.

Section 8 Particular Conditions of Contract (PCC)

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Section 8 - Particular Conditions of Contract

The following Particular Conditions of Contract (PCC) shall supplement the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

Part A – Contract Data

Conditions	Ref. GCC	Data
Employer's Name and Address	1.1.2.2	The Chairman Road Development Authority "Maganeguma Mahamedura" No. 216, Denzil Kobbekaduwa Mawatha Koswatta Battaramulla SRI LANKA
Engineer's Name and Address	1.1.2.4 & 1.3	To be notified later
Bank's Name	1.1.2.11	Asian Development Bank (ADB)
Borrower's Name	1.1.2.12	Democratic Socialist Republic of Sri Lanka
Time for Completion	1.1.3.3	365 days from the Commencement Date for civil Works and thereafter 5 years for Performance-Based Maintenance Works.
Defects Notification Period	1.1.3.7	365 days. (After the completion of civil Works)
Electronic Transmission Systems	1.3 (a)	<u>Employer:</u> Facsimile number: +94 11 2864801 ; Electronic mail address: rdachairman@gmail.com <u>Engineer:</u> To be notified later <u>Contractor:</u> To be notified later
	1.3 (b)	<u>Employer:</u> The Chairman Road Development Authority "Maganeguma Mahamedura" No. 216, Denzil Kobbekaduwa Mawatha Koswatta Battaramulla SRI LANKA <u>Engineer:</u> To be notified later <u>Contractor:</u>

Governing Law	1.4	The law of the Democratic Socialist Republic of Sri Lanka
Ruling Language	1.4	English
Language for Communications	1.4	English
Contract Agreement	1.6	To be signed within 14 days of the Contractor submitting Performance Security acceptable to the Employer. In case of a joint venture, Contract Agreement shall be signed by the authorized person whom nominated by the lead partner as per ITB 20.2
Time for Access to the Site	2.1	Within 7 days after Commencement Date
Engineer's Duties and Authority	3.1(B)(ii)	Employer's approval is not required for the issue of: Each Variation of value less than or equal to 0.1% of the Accepted Contract Amount, provided the cumulative total of Variations does not exceed 2% of the Accepted Contract Amount.
Performance Security	4.2	The Performance Security will be in the form of an unconditional bank guarantee in the amount(s) of 5% of the Accepted Contract Amount in the currencies and proportions in which the Contract Price is payable. The Performance Security shall be a bank guarantee, issued by a reputable bank acceptable to the Employer in the format included in the bidding documents. If the institution issuing the security is located outside Sri Lanka, it shall have correspondent financial institution located in Sri Lanka to make it enforceable. The Contractor shall submit a separate Performance Security for the Performance Based Maintenance period as indicated in Part B (Special Provisions).
Normal Working Hours	6.5	8.00 to 17.00 Hrs – Monday to Friday 8.00 to 13.00 Hrs – Saturday Barring Mercantile Holidays
Extension of Time for Completion	8.4	For the purpose of Sub-Clause 8.4(c) the relevant meteorological station is in the project area.
Delay Damages for the Works	8.7 & 14.15(b)	0.05 % of the Accepted Contract Amount per day.
Maximum Amount of Delay Damages	8.7	5% of the Accepted Contract Amount.
Provisional Sums	13.5.(b)(ii)	Percentage as mentioned in the bills of quantity or 10% if not mentioned in the bills of quantity.

Adjustments for Changes in Cost	13.8	Cost adjustments for payments in local currency shall be In accordance with the Sub-Clause 13.8 of the Section 8 - Particular Conditions of Contract Part B – Special Provisions.
The Contract Price	14.1	The following sentence under Clause 14.1 shall <u>not</u> apply: "Notwithstanding the provisions of sub-paragraph (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."
Total Advance Payment	14.2	<p>20% of the Accepted Contract Amount excluding amounts of Provisional Sums, Performance Based Maintenance, and Physical & Financial Contingencies.</p> <p>Advance payment will be paid in three instalments as follows;</p> <p>1st installment of 5% of the Accepted Contract Amount excluding amounts of Provisional Sums, Performance Based Maintenance, and Physical & Financial Contingencies.</p> <p>2nd installment of 5% of the Accepted Contract Amount excluding amounts of Provisional Sums, Performance Based Maintenance, and Physical & Financial Contingencies.</p> <p>3rd installment of 10% of the Accepted Contract Amount excluding amounts of Provisional Sums, Performance Based Maintenance and Physical & Financial Contingencies.</p> <p>Advance payment will be paid upon fulfilment of conditions stated in Sub-Clause 14.2 of Particular Conditions of Contract (Part B).</p>

Repayment Amortization of Advance Payment	14.2(b)	<p>In accordance with the following formulae:</p> $Y = \frac{(X - 0.3) \times Z}{(0.9 - 0.3)}$ <p>Y = Cumulative repayment Z = Total amount of Advance X = Percentage value of cumulative payments certified</p> $X = [(A+B) / (C - D - E - F)] \times 100$ <p>A = Value of work done B = Price Adjustments C = Accepted Contract Amount D = Unutilized Contingencies E = Unutilized Provisional Sums F = Unutilized Performance Based Maintenance</p>
Percentage of Retention	14.3(c)	10%
Limit of Retention Money	14.3(c)	5% of the Accepted Contract Amount.
Plant and Materials	14.5(b)	Not applicable
	14.5(c)(i)	<p>Plant and Materials (complying with relevant specifications) for payment of 80% of their value when delivered to the Site</p> <ol style="list-style-type: none"> 1. Cement 2. Bitumen 3. Reinforcement Steel 4. Metal 5. Geotextiles 6. Aggregates (ABC) 7. Sand 8. Pre-cast items 9. Soil for embankment and sub-base 10. Road studs and road marking material

Minimum Amount of Interim Payment Certificates	14.6	Delete the entire 2 nd paragraph and replace the following; “However, prior to issuing the Taking-Over Certificate for the Works, the Engineer shall not be bound to issue an Interim Payment Certificate in an amount which would (after retention and other deductions) be less than the 1.5% of the Accepted Contract Amount, and in this event, the Engineer shall give notice to the Contractor accordingly. In such case, the Contractor shall make a written request to the Engineer stating the reasons in the event where amount of Interim Payment Certificate is less than the specified. Accordingly, if such reasons are acceptable to the Engineer, the Engineer shall issue the Interim Payment Certificate.”
Currencies of Payment	14.15	Currency of Payment shall be Sri Lankan Rupees.

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Corrupt and Fraudulent Practices	15.6	<p>For the purpose of this Sub-Clause ADB's Anticorruption Policy requires that Borrowers (including beneficiaries of ADB – financed activity), as well as Contractors, Subcontractors, manufacturers, and Consultants under ADB-financed contracts, observe the highest standard of ethics, observe the highest standard of ethics during procurement and execution of such contracts. In pursuance of this policy, ADB:</p> <p>(a) Defines, for the purposes of this provision, the terms set forth below as follows:</p> <p>(i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party:</p> <p>(ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation:</p> <p>(iii) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party:</p> <p>(iv) "collusive practice" means an arrangement between two or more parties designated to achieve an improper purpose, including influencing improperly the actions of another party:</p> <p>(v) "obstructive practice" means (a) deliberately destroying, falsifying, altering or concealing of evidence material to an ADB investigation: (b) making false statements to investigators in order to materially impede an ADB investigation: (c) failing to comply with requests to provide information, documents or records in connection with OAI investigation: (d) threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or (e) materially impeding ADB's contractual rights of audit or access to information.</p> <p>(vi) "integrity violation" is any act, which violates ADB's Anticorruption Policy, including (i) to (v) above and the following: abuse, conflict of interest, violations of ADB sanctions, retaliation against whistleblowers or witness, and other violations of ADB's Anticorruption Policy, including failure to adhere to the highest ethical standard.:</p> <p>(b) Will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations in competing for the Contract.</p>
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		<p>(c) Will cancel the portion of the financing allocated to a contract if it determines at any time that representatives of the borrower or of a beneficiary of ADB – financing engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations during the procurement or the execution of that contract, without the borrower having taken timely and appropriate action satisfactory to ADB to remedy the situation; and</p> <p>(d) Will impose remedial actions on a firm or an individual, at any time, in accordance with ADB's Anticorruption Policy and Integrity Principles and Guidelines (both as amended from time to time), including declaring ineligible, either indefinitely or for a stated period of time, to participate in ADB-financed, administrated, or supported activities or to benefit from an ADB-financed, administrated, or supported contract, financially or otherwise, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations.</p>
Maximum Total Liability of the Contractor to the Employer	17.6	Multiplier is 1.15
Periods for Submission of Insurance: a. Evidence of Insurance. b. Relevant Policies	18.1	21 days 21 days
Maximum Amount of Deductibles for Insurance of the Employer's Risks	18.2(d)	Sri Lankan Rupees 250,000
Minimum Amount of Third Party Insurance	18.3	Sri Lankan Rupees 10 million per occurrence without limitation to the number of occurrences per year.
Minimum Amount of Professional Indemnity Insurance	18.3	Sri Lankan Rupees 10 million per occurrence without limitation to the number of occurrences per year.
Date by which the DB Shall Be Appointed	20.2	Within 28 days from the Commencement Date
The DB Shall Be Comprised of	20.2	Three Members
List of Potential DB Sole Members	20.2	None
Appointment (if not agreed) To Be Made By	20.3	The President of Institution of Engineers, Sri Lanka

International Arbitration	20.6 (a)	Arbitration shall be: (i) Administered by Institute for the Development of Commercial Law and Practice, ICLP, No 53/1, Ananda Kumaraswamy Mawatha, Colombo 07, Sri Lanka (ii) Conducted in accordance with the rules of Arbitration: UNCITRAL.
Place of Arbitration	20.6	Colombo, Sri Lanka

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Section 8

Particular Conditions of Contract

Part B – Special Provisions

Sub-Clause 1.1: Definitions

After Sub-paragraph 1.1.6.10 add the following Sub-Clauses:

- 1.1.6.11 **“Employer’s Requirements”** means the description of the Scope, Standard Specifications, Particular Specifications, Standard Drawings, Specific Drawings, Supplementary Information, Traffic control and Safety during construction, EMP and EMoP, Specification for PBM, Design criteria (if any) and Program of Work, as included in the Contract and any alterations and modifications thereto in accordance with the Contract.
- 1.1.6.12 **“Performance Based Maintenance”** means taking maintenance actions or interventions during the Performance-Based Maintenance Period, in accordance with response times, intervention thresholds and performance indicators as specified in the Employer’s Requirements.
- 1.1.6.13 **“Performance Based Maintenance Period”** means a period of 5 years including Defects Notification Period.
- 1.1.6.14 **“Subcontractor for Performance Based Maintenance”** is a person or an entity which enters into a contract with the Contractor to carry out the Performance Based Maintenance under Sub-Clause 4.4

Sub-Clause 1.5: Priority of Documents

Delete the documents listed (a) to (i) and substitute

- (a) the Contract Agreement,
- (b) the Memorandum of Understanding, if any,
- (c) the Letter of Acceptance,
- (d) the Letter of Bid,
- (e) the Addenda Nos *insert Addenda numbers if any.*
- (f) the Particular Conditions of Contract – Part A (Contract Data),
- (g) the Particular Conditions of Contract – Part B (Special Provisions),
- (h) the List of ADB Eligible Countries,
- (i) the General Conditions of Contract,
- (j) the Particular Specifications,
- (k) the Standard Specifications,
- (l) the Drawings,
- (m) the completed Schedules including Bill of Quantities,
- (n) the Contractor’s Proposals approved by the Engineer,

Sub-clause 3.1: Engineer's Duties and Authority

Under the caption "The following provisions shall apply"

After sub- Paragraph "(D) – Sub-Clause 13.4 Specifying the amount payable in each of the applicable currencies" add the following sub paragraph (E, F, G & H)

(E) Sub-Clause 4.4: Approving Subcontractors for any part of the Works.

(F) Sub-Clause 8.4: Determining Extension of Time for which the Contractor is entitled.

(G) Sub-Clause 8.8: Issuing instructions to the Contractor for suspension of Work.

(H) Sub-Clause 12.3: Determining new rates or prices for any item of work instructed.

Sub-Clause 4.1: Contractor's General Obligations

After the word "Works" in the last sentence of the 1st paragraph add "and shall carry out Performance-Based Maintenance of the roads under the Contract during the Performance-Based Maintenance Period".

Delete the word "and" after the word "completion" in the third line 2nd Paragraph, substitute a comma and add "and Performance-Based Maintenance of the roads under the Contract during the Performance-Based Maintenance Period".

At the end of the Sub-Clause, add following paragraph

The Contractor shall carry out the design of all components of the road rehabilitation and road construction work. The geometric design & the pavement design of the road and the design of bridges require the approval of the Engineer.

The topographical survey, level survey and cross section survey necessary for the geometric design and the foundation investigation and hydrological studies necessary for the design of bridges are required to be carried out by the Contractor.

A road condition investigation for road rehabilitation work and a road trace investigation for new road construction work, consisting of but not restricted to, visual inspection, DCP testing & trial pits with materials testing is required to be done by the Contractor. Based on this investigation, sections of road that require rehabilitation over and above the pavement thicknesses shown in the bid documents are to be identified by the Contractor.

The Contractor will design all culverts identified for widening, reconstruction and new construction. The contractor will also design all protection work in the form of gabion walls, retaining walls, toe walls etc. These designs require the approval of the Engineer.

The Contractor will prepare the working drawings resulting from the above and submit same to the Engineer for approval. The Contractor will carry out all work in accordance with the approved drawings.

The Contractor shall comply ADB's safeguard policies.

The Contractor shall be responsible, at his own cost, for detailed designs and preparation and submission of as-built documents of all Permanent Works completed under the Contract in an acceptable manner to the Engineer.

Sub-Clause 4.2: Performance Security**Delete paragraph 6 and replace with the following:**

The Contractor shall obtain a separate Performance Security for proper performance of performance based maintenance works from the date of commencement of performance based maintenance works. The amount of this Performance Security for the performance based maintenance period shall be the value of performance based maintenance works computed using the rates quoted in the bills of quantity or Letter of Acceptance. The Employer shall return the original Performance Security of the Works to the Contractor as soon as practicable after the Contractor has supplied all the Contractor's Documents and completed and tested all the Works, including remedying any defects and upon receipt by the Employer of the new Performance Security for the Performance Based Maintenance.

Add the following at the end of the Sub-Clause 4.2

The Contractor shall not be reimbursed the Cost incurred for obtaining the Performance Securities.

Sub-Clause 4.4: Subcontractors**Add the following subparagraph after subparagraph 2**

If any Subcontractor for Performance-Based Maintenance is selected, the consent of the Engineer shall be obtained before the issue of Taking-Over Certificate.

Sub-Clause 4.7: Setting Out**Insert the following as the 3rd and 4th paragraphs of Sub-Clause 4.7**

"The Contractor shall give to the Engineer not less than Forty Eight (48) hours prior written notice of his intention to set out or establish levels for any part of the Works so that timely arrangement may be made for checking or issuing instructions. Contractor shall indicate in his written notice the date by which the information, if any, is required by them".

"The alignment of the road centreline may need to be adjusted and the Contractor shall incorporate such adjustments in consultation with the Engineer."

Sub-Clause 4.9: Quality Assurance**Delete paragraph 1 and 2 and substitute:**

The Contractor shall establish and implement a documented Quality Management /Assurance System (QMAS) in accordance with ISO 9000: 2008 standard requirements, within 28 days after the Commencement Date and submit evidence for the same for Engineer's review and approval. The Contractor shall also prepare and submit for Engineer's approval a Project Quality Plan (PQP) for the project based on requirements of the Contract, Contractor's site organization, Contractor's method of construction and statutory requirements, within 28 days after the Commencement Date. PQP shall include Inspection and Test Plans/Schedules for works and materials or Material Quality Plans and Work Quality Plans, which have to be prepared to reflect the contractual requirements stipulated in the Specifications, such as test and inspections required, hold points, testing / inspection frequencies, acceptance / approval criteria, quality records to be maintained and applicable standards.

All monthly payment applications for work or material submitted to the Engineer shall be adequately supported by summary of tests and inspection carried out and other relevant QMAS paper work to show that relevant work or material have been checked by the QMAS and in accordance with PQP.

The Engineer shall be entitled to audit any aspect of the system and order any additional tests to be carried out in his presence.

The Contractor shall submit for Engineer's review, Audit Reports for Internal and third party audits, Quality records for Inspection and testing, Corrective Action Requests and Non Conformance Reports as

evidence for effective implementation of his Quality Management/Assurance System. The Contractor shall be responsible for ensuring that all Sub-Contractors and Suppliers comply with the requirements of the Contractor's Quality Management System and the PQP.

The entire cost of maintaining quality assurance and quality control systems including testing, carried out by the Contractor shall be deemed to be included in the rates and prices tendered for the related items of work, except where otherwise specifically provided for in the Contract.

The Contractor's attention is drawn to the provisions of the various sections of the Specification regarding the minimum frequency of testing that will be required for quality control. The Contractor shall, at his own initiative, increase this frequency where necessary to ensure adequate control.

The Employer may carry out audits on the Contractor's Quality Management/Assurance System either jointly with a third party or jointly with the Engineer, to determine the effectiveness of implementation of the Contractor's QMAS and Quality Assurance Plan and the Contractor shall provide every assistance required to carry out an effective audit.

Sub-Clause 4.17: Contractor's Equipment

Add the following paragraph 2

Immediately upon bringing an item of Contractor's Equipment to the Site, the Contractor shall notify the Engineer in writing to this effect and shall provide a description of the equipment giving its type, manufacturer, model and capacity, together with a unique identification number. If an item of Contractor's Equipment is hired/leased, then the Contractor shall provide the name and address of the owner thereof or the name and address of the vendor named in the agreement for hire-purchase thereof. A certified copy of the agreement shall be supplied to the Engineer.

Sub-Clause 4.18: Protection of the Environment

Add the following paragraphs at the end of the Sub-Clause

The Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP), provided as Appendix A 1 in Section 6.6 of Part II Volume II (Employer's Requirements), is an integral part of the contract documents. The Contractor shall, within 28 days from the signing of the Contract, submit to the Engineer for his approval a Site-Specific Environmental Management Action Plan (SSEMAP), which shall be in compliance with the requirements of the EMP and EMoP. All Works shall be carried out in accordance with the Initial Environmental Examination, the EMP and the Contractor's SSEMAP.

The Contractor shall comply with all applicable national, provincial, and local environmental laws and regulations. The Contractor shall (a) establish an operational system for managing environmental impacts, (b) carry out all of the monitoring and mitigation measures set forth in the Initial Environmental Examination, the EMP and EMoP and in any other safeguards document, and any corrective or preventative actions set forth in the Safeguards Monitoring Report; and (c) allocate the budget to ensure that all such measures are carried out. The Contractor shall provide the Employer with a written notice of any unanticipated environmental, resettlement or small ethnic community peoples risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the Initial Environmental Examination, EMP and any other safeguard plans. The contractor shall update the SSEMAP including such impacts and mitigation measures taken.

Sub-Clause 4.21 – Progress Reports

Add the following item at the end of the Sub-Clause

- (i) Monitoring of the obligations in Sub-Clause 4.18, 6.4 and 6.7, 6.20 and 6.21.

Sub-Clause 4.25: Utilities**Add the following Sub-Clause 4.25**

“The Contractor shall be fully responsible for the management, co-ordination and execution of all activities associated with the survey, recording, relocation, removal and protection of public utilities including:

- (i) Liaising with utility authorities, the Employer, the Engineer, landowners and any other party concerned,
- (ii) The performance of the relocation, removal or protection work. At the discretion of the public utility concerned part or parts of this work may be performed by themselves.
- (iii) Making payments to public utility authorities of such amounts payable for work performed or to be performed by them after obtaining approval of the Employer for such amounts payable to public utility authorities. It is expressly understood and agreed that the Contractor has made full allowance in his Tender for all risk and consequences of delay, inconvenience, cost or damage associated with above.

Sub-Clause 6.1: Engagement of Staff and Labour**Replace the paragraph 2 with the following**

“The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour with appropriate qualifications and experience from the project area and the region within the Democratic Socialist Republic of Sri Lanka.”

Add the following Paragraph

The Contractor must arrange to hold training programs to his workers and supervisors and any other personnel including operators regarding road maintenance work and safety during work at least biannually for those engaged in road construction and maintenance work acceptable to the Engineer.

Sub-Clause 6.4: Labour Law**Add the following paragraph**

The Contractor shall (a) encourage the employment of less privileged, particularly women, and provide appropriate facilities for women in work sites; (b) give priority in employment to people directly affected by the Project; (c) not differentiate wages between men and women for work of equal value; and (d) comply with the measures set forth in the Gender Action Plan (GAP).

Sub-Clause 6.5: Working Hours**Add the following paragraphs**

Should the Contractor's requirements in this respect involve the Employer in an increase in supervision costs, such increased costs shall, after due consultation with the Employer and Contractor, be determined by the Engineer and shall be recoverable by the Employer from the Contractor and may be deducted from any payments which may be due or which may become due to the Contractor.”

The provisions of this clause shall not be applicable in the case of any work which it is customary to carryout multiple shifts as per Contract.

Sub-Clause 6.7: Health and Safety**Add the following at the end of the Sub-Clause**

The Contractor shall (i) provide safe working conditions and water and sanitation facilities for male and female workers and

The Contractor shall prepare and submit to the Engineer for review and approval a Health and Safety Plan based on International safety standards and best practices of occupational health. The Health and Safety Plan should provide methods for:

- (i) Management of health and safety on Site including specific measures in containment of any spread of disease within office, sites and worker camps, promoting an awareness of site safety and industrial health amongst all persons directly or indirectly associated with the Works and publicity programmes by way of training classes, posters prominently displayed in relevant areas of the Site, and
- (ii) Accommodating and controlling public and construction traffic during construction.
The Safety Plan is to include those matters referred to in the Specifications and is to be managed and updated by the Contractor.

In the event of any outbreak of illness of an epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government of Sri Lanka or the local medical or sanitary authorities, for the purpose of dealing with and overcoming the same.

Particularly, in respect of the Covid-19 global pandemic:

- (a) the Contractor shall comply with all applicable national, provincial and local Laws and regulations;
- (b) it is expressly understood and agreed that the Contractor has to make full allowance in his bid for carrying out all the works adhering to health and Safety guidelines of COVID situation and considering consequences of delay, inconvenience, additional expenses, lower productivity, shortages in the availability of personnel and/or Goods in carrying out work, during the current COVID pandemic. Extension of Contract Period will be considered, only in case of lock down of isolated areas, after considering the effect of such lock down in the Critical Path activities; and
- (c) the Contractor is deemed to be familiar with all Guidelines on Health and Safety issued by the relevant authorities including the guidelines issued by the Ministry of Health and Ministry of Roads & Highways, Sri Lanka and the Construction Industry Development Authority (CIDA), in order to comply with such guidelines as applicable and appropriate during the execution of Works.
- (d) Obtaining a record of personal health and social behaviour during a specific time period.

The Contractor shall maintain such records and make such reports concerning safety, health and welfare of persons and damage to property as the Engineer may from time to time prescribe.

The Contractor shall conduct health and safety programmes for workers employed under the project, and shall include information on the risk of spread of infectious diseases such as COVID – 19 and sexually transmitted diseases, including HIV/AIDs in such programs as stated in Clause 108.3 of Section 6.2, Particular Specifications of Employer's requirements.

Sub-Clause 6.8: Contractor's Superintendence**Add the following paragraph 3**

The Contractor shall submit to the Engineer for the Engineer's approval the Contractor's proposed organization structure. This structure will only be approved and be considered to remain approved if:

- (i) It ensures that each individual team of workers is properly supervised by a suitably experienced charge hand and
- (ii) Each appropriately sized group of teams and all subcontractors are supervised by a suitably experienced foreman in the direct employment of the Contractor and
- (iii) All charge hands and foremen are identified by name and
- (iv) All charge hands have an efficient means of communicating with foremen and all foremen have an efficient means of communicating with the Contractor's Representative and
- (v) The approved organization structure is implemented on Site.

Sub-Clause 6.15: Measures against Insect and Pest Nuisance**Delete the present Sub-Clause 6.15 and replace by the following:**

The Contractor shall at all times take the necessary precautions to protect all staff and labour employed on the Site from insect nuisance, rats and other pests and reduce dangers to health and the general nuisance caused by the same. The Contractor shall provide his staff and labour with suitable prophylactics for the prevention of malaria and take steps to prevent the formation of stagnant pools of water. Special care shall be taken to prevent spreading of the mosquito-borne disease, dengue fever by keeping working areas clean and preventing collection of stagnant water in any form within and outside the houses, offices etc.

The Contractor shall comply with all the regulations of the local health authorities in these respects and shall in particular arrange to spray thoroughly with approved insecticide all buildings, working areas erected on the site. Such treatment shall be carried out regularly as required by the Health Authorities or the Engineer.

Sub-Clause 6.21: Child labour**Delete the present Sub-Clause 6.21 and replace by the following:**

The Contractor shall not employ any child to perform any work, including work that is economically exploitative, or is likely to be hazardous to, 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.

"Child" means a child below the statutory minimum age of 16 years (specific under national, provincial or local law)

The Contractor shall not violate any prohibitions against child labour under international treaty obligations

Add new Sub-Clause 6.25**Respective Work Environment**

The Contractor shall ensure that its employees and sub-contractors observe the highest ethical standards, good hygienic work environment and refrain from any form of bullying, discrimination, misconduct and harassment, including sexual harassment and shall, at all times, behave in a manner that creates an environment free of unethical behaviour, bullying, misconduct and harassment including sexual harassment. The Contractor shall take appropriate action against any employees or sub-contractors, including suspension or termination of employment or sub-contracts, if any form of unethical or inappropriate behaviour is identified.

The Contractor shall conduct training programs for its employees and sub-contractors to raise awareness on and prevent any form of bullying, discrimination, misconduct and harassment including sexual harassment, good hygienic environment and to promote a respectful work environment. The Contractor shall keep an up to date record of its employees and sub-contractors who have attended and completed such training programs and provide such records to the Employer or the Engineer at their first written request.

Sub-Clause 7.7: Ownership of Plant and Materials**Add the following paragraph 2**

“The Contractor shall not sell or otherwise dispose of or remove off the Site, except for the purpose of the Works, any sand, stone, clay, ballast, rock or other substances or materials which he obtains from any excavation made for the purpose of the Works or any buildings or produce upon the Site at the time of the delivery of the possession of the Site and all such substance, material, buildings and produce shall be the property of the Employer. Provided that the Contractor may with the permission in writing of the Engineer dispose of them off the Site at approved locations.”

Sub-Clause 8.1: Commencement of Works

Delete the first paragraph and sub paragraphs (a), (b), (c) and (d) and 2nd paragraph and substitute the following:

The Commencement Date shall be within 28 days from the date of receipt of Letter of Acceptance.

Prior to the commencement of Works at Site the following precedent conditions should be fulfilled.

- (a) Submission of the Performance Security in accordance with the Sub-Clause 4.2 of the Particular Conditions of the Contract.
- (b) Submission of Insurance policies required, under Sub-Clause 18
- (c) Arrange to take possession of Site.
- (d) Submission of program of work and method statements.

The Engineer shall instruct the Contractor to commence the Works, with a notification recording the agreement of both Parties on fulfilment of above 04 precedent conditions.

Sub-Clause 8.3: Programme

Delete Sub paragraph (a) and replace with the following:

- (a) The order in which the Contractor intends to carry out the Works including;
- (i) Programme shall be prepared indicating the anticipated timing of each stage of design (if any) and construction indicating the resources allocated. The programme shall be prepared using MS Project or similar Project Management Software indicating critical path and clear logic in sequencing of activities.
 - (ii) A detailed mobilization programme with all principal mobilization events including the anticipated timing of procurement, delivery to site, construction, erection and commissioning, provision of Employer's, Engineer's and Contractor's facilities, mobilization of key personnel, etc.
 - (iii) A maintenance schedule is required to be submitted at the beginning of each year during the Performance Based Maintenance and updated during implementation as required.

Add the following sub-item (iii) to item (d) of subparagraph 1 of Sub-Clause 8.3 with the following:

- (iii) A detailed cash flow estimate, in monthly periods.

Add the following two paragraphs after paragraph 2 of Sub-Clause 8.3:

The submission to and consent by, the Engineer of such programme, or the provision of such general descriptions of cash flow estimates, shall not relieve the Contractor from any of his duties or responsibilities under the Contract.

28 days prior to the commencement of Performance Based Maintenance Works, the Contractor shall submit a detailed work schedule and method statement for Performance Based Maintenance Work indicating related work items and their sequence for compliance with corresponding service levels / performance indicators as per the Performance Based Maintenance Specifications.

Sub-Clause 8.4. Extension of time for Completion

Add the following paragraphs

"For the purposes of Sub-Clause 8.4 (c), it is agreed that "exceptionally adverse climatic conditions" shall be exclusively where:

- (i) On any single day, the rainfall measured at the relevant meteorological station as given in Contract Data exceeds the 50 percentile value of the daily rainfall for that calendar month for that station, as calculated using the last 120 calendar months of that station's rainfall records or, in the case where the station's rainfall records do not extend back as far as 120 months, then that station's available records and
- (ii) The rainfall measured at that meteorological station exceeds 5 mm (five millimetres) on the day in question and
- (iii) Work activities are affected on that day in that station's zone of influence

Any delay caused by exceptionally adverse climatic conditions will be "no fault delay" and costs will be deemed to lie where they fall. That is, in the case of such delay, pursuant to the Contract the Contractor is entitled to an extension of time, the Engineer will approve an extension of time for the period of delay and the Contractor agrees to forgo any right to claim additional costs arising from such delay."

Sub-Clause 8.7: Delay Damages**Add the following paragraph 3**

"The Employer may elect to recover an interim deduction of delay damages from any payment that is due to the Contractor. Such interim payment shall be calculated by multiplying the amount per day stated by the number of days that have elapsed between the due date for Completion and the date on which the interim calculation is made, less any previous interim payment of delay damages made. The total amount of delay damages recovered shall not exceed five percent (5%) of the Accepted Contract Amount.

Sub-Clause 11.9: Performance Certificate**Delete subparagraph 2 and insert the following subparagraphs:**

If a Taking-Over Certificate is issued for any part / Section of the Works, the Performance-Based Maintenance Period for that part / Section shall commence from the date of issue of the Taking-Over Certificate for that part / Section.

During the Defect Notification Period, the Contractor shall remedy defects that may arise on the Works or the Materials used. In addition, during the Performance Based Maintenance Period, the Contractor shall carry out maintenance of the completed Work, in accordance with the performance indicators for the Performance Based Maintenance as specified in the Employer's Requirements.

The Engineer shall issue the Performance Certificate for the Contract on completion of the Performance Based Maintenance Period for the whole of the Works.

Sub-Clause 12.2: Method of Measurement**Replace subparagraph (a) as follows;**

Measurement shall be made for approved design profile quantities or net actual quantity within the approved design profile. Literal meaning of net is excluding all nonessential considerations, and

Replace subparagraph (b) as follows;

- (b) the method of measurement shall be in accordance with the Specification, Bill of Quantities or other applicable Schedule.

Sub-Clause 12.3: Evaluation**Paragraph (a) (ii) – Delete 0.25% and substitute 2%**

Sub-Clause 13.8: Adjustment for Changes in Cost**Delete the entire Sub- Clause and substitute the following**

No price adjustment shall apply to foreign currency portion of the value of work done payable to the Contractor.

For the local currency component the following shall apply.

The amounts computed from the formula given under this Sub-Clause in respect of the rise or fall in the cost of Labour, Material, Plants and other inputs to the works, shall be added to or deducted from the payment to the Contractor as follows.

(a) Table of Adjustment Data

Input		Percentage
Name	Indices Reference	
Heavy Equipment	P2	27.77
Bitumen 60/70	M30C	17.57
Skilled Labour	L1	10.13
Fuel	P3	6.50
Semiskilled Labour	L2	5.68
Reinforcement Steel	M13	4.59
Metal	M7	4.05
Form Work Timber	M21	3.62
Aggregate Base Course (ABC)	M48	2.52
Cement	M3	2.39
Earth	M45	1.76
Unskilled Labour	L3	1.28
Sand	M8	1.17
Precast Concrete	M43	0.97
Total		90.00

- (b) The adjustment to the Contract Price in respect of changes in Cost for local Currency shall be determined from following formula,

$$F = \frac{0.966 (V - V_{na})}{100} \sum_{\text{all inputs}} \frac{P_x (I_{xc} - I_{xb})}{I_{xb}}$$

Where

F	=	Price adjustment for the period concerned
V	=	Current valuation of work done for the period
V _{na}	=	Valuation of non-adjustable element
P _x	=	Input percentage of input named x
I _{xc}	=	Current indices of input x
I _{xb}	=	Base indices of input x

No other adjustment of the Contract Price on account of fluctuations of inputs shall be made, notwithstanding the fact that the contractor has to pay additional amount under specific circumstances.

- (c) The “Input Percentage” means the percentage proportionate contribution of any input in terms of cost of the construction based on the prices prevailing on one month prior to submission of the tender and listed in the Table of Adjustment Data shown or any other adjustment data acceptable as per the Bid submission.

The indices applicable for the operation of this formula are those compiled and published by the Institute for Construction Training and Development, Sri Lanka, in the ICTAD Bulletin of Construction Statistics.

- (d) “Non Adjustable Elements” means
The work done under the following items, which shall not be considered for computation of price adjustment:
- (i) All items of work listed in Bill No. 01 – Preliminary and General Items
 - (ii) Extra Works and additional work done by order of the Engineer and valued in terms of Clause 12.3 based on prices prevailing at the time such works were executed; and
 - (iii) All works on Provisional Sums where new rate is adopted.
- (e) The “Current Valuation” means the gross value of permanent work duly executed during the current valuation period being reviewed, plus the cost of 80% of necessary materials delivered to Site but not incorporated in the permanent work done.
Calculation as follows:

$$V = (V_c + M_c) - (V_p + M_p)$$
Where V_c = Value of work done in current month
 M_c = Value of 80% Material delivered to site in current month but not incorporated in the Permanent Work.
 V_p = Value of Work done in previous month
 M_p = Value of 80% Material delivered to site in previous month but not incorporated in the Permanent Work of the previous month.
- (f) “Base Indices” means the indices for the input, prevailing one month prior to the latest date for submission of Bids.
- (g) In the case of first interim bill the Current Indices for the purpose of calculation of price adjustment shall be taken as the indices prevailing on the first month after the Commencement of the Contract. For any other interim claim or for the final claim the current indices shall be taken as the indices prevailing for the calendar month, one month after the previous valuation was done.
- (h) The weightings (coefficients) for each of the factors of cost stated in the table(s) of adjustment data shall only be adjusted twice, at any time prior to issuing the Taking-Over Certificate for the whole of the Works, if they have been rendered unreasonable, unbalanced or inapplicable, as a result of Variations.
- (i) Adjustment after the Date of Completion
If the Contractor fails to complete the Works within the Time for Completion, prescribed under clause 8.2 (*Time For Completion*) or 8.4(*Extension of time for completion*) the price adjustment for the work performed after the due date of completion as described above shall be made using the current indices prevailed at the due date for completion
- (j) Adjustment during Performance Based Maintenance Contract

No price adjustment shall be done for work carried out during Performance Based maintenance Period. Contractor shall be paid in accordance with rates quoted in the Bills of Quantities for the respective years of the Performance Based Maintenance Period.

Sub-Clause 14.2 Advance Payments**Add the following Paragraph;**

1st instalment of the advance payment will be made under the certification of the Engineer, after,:

- (i) Provision by the Contractor of the Performance Security in accordance with Sub -Clause 4.2;
- (ii) Submission of Programme, methodology and cash flow estimates as per Sub-Clauses 8.3 and 14.4;
- (iii) Provision by the Contractor of an unconditional on demand bank guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to the advance payment. The bank guarantee shall be obtained either from a;
 - a) Bank located in Sri Lanka and approved by Central Bank of Sri Lanka; or
 - b) Foreign Bank through and confirmed by a Bank located in Sri Lanka which is approved by Central Bank of Sri Lanka.

2nd instalment of the advance payment will be made under the certification of the Engineer, after,:

- (i) after the Contractor's mobilization at the site as mentioned below:
 - (a) Personnel as mentioned in Personnel Requirements (Volume II, Employer's Requirements, Part A)
 - (b) Equipment as mentioned in Equipment Requirements (Volume II, Employer's Requirements, Part A)
- (ii) Provision by the Contractor of an unconditional on demand bank guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to the advance payment. The bank guarantee shall be obtained either from a;
 - a) Bank located in Sri Lanka and approved by Central Bank of Sri Lanka; or
 - b) Foreign Bank through and confirmed by a Bank located in Sri Lanka which is approved by Central Bank of Sri Lanka.

3rd instalment of the advance payment will be made under the certification of the Engineer, after:

- (i) The Contractor has achieved 20% physical progress.
- (ii) Provision by the Contractor of an unconditional on demand bank guarantee in a form and by a bank acceptable to the Employer in amounts and currencies equal to the advance payment. The bank guarantee shall be obtained either from a;
 - a) Bank located in Sri Lanka and approved by Central Bank of Sri Lanka; or
 - b) Foreign Bank through and confirmed by a Bank located in Sri Lanka which is approved by Central Bank of Sri Lanka.

Sub-Clause 14.5: Plant and Materials Intended for the Work.**Add the following at the end of the Sub-Clause 14.5**

All Plant and Material paid for under Sub-Clause 14.5 shall be deemed to be owned by the Employer who shall have the full rights of ownership.

Sub-Clause 14.7: Payment.**Delete and add the last Paragraph;**

Payment of the amount due in each currency shall be made into an ESCROW bank account, nominated by the Contractor, in the payment country (for this currency) specified in the Contract.

Sub-Clause 14.9: Payment of Retention Money**Delete the entire Sub-Clause and replace with the following:**

When the Taking-Over Certificate has been issued for the construction works and all outstanding works as stated in the defects and minor outstanding Works list has been completed, the first half of the Retention Money shall be certified by the Engineer for payment to the Contractor. If a Taking-Over Certificate is issued for a Section or Part of the Works, a proportion of the Retention Money shall be certified and paid. This proportion shall be half (50%) of the proportion calculated by dividing the estimated contract value of the Section or part, by the estimated final Contract Price.

The second half of the Retention Money shall be released at the end of the Performance Based Maintenance period.

On request of the Contractor, once the maximum amount of Retention Money reached, the total amount of Retention Money could be certified for payment by the Engineer against a guarantee presented by the Contractor, in the form acceptable to the Employer and issued by a reputable bank or financial institution selected by the Contractor. The Contractor shall ensure that the guarantee is in the amounts and currencies of the maximum amount of 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 in Sub- Clause 4.2. On receipt by the Employer of the required guarantee, the Engineer shall certify and the Employer shall pay the Retention Money.

Sub-Clause 15.2: Termination by Employer

Add the following new subparagraph as 15.2 (g)

If the delay is more than the period, for which the Maximum Delay Damage is allowed to be applied, the Employer may consider this situation as Contractor's fundamental breach of the Contract, and the Employer may consider Termination of the Contract. The Delay is determined by updating the accepted program with actual progress, after saving the accepted program as a Baseline.

Add the following new subparagraph as 15.2 (h)

The Contractor's Representative shall be at the work site during the contract duration, failure to comply with this requirement will lead to Termination by the Employer as stipulated in GCC 15

Sub-Clause 18.1: General Requirements for Insurances**Add the following at the end of Sub-Clause 18.1:**

"Acceptable to the Employer"

Add the following new subparagraph at the end of Sub-Clause 18.1:

"the Contractor shall takeout separate Workmen's Compensation and Contractor's All Risks Insurance Policy for Performance Based Maintenance period commencing from the date of issue of the Taking over Certificate for the full value of Performance Based Maintenance Work."

Sub-Clause 18.2: Insurance of Works and Contractor's Equipment

Add the following words at the end of paragraph 1 and 3 of Sub-Clause 18.2:

"it being understood that such insurance shall provide for compensation to be payable in currencies required to rectify the loss or damage incurred."

Sub-Clause 18.3: Insurance against Injury to Person and Damage to Property

Add the following new subparagraph after subparagraph 2 of Sub-Clause 18.3:

"The Contractor, subject to Sub-Clause 17.1, shall obtain Professional Indemnity Insurance Policy for amounts stated in the Contract Data and maintain until the Performance Certificate is issued"

Clause 21: Restrictions on Eligibility

Add the following new Sub-Clause 21.1

- (a) Any Plant, Materials or services which will be incorporated in or required for the Works, as well as the Contractor's Equipment and other supplies, shall have its origin in eligible source countries as listed in Part I, Section 5.
- (b) For the purpose of this Sub Clause, "origin" means the place where the materials and equipment were mined, grown, produced, or manufactured, or from which the services are provided.
- (c) The origin of Goods and Services is distinct from the nationality of the Supplier.

Clause 22: Use of Explosives

Add the following new Sub-Clause 22.1

The Contractor shall only use explosives when provided for in the Contract or when ordered or instructed by the Engineer. Where the use of explosives is so provided or ordered or instructed the Contractor shall comply with the requirements of the following provisions of this clause in addition to the laws of Sri Lanka as applicable:

- (1) The Contractor shall at all times take every possible precaution and shall comply with the appropriate laws and regulations relating to the importation, handling, transportation, storage and use of explosives and shall at all times when engaged in blasting operations post sufficient warning flagmen to the satisfaction of the Engineer.
- (2) The Contractor shall at all times maintain full liaison with and inform well in advance and obtain such permission as is required from all Government authorities, public bodies and private parties whatsoever concerned or affected by blasting operations.
- (3) Notwithstanding that the Contractor shall be fully responsible for the consequences of any blasting including injury to personnel and damage to property caused as a result of the use of explosives, the Contractor shall ensure that no injury to personnel occurs and that no damage is inflicted.
- (4) The Contractor shall pay all license fees and charges which may be required for storage or in respect of any other matter whatsoever.

Clause 23: Noise, Disturbance and Pollution**Add the following new Sub-Clause 23.1**

All Works shall be carried out without unreasonable noise and disturbance. The Contractor shall indemnify and keep indemnified the Employer from and against any liability for damages on account of noise or other disturbance created when carrying out the Works and from and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in regard or in relation to such liability.

Clause 24: Customs and Security Requirements**Add the following new Sub-Clause 24.1**

The Contractor shall comply with all regulations for the time being imposed by the Customs and Port Security Authorities in respect of the passage of Equipment, vehicles, Materials, explosives and personnel through Customs and National Security barriers.

Clause 25: Drawings and Photographs of the works**Add the following new Sub-Clause 25.1**

The contractor shall not disclose details of drawings furnished to him and Works on which he is engaged without the prior approval of the Engineer in writing. No photographs of the Works or any part thereof or equipment employed thereon shall be taken or permitted by the Contractor to be taken by any of his Employees or any Employee of his Subcontractor without the prior approval of the Engineer in writing and no such photographs shall be published or otherwise circulated without the approval of the Engineer in writing.

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Section 9 - Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

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Notification of Award

[on letterhead paper of the employer]

Letter of Acceptance

..... date.

To: *Name and address of the contractor*

Subject: *Notification of Award Contract No.*

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 Bid Data Sheet* for the Accepted Contract Amount of the equivalent of *amount in words and figures and name of currency*, as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose the Performance Security Form included in Section 9 (Contract Forms) of the Bidding Document.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Contract Agreement

THIS AGREEMENT made the day of, between *name of the employer*. (hereinafter “the Employer”), of the one part, and *name of the contractor*. (hereinafter “the Contractor”), of the other part:

WHEREAS the Employer desires that the Works known as *name of the contract*. should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein.

The Employer and the Contractor agree as follows:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
 - (a) the Contract Agreement,
 - (b) the Letter of Acceptance,
 - (c) the Letter of Bid,
 - (d) the Variation Nos *insert variation numbers if any*.
 - (e) the Particular Conditions of Contract – Part A,
 - (f) the Particular Conditions of Contract – Part B,
 - (g) the List of Eligible Countries that was specified in Section 5 of the Bidding Document
 - (h) the General Conditions of Contract,
 - (i) the Specifications,
 - (j) the Drawings,
 - (k) the completed Schedules including Bill of Quantities, and
 - (l) any other documents shall be added here.¹
3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of *name of the borrowing country*. on the day, month and year indicated above.

¹ Tables of Adjustment Data may be added if the contract provides for price adjustment (see GCC 13.8).

Signed by

Signed by

for and on behalf of the Employer
in the presence of

for and on behalf the Contractor
in the presence of

Witness, Name, Signature, Address, Date

Witness, Name, Signature, Address, Date

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Performance Security

..... Bank's name, and address of issuing branch or office¹

Beneficiary: *Chairman, Road Development Authority, Maganeguma Mahamedura", Denzil Kobbekaduwa Mawatha, Koswatta, Battaramulla*

Date:

Performance Guarantee No.:

We have been informed that *name of the contractor*. (hereinafter called "the Contractor") has entered into Contract No. *reference number of the contract*. with you, for the execution of *name of contract and brief description of works*. (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we *name of the bank*. hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *name of the currency and amount in words*² (*amount in figures*.) such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the Day of ,³, and any demand for payment under it must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458 (*or ICC Publication No. 758 as applicable*), except that subparagraph (ii) of Sub-article 20(a) is hereby excluded.⁴

.....
Signature(s) and seal of bank (where appropriate)

If the institution issuing the performance security is located outside the country of the employer, it shall have a correspondent financial institution located in the country of the employer to make it enforceable.

¹ All italicized text is for guidance on how to prepare this demand guarantee and shall be deleted from the final document.

² The guarantor shall insert an amount representing the percentage of the contract price specified in the contract and denominated either in the currency(ies) of the contract or a freely convertible currency acceptable to the employer.

³ Insert the date 28 days after the expected completion date. The employer should note that in the event of an extension of the time for completion of the contract, the employer would need to request an extension of this guarantee from the guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [6 months][1 year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

⁴ Or the same or similar to this clause specified in the Uniform Rules for Demand Guarantees, ICC Publication No. 758 where applicable.

Advance Payment Security

Demand Guarantee

[Guarantor letterhead or SWIFT identifier code]

Beneficiary Chairman, Road Development Authority, Maganeguma Mahamedura, Denzil Kobbekaduwa Mawatha, Koswatta, Battaramulla

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 Contractor") 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 Contractor, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ ()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 Contractor:

- (a) has used the advance payment for purposes other than the costs of mobilization in respect of the Works; or
- (b) has failed to repay the advance payment in accordance with the Conditions of Contract, specifying the amount which the Contractor 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 Contractor 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 Contractor 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 and contingencies, has been certified for payment, or on the ____ day of _____, 2____, whichever is

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.

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.

<i>If the institution issuing the advance payment security is located outside the country of the employer, it shall have a correspondent financial institution located in the country of the employer to make it enforceable.</i>

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FORM OF RETENTION MONEY GUARANTEE

.....
[Guarantor's Name, and the Address]

Name of the Contract:.....

Identification No. of the Contract:.....

Beneficiary:

[Name and Address of the Employer of the Contract]

Date:.....

RETENTION MONEY GUARANTEE NO.:.....

We have been informed that [name of the Contractor] (hereinafter called "the Principal") is your contractor of the above Contract and wishes to receive early payment of the retention money, for which the Contract requires him to obtain a Retention Money Guarantee.

At the request of the Principal , we (name of the Guarantor/issuing Agency) hereby irrevocably undertake to pay you, the Beneficiary/Employer, any sum or sums not exceeding in total the amount of [the 'guaranteed amount' in words] (.....) [the 'guaranteed amount' in figures] upon receipt by us of your demand in writing accompanied by a written statement that the Principal has failed to carry out his obligation(s) to rectify certain defect(s) for which he is responsible under the Contract.

The demand and statement must be received by us on or before [28 days after the expected expiry of the Defects Notification Period of the Contract] (the 'expiry date'), when this guarantee shall expire.

We have been informed that in the event of an extension of the Defects Notification Period of the Contract the Beneficiary may require the Principal to extend this guarantee prior to such expiry date. We undertake to pay you such guaranteed amount upon receipt by us before such expiry date, of your written statement that the Defects Notification Period has been extended and that this guarantee has not been extended.

This guarantee shall be governed by the laws of the Democratic Socialist Republic of Sri Lanka and shall be subject to the Uniform Rules for Demand Guarantees, published as number 458 by the International Chamber of Commerce, except as stated above.

.....
[signature(s)]

Date :.....