

Republic of Ghana

MINISTRY OF ROADS AND HIGHWAYS
DEPARTMENT OF URBAN ROADS

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC
MANAGEMENT AND ROADS COMPLETION PROJECT

CONTRACT DOCUMENT

for

LA BEACH ROAD COMPLETION PROJECT, PH.1

(Tema Road: Independent Arch to Nungua Barrier – 16.00km)

Contract No. DUR/CDB/AMA-LEKMA/AITMSRCP/WKS/04/12

VOLUME 1

The Director
Department of Urban Roads
PMB, Ministries
Accra

October 2012

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Renewed contract agreement

2018

*In case of reply the number
and the date of this letter
should be quoted*
Tel: No. 233-(0)302-671328,
Fax No. 233-(0)302-688759
Url: www.mrt.gov.gh
Email: info@mrt.gov.gh



REPUBLIC OF GHANA

MINISTRY OF ROADS &
HIGHWAYS
P. O. BOX M.57
ACCRA
GHANA

My Ref No.....

29th June 2018

Your Ref. No.....

**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT AND ROADS
COMPLETION PROJECT**

LA BEACH ROAD COMPLETION PROJECT PH. 1
(TEMA ROAD: INDEPENDENT ARCH TO NUNGUA BARRIER – 16KM)

SUBMISSION OF SIGNED SUPPLEMENTARY CONTRACT AGREEMENT

We forward herewith a copy of the signed Supplementary Contract Agreement for the above mentioned project for your retention.

Counting on your usual cooperation.

A handwritten signature in black ink, appearing to be 'Ibrahim Seidu'.

IBRAHIM SEIDU
DIRECTOR, PROCUREMENT
FOR: MINISTER

THE MANAGING DIRECTOR
CHINA GANSU INT. CORPORATION FOR ECONOMIC
AND TECHNICAL COOPERATION,
NO. 575 XIJIN EAST ROAD, QILIHE DISTRICT,
LANZHOU CITY, GANSU PROVINCE,
P.R. CHINA

THE DIRECTOR
DUR, ACCRA

THE CHIEF LEGAL OFFICER
MRH, ACCRA

THE DIRECTOR, PROCUREMENT, MRH

THE DIRECTOR OF FINANCE
MRH, ACCRA

PROG

SUPPLEMENTARY CONTRACT AGREEMENT

TO CONTRACT

FOR THE

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT AND ROADS

COMPLETION PROJECT--LA BEACH ROAD COMPLETION PROJECT PH.1

(Tema Road: Independent Arch to Nungua Barrier – 16.00km)

This Supplementary Contract Agreement is signed on 28th June of 2018 between:

THE MINISTRY OF ROADS AND HIGHWAYS represented by THE DEPARTMENT OF URBAN ROADS AT NO. 1 FOREIGN AFFAIRS ROAD, OPPOSITE REGISTRAR-GENERAL'S DEPARTMENT, PRIVATE MAIL BAG, MINISTRIES, ACCRA (hereinafter "**THE EMPLOYER**"), of the one party,

And

CHINA GANSU INTERNATIONAL CORPORATION FOR ECONOMIC AND TECHNICAL COOPERATION, having its registered office at NO. 575 XIJIN EAST ROAD, QILIH DISTRICT, LANZHOU CITY, GANSU PROVINCE, P.R. CHINA (hereinafter "**THE CONTRACTOR**"), of the other party:

WHEREAS:

The Employer and the Contractor signed on 24th December 2012 the Contract Document for the Works known as **ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT AND ROADS COMPLETION PROJECT – LA BEACH ROAD COMPLETION PROJECT PH.1** with contract identification no. **DUR/CDB/AMA-LEKMA/AITMSRCP/WKS/04/12 (THE CONTRACT DOCUMENT)**, with a validity period of eighteen (18) months, pending conditions precedent, which expired on 24th June 2014. This validity period was subsequently extended by a further eighteen (18) months, expiring on 24th December 2015.

NOW:

1. Both the Employer and the Contractor mutually agree to enter into a Supplementary Agreement to confirm that the **Contract Document** is still valid, and hereby update the Conditions as defined in Section-I (Contract Agreement) Clause 7, to "The Employer shall promptly confirm to the contractor the date on which all of these conditions in Clause 6 have been satisfied. If any of these conditions have not been satisfied by 24th December 2019, this Agreement shall be void and ineffective and any securities issued in relation to the above Works shall be returned."



2. "Construction of Accra Intelligent Traffic Control Centre", "Accra Metropolitan Area Junction Improvement Works", "Design and Supervision of Accra Traffic Control Center" and "Supervision of Accra Metropolitan Area (AMA) Intelligent Traffic Management Project" are addition to original Contract Agreement as provisional sum. See attached Project Overview and BoQ for additional work.

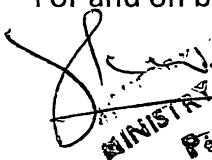
Total Sum of this Contract Agreement is updated as below:

Description	Sum (US\$)
ORIGINAL CONTRACT SUM	
La Beach Road Completion Project – PH. 1	46,800,000.00
Sub-total	46,800,000.00
ADDITIONAL CONTRACT SUM	
Construction of Accra Intelligent Traffic Control Centre (see attachment 1)	10,000,000.00
Accra Metropolitan Area Junction Improvement Works (see attachment 2)	19,500,449.00
Design and Supervision of Accra Traffic Control Center Supervision of Accra Metropolitan Area (AMA) Intelligent Traffic Management Project	5,500,000.00
Sub-total	35,000,449.00
TOTAL SUM	81,800,449.00

3. The Total Advance Payment of the Contract adjusts to 15% of the Accepted Contract Amount and payable in the same currency.
4. All other terms and conditions of the original Contract Agreement remain unchanged and valid.

IN WITNESS whereof, this Supplementary Contract Agreement has been signed in two original by the authorized signatories of both the parties and become effective from the day and year first above written.

For and on behalf of the Employer


MINISTRY OF ROADS AND HIGHWAYS
P.O. BOX 2000
ACCRA

Authorized representative
Ministry of Roads and Highways,

Witness:



Name: Abass M. Awolu

Designation: Director - DOR

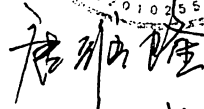
Date: 28th June, 2018

For and on behalf of the Contractor




Authorized Representative
China Gansu International Corporation
For Economic and Technical Cooperation

Witness:



Name: Tang Weilong

Designation: Manager

Date: 2018.6.28

Renewed Contract Agreement

2015

**SUPPLEMENTARY CONTRACT AGREEMENT TO
CONTRACT**

FOR THE

**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT AND ROADS
COMPLETION PROJECT**

LA BEACH ROAD COMPLETION PROJECT PH.1

(Tema Road: Independent Arch to Nungua Barrier-16.00km)

This Supplementary Contract Agreement is signed on 26th June of 2014 between:

THE MINISTRY OF ROADS AND HIGHWAYS Represented By **THE DEPARTMENT OF URBAN ROADS**
AT NO. 1 FOREIGN AFFAIRS ROAD, OPPOSITE REGISTRAR-GENERAL'S DEPARTMENT, PRIVATE
MAIL BAG, MINISTRIES, ACCRA (hereinafter "THE EMPLOYER"), of the one party,

And

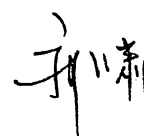
**CHINA GANSU INTERNATIONAL CORPORATION FOR ECONOMIC AND TECHNICAL
COOPERATION.**, having its registered office AT NO. 573 XINJIN EAST ROAD, QILIHE DISTRICT,
LANZHOU CITY, GANSU PROVINCE, P.R. CHINA (hereinafter "THE CONTRACTOR"), of the other
party:

WHEREAS:

The Employer and the Contractor signed on 24 December 2012 the Contract Agreement for the Works known as **ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT AND ROADS COMPLETION PROJECT - LA BEACH ROAD COMPLETION PROJECT PH.1** with contract identification no. **DUR/CDB/AMA-LEKMA/AITMSRCP/WKS/04/12 (THE CONTRACT AGREEMENT)**, with a validity contract period of eighteen (18) months pending conditions precedent, and thus expiring on 24th June 2014.

NOW:

1. Both the Employer and the Contractor mutually agree to enter into a Supplementary Agreement to extend the validity period of the above mentioned Contract Agreement pending same conditions precedent for another period (18) months thus making a total validity period of 36 months.

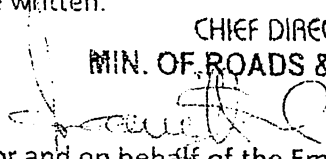



"The validity period of the Contract Agreement is hereby extended for Eighteen (18) months from the 24th June 2014 to expire on 24th December 2015.

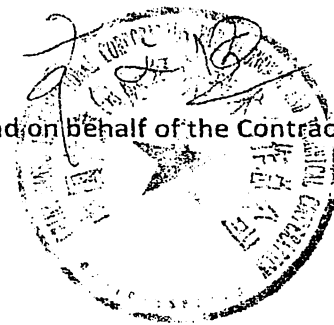
2. All other terms and conditions of the original Contract Agreement remain unchanged.

IN WITNESS whereof, this Supplementary Contract Agreement has been signed in two original by the authorized signatories of both the parties and become effective from the day and year first above written.

CHIEF DIRECTOR
MIN. OF ROADS & HIGHWAYS

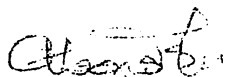

For and on behalf of the Employer


For and on behalf of the Contractor



Authorize Representative
Ministry of Roads and Highways,

China Gansu International Corporation
For Economic and Technical Cooperation
Authorized Representative of MBEC



Witness:

Abdass M. Awdu

Name:

Director

Designation:

Date: 27th June 2014

Witness:



Name: Wang Guangrui

Designation: Assistant of General Manager

Date: 27th June, 2014



Section I - Contract Agreement

Section I. Contract Agreement

THIS AGREEMENT made the 24th day of December, 2012, between

THE MINISTRY OF ROADS AND HIGHWAYS represented by the **DEPARTMENT OF URBAN ROADS** of No. 1 Foreign Affairs Road, opposite Registrar-General's Department, Private Mail Bag, Ministries, Accra (hereinafter "the Employer"), of the one part,

and

CHINA GANSU INTERNATIONAL CORPORATION FOR ECONOMIC AND TECHNICAL COOPERATION of No. 573 Xinjin East Road, Qilihe District, Lanzhou City, Gansu Province, P. R. China (hereinafter "the Contractor"), of the other part:

WHEREAS the Employer desires that the Works known as **ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT AND ROADS COMPLETION PROJECT - LA BEACH ROAD COMPLETION PROJECT, PHASE 1** with contract identification no. **DUR/CDB/LEKMA-TMA/AITMSRCP/WKS/04/12** 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:

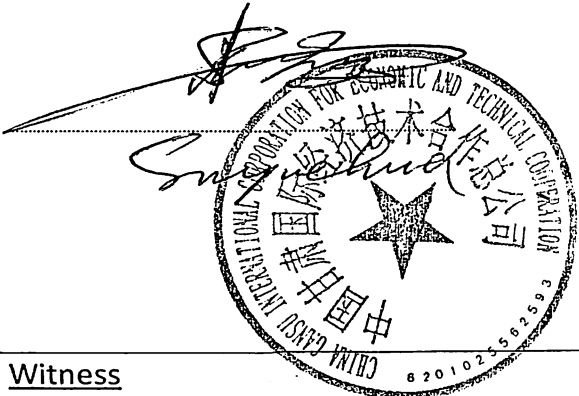
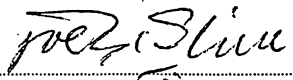

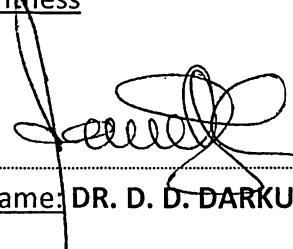
1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
 - (i) the Letter of Acceptance
 - (ii) the Letter of Bid
 - (iii) the Particular Conditions
 - (iv) the General Conditions;
 - (v) the Specification
 - (vi) the Drawings; and
 - (vii) the Bills of Quantities
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.

Section I. Contract Agreement

4. The Employer hereby covenants to pay the Contractor an amount in the sum of **Forty Six Million, Eight Hundred Thousand United States Dollars (US\$ 46,800,000.00)** in consideration of the execution and completion of the Works in **Twenty-Four (24) Months** 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.
5. The Contract Price shall be paid in **United States Dollars (US\$)**.
6. The Contract shall come into full force and effect on the date when all the following conditions precedent have been fulfilled and satisfied:
 - Signing of the applicable GOG-CDB Subsidiary Loan Agreement
 - Signing of the Contract Agreement
 - Approvals by the relevant Ghanaian governmental agencies
 - Submission of the Performance Security by the Contractor to the Employer as per the provisions of Clause 4.2 of the Conditions of Contract
 - Receipt of notification by the Contractor with a copy to the Employer stating that the Loan Agreement has been signed.
7. The Employer shall promptly confirm to the Contractor the date on which all of these conditions have been satisfied. If any of these conditions have not been satisfied within **Eighteen (18) Months** of the above-mentioned date on which this Agreement is made, this Agreement shall be void and ineffective and any securities issued in relation to the above Works shall be returned.

Section I. Contract Agreement

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Ghana on the day, month and year indicated above.

<p>For and on behalf of the Contractor</p>	<p>For and on behalf of the Employer</p>
	<p>----- HON. JOE GIDISU MINISTER Ministry of Roads & Highways</p>  <p>----- HON. JOE GIDISU (MP) MINISTER FOR ROADS AND HIGHWAYS, REPUBLIC OF GHANA</p>
<p><u>Witness</u></p>  <p>----- Name: <i>Lin Kanton</i></p> <p>Designation: <i>Q.S; GGTCOP</i></p> <p>Date: <i>2012-10-29</i></p>	<p><u>Witness</u></p>  <p>----- Name: DR. D. D. DARKU</p> <p>Designation: DIRECTOR, DEPARTMENT OF URBAN ROADS</p> <p>Date:</p>

Section II - Letter of Acceptance



Republic of Ghana
DEPARTMENT OF URBAN ROADS
HEAD OFFICE

Private Mail Bag
Ministries Post Office
Accra

In case of reply the number
and date of this letter
should be quoted.

Our Ref No. DUR/10/E.B./N/5/107

Your Ref. No.....

16th October 2012

Tel: 233-21-685680/9

Fax 233-21 685683

The Chairman
China Gansu International Corporation for Economic and Technical Cooperation
No. 573 Xinjin East Road, Qilihe District
Lanzhou City, Gansu Province
China.

Dear Sir,

LETTER OF ACCEPTANCE

**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT AND ROADS
COMPLETION PROJECT**

**LA BEACH ROAD COMPLETION PROJECT, PHASE 1 (Tema Road: Independent Arch to Nungua
Barrier – 16.00Km)**

I have the pleasure to inform you that DUR Entity Tender Committee at its meeting on 10th October, 2012 has given approval for your proposal dated 3rd October, 2012 for the execution of the above-mentioned-works for the Accepted Contract Amount of **Forty-Six Million, Eight Hundred Thousand United States Dollars (US\$ 46,800,00.00)**, for completion in **Twenty-Four (24) Calendar Months** pursuant to the Public Procurement Authority's approval letter referenced PPA/CEO/564/12 dated 10th April, 2012.

Payment for the contract will be made in the currencies of the proposal.

Possession of the site shall be given to you after the signing of the contract.

The Engineer for the project shall be Arcscale Consult in association with China Bridge Reconnaissance and Design Institute.

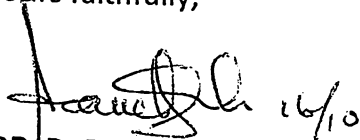
You are however required under the contract to submit to this office the Performance Security addressed to the Honourable Minister of Roads and Highways, P.O. Box M57, Ministries, Accra within Twenty-Eight (28) days from the date of the Signing of applicable GoG-CDB Loan Agreement in accordance with the Conditions of Contract.

The Performance Security shall be in the form of a bank guarantee from an acceptable financial institution amounting to **Four Million, Six Hundred and Eighty Thousand United States Dollars (US\$ 4,680,000.00)**, being Ten Percent (10%) of the Accepted Contract Amount.

You are entitled to and may apply under Clause 14.2 of the Conditions of Contract for an Advance Loan of **Nine Million, Three Hundred and Sixty Thousand United States Dollars (US\$ 9,360,000.00)** being Twenty Percent (20%) of the Accepted Contract Amount.

The Contract Documents are ready for signing. You may inspect the documents at our offices prior to signing them.

Yours faithfully,



DR. D. D. DARKU
DIRECTOR

- Cc:
- The Hon. Minister, MRH, Accra
 - The Hon. Minister, MOFEP, Accra
 - The Hon. Minister, GAR, Accra
 - The Director of Procurement, MRH, Accra
 - The Chief Executive, Public Procurement Authority, Accra
 - The Auditor-General, Ghana Audit Service, Accra
 - The Team Leader, Presidential Task Force on CDB Loan, Accra
 - The Hon. Metropolitan Chief Executive, AMA, Accra
 - The Secretary, Entity Tender Committee, DUR, Accra
 - The Deputy Director, Planning and Development, D.U.R, Accra
 - The Deputy Director, Finance and Administration, D.U.R, Accra
 - The Contracts Manager, D.U.R, Accra
 - The Chief Accountant, D.U.R, Accra
 - The Internal Auditor, DUR, Accra
 - The Metropolitan Roads Engineer, AMRD, Accra

Section III - Letter of Bid, Appendix to Bid & Power of Attorney

中国甘肃国际经济技术合作总公司

CHINA GANSU INTERNATIONAL CORPORATION FOR ECONOMIC AND TECHNICAL COOPERATION

No.575 Xijin East Road, Qilihe District,

Tel: +86-931-2653950

Lanzhou City, Gansu Province, China

Fax: +86-931-2658644

The Director

Department of Urban Roads

2nd Floor, Room No.301

No.1 Foreign Affairs Road

Accra

**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT RPROJECT AND
ROADS COMPLETION PROJECT**

LA BEACH ROAD COMPLETION PROJECT PH.1

LETTER OF BID

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Document, including Addenda issued in accordance with Instructions to Bidders (ITB)8;
- (b) We offer to execute in conformity to the Bidding Document the following Works:
**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT AND ROADS
COMPLETION PROJECT: LA BEACH ROAD COMPLETION PROJECT PH.1**
- (c) The total price of our Bid, excluding any discounts offered in item (d) below is: USD 46,800,000.00 (FORTY SIX MILLION, EIGHT HUNDRED THOUSAND UNITED STATES DOLLARS);
- (d) The discounts offered and the methodology for their application are: None;
- (e) Our bid shall be valid for a period of 180 days from the date fixed for the bid submission deadline in accordance with the Bidding Document, 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 Document;

- (g) We, including any subcontractors or suppliers for any part of the contract, have or will 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 or as a subcontractor, in more than one bid in this bidding process in accordance with ITB 4.3, other than alternative offers submitted in accordance with ITB 13;
- (j) We, including any of our subcontractors or suppliers for any part of the contract, have not been declared ineligible by the Agency, 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 entity/We are a government owned entity 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:

Name of Recipient	Address	Reason	Amount
<u>None</u>	<u>None</u>	<u>None</u>	<u>None</u>
_____	_____	_____	_____

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

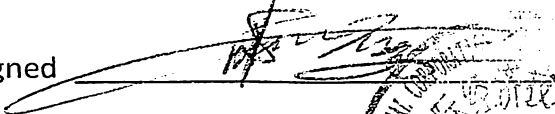
- (m) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (n) We understand that you are not bound to accept the lowest evaluated bid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

¹ Bidder to use as appropriate

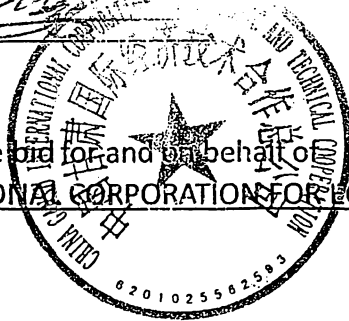
Name Su Yuehua

In the capacity of Managing Director

Signed



Duly authorized to sign the bid for and on behalf of
CHINA GANSU INTERNATIONAL CORPORATION FOR ECONOMIC AND TECHNICAL
COOPERATION



Dated on 3rd day of OCTOBER, 2012

Section IV - Particular Conditions of Contract

Section IV - Particular Conditions of Contract

Section IV. Particular Conditions of Contract

The following Particular Conditions shall supplement the GC. Whenever there is a conflict, the provisions herein shall prevail over those in the GC.

Part A - Contract Data

Conditions	Sub-Clause	Data
Employer's name and address	1.1.2.2 & 1.3	The Ministry of Roads and Highways, acting through, the Director Department of Urban Roads, Room No. 301, 2 nd Floor, No. 1 Foreign Affairs Road, Attention: Dr. D. D. Darku
Engineer's name and address	1.1.2.4 & 1.3	Arcscale Consult in association with China Bridge Reconnaissance and Design Institute
Agency's name	1.1.2.11	China Development Bank for Cooperation (CDB)
Borrower's name	1.1.2.12	Government of the Republic of Ghana
Time for Completion	1.1.3.3	Twenty-Four (24) Months
Defects Notification Period	1.1.3.7	365 days.
Sections	1.1.5.6	Not Applicable
Electronic transmission systems	1.3	Not Applicable
Governing Law	1.4	Republic of Ghana
Ruling language	1.4	English
Language for communications	1.4	English
Time for the Parties entering into a Contract Agreement	1.6	
Time for access to the Site	2.1	Seven (7) days after Commencement Date
Engineer's Duties and Authority	3.1(b)(ii)	Variations resulting in an increase of the Accepted Contract Amount in excess of 10% shall require approval of the Employer.
Performance Security	4.2	The performance security shall be in the form of a demand guarantee in the amounts of Ten (10) percent of the Accepted Contract Amount and in the same currency of the Accepted Contract Amount.

Conditions	Sub-Clause	Data
Normal working hours	6.5	07:30 to 17:00 Hours GMT
Delay Damages for the Works	8.7 & 14.15(b)	0.025% of the Accepted Contract Amount per day.
Maximum amount of Delay Damages	8.7	5% of the Accepted Contract Amount.
Total advance payment	14.2	20% Percentage of the Accepted Contract Amount and payable in the same currency
Repayment amortization rate of advance payment	14.2(b)	20% of the amount of each Interim Payment Certificate
Percentage of Retention	14.3	10%
Limit of Retention Money	14.3	5% of the Accepted Contract Amount
Plant and Materials	14.5(b)(i)	If Sub-Clause 14.5 applies: Plant and Materials for payment Free on Board; Bitumen Reinforcing Steel Cement Joint Materials W-Section Crash Barrier Road Marking Thermoplastic Paint Road Marking Glass Beads
	14.5(c)(i)	Plant and Materials for payment when delivered to the Site; Bitumen Cement Reinforcing Steel Hydrated Lime PVC Pipes and Fittings Road sign Materials
Minimum Amount of Interim Payment Certificates	14.6	2% of the Accepted Contract Amount.

Conditions	Sub-Clause	Data
Publishing source of commercial interest rates for financial charges in case of delayed payment	14.8	<u>Local Currency Payments</u> Bank of Ghana's DMB Lending Rate for Construction plus Two (2) percent. <u>Foreign Currency Payment</u> London Inter-Bank On-Lending Rate (LIBOR) plus One (1) percent.
Maximum total liability of the Contractor to the Employer	17.6	The product of 1.1 times the Accepted Contract Amount.
Periods for submission of insurance: a. evidence of insurance. b. relevant policies	18.1	<u>14</u> days <u>21</u> days
Maximum amount of deductibles for insurance of the Employer's risks	18.2(d)	The equivalent of US\$ 5,000
Minimum amount of third party Insurance	18.3	US\$100,000.00 per occurrence with the number of occurrences unlimited.
Date by which the DB shall be appointed	20.2	28 days after the Commencement date
The DB shall be comprised of	20.2	Three (3) Members
List of potential DB sole members	20.2	None
Appointment (if not agreed) to be made by	20.3	Ghana Institution of Engineers/Ghana Institution of Surveyors/Ghana Arbitration Centre
Rules of arbitration	20.6(a)	Rules in force and effect by the London Court of International arbitration; Seat of Arbitration: London, Great Britain

Table: Summary of Sections

Section Name/Description (Sub-Clause 1.1.5.6)	Time for Completion (Sub-Clause 1.1.3.3)	Damages for Delay (Sub-Clause 8.7)
NOT APPLICABLE		

Part B - Specific Provisions

Sub-Clause 1.1.1 The Contract	Sub-Clause 1.1.1.8 is amended by the addition of the following words at the end; "The word 'Tender' is synonymous with 'Bid' and the words 'Tender Documents' with 'Bidding Documents'."
Sub-Clause 1.5 Priority of Documents	Delete the documents listed and substitute: (a) the Contract Agreement, (b) the Letter of Acceptance, (c) the Bid, (d) the Particular Conditions – Part A, (e) the Particular Conditions – Part B (f) the General Conditions (g) the Specification, (h) the Drawings (i) the Bills of Quantities and (j) any related/relevant documents forming part of the Contract
Sub-Clause 4.4 Subcontractors	Add the following to Sub-Clause 4.4 "The Contractor shall be responsible for observance by his sub-Contractors of Clause 6 [Staff and Labour]."
Sub Clause 6.2 Rates of Wages and Conditions of Labour	Add the following to Sub-Clause 6.2 "The Contractor shall pay his employees promptly and regularly at the customary intervals and all employees shall be paid in full and up to date before the issue of the Performance Certificate."
Sub Clause 6.4 Labour Laws	Add the following to Paragraph 3 of Sub-Clause 6.4 "The Contractor shall comply in all respects with the requirements of all laws for the time being in force and shall ascertain from the Labour Department and shall strictly comply with all the regulations written or otherwise of the Commissioner of Labour or any of his duly appointed representatives affecting the employment of any class of employee under this contract and from time to time in force."

Sub-Clause 6.7 Health and Safety	Add the following to Sub-Clause 6.7 “The Contractor and any Sub-Contractor engaged in the performance of the contract shall provide and equip, as appropriate, all workers in hazardous occupations with protective clothing, gloves, goggles, masks, footwear and headgear manufactured to such a standard as to ensure adequate protection against injury and accident.”
Sub-Clause 6.11 Disorderly Conduct	Add the following to Sub-Clause 6.11 “The Contractor shall neither be entitled to institute his own Police Force nor interfere with members of the Ghana Police Service who shall have free and undisputed access at all times to any part of the Works in the execution of their duties.”
	Add the following Sub-clauses 6.23, 6.24 and 6.25 after Sub-clause 6.22
Sub-Clause 6.23 Workers’ Organizations	In countries where national law recognizes workers’ rights to form and to join workers’ organizations of their choosing without interference and to bargain collectively, the Contractor shall comply with national law. Where national law substantially restricts workers’ organizations, the Contractor shall enable alternative means for 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 national law is silent, the Contractor shall not discourage workers from forming or joining workers’ organizations of their choosing or from bargaining collectively, and will not discriminate or retaliate against Contractor’s Personnel who participate, or seek to participate, in such organizations and bargain collectively. The Contractor shall engage with such workers representatives. Worker organizations are expected to fairly represent the workers in the workforce.
Sub-Clause 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 will 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 national law provides for non-discrimination in employment, the Contractor shall comply with national law. When national 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 inherent requirements of the job will not be deemed discrimination.

Sub-Clause 6.25 Epidemics	<p>'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, or the local medical or sanitary authorities for the purpose of dealing with and overcoming the same.'</p>
Sub-clause 13.8 Adjustments for Changes in Cost	<p>Delete Sub-Clause 13.8 [Adjustment for Changes in Cost] and substitute with the following:</p> <p>"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.</p> <p>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.</p> <p>The amount to be added to or deducted from the Interim Payment Certificates in respect of changes in cost and legislation shall be determined from formulae for each of the currencies of payment and each of the types of construction work to be performed and plant to be supplied.</p> <p>The formula to be applied to local currency will be of the following type:</p> $P_L = X + a \cdot \frac{LL}{LL_0} + b \cdot \frac{PL}{PL_0} \times \frac{FE}{FE_0} + c \cdot \frac{FU}{FU_0} + d \cdot \frac{BI}{BI_0} + e \cdot \frac{CE}{CE_0} + f \cdot \frac{RS}{RS_0} + g \cdot \frac{TI}{TI_0} + h \cdot \frac{CH}{CH_0} + i \cdot \frac{PC}{PC_0} + j \cdot \frac{CO}{CO_0}$ <p>Where "P_L" is the adjustment factor to be applied to the local currency component of the estimated value of the work carried out in month;</p> <p>"X" is a fixed coefficient, stated in the relevant table of adjustment data, representing the non-adjustable portion in contractual payments;</p> <p>"a", "b", "c", etc., are coefficients representing the estimated proportion of each local cost element (labour, materials, etc.,) in the Works or sections thereof, net of Provisional Sums, stated in the relevant table of adjustment data; such tabulated cost elements may be indicative of resources such as labour, equipment and materials;</p> <p>"LL", "PL", "FE", "FU", "BI", "CE", "RS", "CH", "TI", "PC", "CO" are the current cost indices for the month corresponding to reference prices</p>

applicable, respectively, to the elements of local labour, provision and maintenance of Construction Plant, foreign exchange rate, fuel, bitumen, cement, reinforcing steel, timber, chippings, precast concrete pipes and consumer index 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

"LL₀", "PL₀", etc., are the base cost indices or reference prices corresponding to LL, PL etc. which is applicable to the relevant tabulated cost element on the Base Date.

The formula to be applied to **foreign currency** will be of the following general type:

$$P_F = X + a \cdot \frac{EL}{EL_0} + b \cdot \frac{PLF}{PLF_0} + c \cdot \frac{PS}{PS_0} + d \cdot \frac{SG}{SG_0} + e \cdot \frac{CE}{CE_0} + f \cdot \frac{RS}{RS_0} + g \cdot \frac{TI}{TI_0} + h \cdot \frac{MT}{MT_0} + i \cdot \frac{MI}{MI_0}$$

Where "P_F" is the adjustment factor to be applied to the foreign currency component of the estimated value of the work carried out in any month;

"X" is a fixed coefficient, stated in the relevant table of adjustment data, representing the non-adjustable portion in contractual payments;

"a", "b", "c", etc., are coefficients representing the estimated proportion of each foreign cost element (labour, materials, etc.,) in the Works or sections thereof, net of Provisional Sums, stated in the relevant table of adjustment data; such tabulated cost elements may be indicative of resources such as labour, equipment and materials;

"EL", "PLF", "PS", "SG", "CE", "RS", "TI", "MT", "MI" are the current cost indices for the month corresponding to reference prices applicable, respectively, to the elements of expatriate labour, provision and maintenance of foreign construction plant, pre-stressing tendons, steel girders, imported cement, imported reinforcing steel, imported formwork, maritime transport, and miscellaneous foreign expenditures 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

"EL₀", "PLF₀", "PS₀", etc., are the base cost indices or reference prices corresponding to EL, PLF etc. which is applicable to the relevant tabulated cost element on the Base Date.

If the adjustment is applied to payments made in a currency other than the currency of the source of the index for a particular indexed input, a correction factor will be applied, as follow:

$$P_a = P_x \frac{Z_o}{Z}$$

Where:

P_a = Final Price Adjustment factor,

Z_o = Number of units of the currency of the country of the index, equivalent to one unit of the currency of payment on the date of the base index

Z = The corresponding number of such currency units on the date of the current index

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 Employer. For this purpose, reference shall be made to the values of the indices at stated dates (quoted in the fourth and fifth columns respectively of the table) 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" (stated in the table) 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".

<p>Sub-Clause 14.1 The Contract Price</p>	<p>Amend Sub- Clause 14.1(e) as follows: (e) Notwithstanding the provisions of subparagraph (b), Contractor's Equipment, including essential spare parts therefore, imported by the Contractor for the sole purpose of executing the Contract shall be temporarily exempt from the payment of import duties and taxes upon initial importation, provided the Contractor shall post with the customs authorities at the port of entry an approved export bond or bank guarantee, valid until the Time for Completion plus six months, in an amount equal to the full import duties and taxes which would be payable on the assessed imported value of such Contractor's Equipment and spare parts, and callable in the event the Contractor's Equipment is not exported from the Country on completion of the Contract. A copy of the bond or bank guarantee endorsed by the customs authorities shall be provided by the Contractor to the Employer upon the importation of individual items of Contractor's Equipment and spare parts. Upon export of individual items of Contractor's Equipment or spare parts, or upon the completion of the Contract, the Contractor shall prepare, for approval by the customs authorities, an assessment of the residual value of the Contractor's Equipment and spare part to be exported, based on the depreciation scale(s and other criteria used by the customs authorities for such purposes under the provisions of the applicable Laws. Import duties and taxes shall be due and payable to the customs authorities by the Contractor on (a) the difference between the initial imported value and the residual value of the Contractor's Equipment and spare parts to exported; and (b) on the initial imported value that Contractor's Equipment and spare parts remaining in the Country after completion of the Contract. Upon payment of such dues within 28 days of being invoiced, the bond or bank guarantee shall be reduced or released accordingly; otherwise the security shall be called in the full amount remaining.</p>
<p>Sub-Clause 14.8 Delayed Payment</p>	<p>Delete Paragraph three (3) of sub-clause 14.8 and substitute with the following: "The Contractor shall be entitled to this payment which shall be included in the next interim payment Certificate due, and without prejudice to any other right or remedy".</p>

Schedule of Adjustment Data

The completed schedule shall be submitted as part of the proposed cost of the Detailed Design and shall be of the form in the Tables below.

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

Table A. Local Currency (Ghana Cedi)

Index code	Index description	Source of index	Base Index		Contractor's related currency amount	Contractor's proposed weighting
			Value	Date		
X	Nonadjustable	—	—		—	0.10
LL	Local Labour	MRH				a
PL	Provision and maintenance of construction plant	MRH				b
FE	Foreign exchange	MRH				
FU	Fuel	MRH				c
BI	Bitumen	MRH				d
CE	Cement	MRH				e
RS	Reinforcing Steel	MRH				f
TI	Timber	MRH				g
CH	Chippings	MRH				h
PC	Precast Concrete pipes	MRH				i
CO	Consumer Index	MRH				j
Total						

* If the Base Value is provisional it should be indicated as such. The Base Cost Indices shall be those prevailing on the day 28 days prior to the closing date for submission of bids.

** Ministry of Roads and Highways

With reference to factors for price adjustment formulae pursuant to Clause 13.8 in the Specific Provisions, the Engineer's assessment of weightings/coefficients (excluding provisional sums) for Work Sections are as follows:

Work Section	Resources										Non Adjustable
	Labor	Plant	Materials								
	LL	PL	FU	BI	CE	RS	TI	CH	PC	CO	
Site Clearance	0.03	0.65	0.11	-	-	-	-	-	-	0.11	0.10
Earthworks	0.02	0.63	0.13	-	-	-	-	-	-	0.12	0.10
Concrete works	0.04	0.05	0.01	-	0.35	-	-	0.34	-	0.11	0.10
Formwork	0.15	-	-	-	-	-	0.50	-	-	0.25	0.10
Reinforcing Steel	0.04	0.06	0.02	-	-	0.65	-	-	-	0.13	0.10
Precast concrete pipes	0.02	0.17	0.05	-	0.01	-	-	-	0.52	0.13	0.10
Paving – sub base, base	0.02	0.63	0.13	-	-	-	-	-	-	0.12	0.10
Surfacing – primer seal, seal	0.04	0.02	0.01	0.72	-	-	-	-	-	0.11	0.10
Surfacing – precoated chippings	0.16	0.16	0.06	0.15	-	-	-	0.20	-	0.14	0.10
Haulage of aggregates	0.02	0.58	0.18	-	-	-	-	-	-	0.12	0.10
General Items	0.08	0.22	0.04	-	0.05	0.02	0.02	0.08	-	0.33	0.10

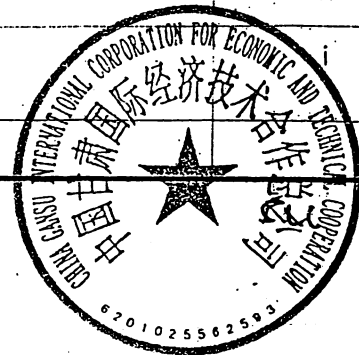
The weightings/coefficients provided in the table above are the Engineer's assessment and is provided as a guide only. The Contractor is to propose their own weightings based on their cost structures and sources of inputs.

Table B. Foreign Currency (FC)

State type:

Index code	Index description	Source of index	Base Index		Contractor's related currency amount	Contractor's proposed weighting
			Value	date		
X	Nonadjustable	—	—	—	—	0.10
EL	Expatriate Labour	http://www.bls.gov	114.4	JUN,12		a
PLF	Provision and maintenance of foreign construction plant	http://www.bls.gov	205.4	SEP,12		b
PS	Prestressing tendons	http://www.bls.gov	203.3	SEP,12		c
SG	Steel Girders	http://www.bls.gov	203.3	SEP,12		d
CE	Imported Cement	http://www.bls.gov	190.7	SEP,12		e
RS	Imported Reinforcing Steel	http://www.bls.gov	203.3	SEP,12		f
TI	Imported Formwork	http://www.bls.gov		SEP,12		g
MT	Maritime Transport	http://www.bls.gov	135.8	SEP,12		h
MI	Miscellaneous Foreign Expenditure	http://www.bls.gov	236.1	SEP,12		i
Total						

* If the Base Value is provisional it should be indicated as such.



Performance Bank Guarantee (Unconditional)

To: The Hon. Minister
Ministry of Roads and Highways
P.O.Box M. 57, Accra

Dear Sir,

WHEREAS _____ [*name and address of Contractor*]
(hereinafter called "the Contractor") has undertaken, in pursuance of Contract No. ____ dated
the ____ day of _____, 20__ to execute _____
[*name of Contract and brief description of Works*] (hereinafter called "the Contract.");

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

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

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

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

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

This guarantee shall be valid until a date 28 days from the date of issue of the Taking-Over Certificate.

SIGNATURE AND SEAL OF THE GUARANTOR:

Name of Bank: _____
Address: _____
Date: _____

Bank Guarantee for Advance Payment

To: The Hon. Minister
Ministry of Roads and Highways
P.O.Box M. 57, Accra

Dear Sir,

**BANK GUARANTEE FOR ADVANCE MOBILISATION
NAME OF CONTRACT:**

In accordance with the provisions of the Conditions of Contract, Clause 14.2 ("Advance Payment") of the above-mentioned Contract, _____
_____ [name and address of Contractor] (hereinafter called "the Contractor") shall deposit with MINISTRY OF ROADS AND HIGHWAYS an unconditional and irrevocable Bank Guarantee to guarantee the Contractor's proper and faithful repayment of the Advance Mobilization monies amounting to _____
[amount of Guarantee] _____ [amount in words].

We, the _____ [Bank], as instructed by the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to the MINISTRY OF ROADS AND HIGHWAYS on their first demand without whatsoever right of objection on our part and without their first claim to the Contractor, in the amount not exceeding the outstanding balance of the Advance Mobilization monies.

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

This Guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until MINISTRY OF ROADS AND HIGHWAYS recover full repayment of the said amount from the Contractor.

Yours truly,

SIGNATURE AND SEAL: _____

Name of Bank or Financial Institution: _____
Address: _____
Date: _____

Section V - General Conditions of Contract

Section V. General Conditions (GC)

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Section VII. General Conditions (GC)

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT AND ROADS COMPLETION PROJECT:

LA BEACH ROAD COMPLETION PROJECT PH.1

The General Conditions shall be the Bank Harmonized Edition of the Conditions of Contract for Construction prepared and copyrighted by the Federation Internationale des Ingenieurs-Conseils (FIDIC), 2005. All rights reserved. These Conditions are subject to the variations and additions set out in Section VIII, Particular Conditions of Contract.

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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 "Agency" 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 twelve months 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,
La Beach Road Completion Project Ph.1

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].

1.2 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 record in writing;

(d) "written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record; and

(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 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 the Contractor's 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 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 Agency

The Contractor shall permit the Agency and/or persons appointed by the Agency to inspect the Site and/or the accounts and records of the Contractor and its subcontractors relating to the performance of the Contract, and to have such accounts and records audited by auditors appointed by the Agency if required by the Agency. The Contractor's attention is drawn to Sub-Clause 15.6 [Corrupt or Fraudulent Practices] which provides, inter alia, that acts intended to materially impede the exercise of the Agency's inspection and audit rights provided for under Sub-Clause 1.15 constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility under the Procurement Guidelines).

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 Agency has notified to the Borrower that the Agency 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 Agency. 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 Agency notification of the suspension, the Employer shall provide reasonable evidence in such 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 Material], 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; and
- (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.
- (d) Any act by the Engineer in response to a Contractor's request except 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 [Unforeseeable Physical Conditions]: Agreeing or determining an extension of time and/or additional cost.
- (b) Sub-Clause 13.1 [Right to Vary]: 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 [Variation Procedure]: Approving a proposal for Variation submitted by the Contractor in accordance with Sub Clause 13.1 [Right to Vary] or 13.2 [Value Engineering].
- (d) Sub-Clause 13.4 [Payment in Applicable Currencies]: 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 [Variations and Adjustments] 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 Agency.

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 and currencies stated in the Contract Data. 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 an entity and from within a country (or other jurisdiction) approved by the Employer, 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 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 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 Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labour (including all the Contractor's employees, all Sub-Contractors

and Consultants' 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 behavior 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, counseling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labour.

The Contractor shall include in the program to be submitted for the execution of the Works under Sub-Clause 8.3 [Programme] an alleviation program 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 program 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 program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation this program 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 their danger to 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 thereto 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 Prohibition of Forced or Compulsory Labour** The contractor shall not employ "forced or compulsory labour" in any form. "Forced or compulsory labour" consists of all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.
- 6.21 Prohibition of Harmful Child Labour** The Contractor shall not employ any child to perform any 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.

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, and these records shall be available for inspection by Auditors during normal working hours. 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].

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 otherwise specified 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 otherwise specified in the Particular Conditions, the Commencement Date shall be the date at which the following precedent conditions have all been fulfilled and the Engineer's instruction recording the agreement of both Parties on such

fulfilment and instructing to commence the Works is received by the Contractor:

- (a) signature of the Contract Agreement by both Parties, and if required, approval of the Contract by relevant authorities in 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, 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; and
- (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.
- (e) 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 [Delay Damages] 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 be 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 [Consequences of Suspension], 8.10 [Payment for Plant and Materials in Event of Suspension] and 8.11 [Prolonged Suspension] 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 a 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 at 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:

measurement shall be made of the net actual quantity of each item of the Permanent Works, and

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 [Works to be Measured] and 12.2 [Method of Measurement] 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 Works 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

If the Contract provides for payment of the Contract Price in more than one currency, then whenever an adjustment is

Currencies

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.

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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;

“Ln”, “En”, “Mn”, ... are the current cost indices or reference prices for period “n”, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the date 49 days prior to the last day of the period (to which the particular Payment Certificate relates); and

“Lo”, “Eo”, “Mo”, ... are the base cost indices or reference prices, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the Base Date.

The cost indices or reference prices stated in the table of adjustment data shall be used. If their source is in doubt, it shall be determined by the Engineer. For this purpose, reference shall be made to the values of the indices at stated dates (quoted in the fourth and fifth columns respectively of the table) 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” (stated in the table) 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.
- (e) Notwithstanding the provisions of subparagraph (b), Contractor's Equipment, including essential spare parts therefor, imported by the Contractor for the sole purpose of executing the Contract shall be exempt from the payment of import duties and taxes upon importation.

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 an entity and from within a country (or other jurisdiction) approved by the Employer, 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 thirty 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 per cent (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] and Sub-Clause 19.6 [Optional Termination, Payment and Release], 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 and (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 subparagraph (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 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.

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 provided by an entity approved by the Employer, 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

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Within 84 days after receiving the Taking-Over Certificate for

Completion

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 the 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 subparagraphs (a) to (d) of Sub-Clause 14.3 [Application for Interim Payment Certificates] shall be made in the currencies and proportions specified in subparagraph (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 Sub-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** If the Employer determines that the Contractor has engaged in corrupt, fraudulent, collusive coercive, or obstructive practices,

Practices

in competing for or in executing the Contract, then the Employer may, after giving 14 days notice to the Contractor, terminate the Contractor's employment under the Contract and expel him from the Site, and the provisions of Clause 15 shall apply as if such expulsion had been made under Sub-Clause 15.2 [Termination by Employer].

Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent, collusive, coercive, or obstructive practice during the execution of the Works, then that employee shall be removed in accordance with Sub-Clause 6.9 [Contractor's Personnel].

For the purposes of this Sub-Clause:

- (i) "corrupt practice"² is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
- (ii) "fraudulent practice"³ 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;
- (iii) "collusive practice"⁴ is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
- (iv) "coercive practice"⁵ 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

² "another party" refers to a public official acting in relation to the procurement process or contract execution]. In this context, "public official" includes Agency staff and employees of other organizations taking or reviewing procurement decisions.

³ a "party" refers to a public official; the terms "benefit" and "obligation" relate to the procurement process or contract execution; and the "act or omission" is intended to influence the procurement process or contract execution.

⁴ "parties" refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

⁵ a "party" refers to a participant in the procurement process or contract execution.

party;

(v) "obstructive practice" is

- (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or
- (bb) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under Sub-Clause 1.15 [Inspections and Audits by the Bank].

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], or
- (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) In the event the Bank suspends the loan or credit from which part 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, or (ii) terminate his employment under 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.
- (i) 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.

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 preventative 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 sub-paragraphs (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 Material], 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 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.

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 its 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 the case of 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 destructed 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 Costs 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 have 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 it 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 notice to the other Party of 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 notice to the other Party of its dissatisfaction and intention to commence arbitration.

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 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, arbitration may be commenced on or after the fifty-sixth day after the day on which a notice of dissatisfaction and intention to commence arbitration was given, even if no attempt at amicable settlement has been made.

20.6 Arbitration

Unless indicated otherwise in the Particular Conditions, any dispute not settled amicably and in respect of which the DB's decision (if any) has not become final and binding shall be finally settled by arbitration. Unless otherwise agreed by both Parties:

- (a) For contracts with foreign contractors, international arbitration with proceedings administered by the institution appointed in the Contract Data, conducted in accordance with the rules of arbitration of the appointed institution, if any, or in accordance with UNCITRAL arbitration rules, at the choice of the appointed institution,
- (b) the place of arbitration shall be the city where the headquarters of the appointed arbitration institution is located,
- (c) the arbitration shall be conducted in the language for communications defined in Sub-Clause 1.4 [Law and Language], and
- (d) For contracts with domestic contractors, arbitration with proceedings conducted in accordance with the laws of the Employer's country.

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 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

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.

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.

Site visits shall be attended by the Employer, the Contractor and the Engineer and shall be coordinated 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.

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.

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.

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.

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.

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.

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 not to make a decision.

Section VI - Specifications

Section VI. Specifications

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Specification

The Standard Specification referred to in the Contract Documents is the:
“Standard Specification for Road and Bridge Works”
published by the then Ministry of Transportation, dated July 2007. Work shall be carried out in accordance with the Standard Specification except as supplemented, modified or revised in the following Special Specifications. Where the Special Specifications are silent, the Standard Specification remains fully applicable where relevant.

The numbering of clauses within the Special Specifications follows that of the Standard Specification. However, all revisions made herein to the Standard Specification are denoted with the letter ‘S’. A copy of the “Standard Specification” may be purchased from the Ministry of Roads and Highways, P.O. Box M 57, Accra, Ghana.

EQUIVALENCY OF STANDARDS AND CODES

Wherever reference is made in the contract to specific standards and codes to be met by the materials, plant and other supplies to be furnished, and work performed or tested, the provisions of the latest current edition or revision of the relevant standards and codes in effect shall apply, unless otherwise expressly stated in the contract.

Where such standards and codes are national, or relate to a particular country or region, other authoritative standards which ensure a substantially equal or higher performance than the standards and codes specified will be accepted, subject to the Engineer’s prior review and written approval. Differences between the standards specified and the proposed alternative standards must be fully described in writing by the Contractor and submitted to the Engineer at least 28 (twenty eight) days prior to the date when the Contractor desires the Engineer’s approval. In the event the Engineer determines that such proposed deviations do not ensure substantially equal performance, the Contractor shall comply with the standards specified in the documents.

EXTENT OF CONTRACT

The works specified under this contract shall include all general and ancillary works and the work of any nature that is deemed necessary for the due and satisfactory construction completion and maintenance of the Works to the full intent and meaning of the Drawings and Specifications, whilst complying with all Conditions of Contract whether specifically mentioned or not in the clauses of the Specifications.

La Beach Road Completion Project Ph.1

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The works specified under this contract shall include all general and ancillary works and the work of any nature that is deemed necessary for the due and satisfactory construction completion and maintenance of the Works to the full intent and meaning of the Drawings and Specifications, whilst complying with all Conditions of Contract whether specifically mentioned or not in the clauses of the Specifications.

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Schedules

Schedule 1: Minimum Specifications for Vehicle Type 1

SPECIAL SPECIFICATION

1. GENERAL

1.1S Project Location and Extent of the Works

The project is located in the eastern corridor of the Accra Metropolitan Area. The project is under the Road Completion component (Roads Completion in Accra East Corridor Project) of the Accra Metropolitan Area Intelligent Traffic Management and Roads Completion Project.

Under the Roads Completion in Accra East Corridor Project, the arterial road, (Tema Road – 15.9km - from the Independence Arch in Accra to the Nungua Barrier at Nungua) is to be widened into a 2x2 lane dual carriageway with a 2-lane Bus Rapid Transit (BRT) Route within the median. Service lanes will be constructed along sections of the road. One bridge will be constructed across the Kpeshie Lagoon and an Interchange at the Teshie Link/Tema Road Intersection near Lascala, Teshie

The Tema Road commences at the Independence Arch and ends at the junction with the Coastal Road and Lashibi Road, near the Nungua Barrier. It measured approximately 15.9 km as driven. This road can be divided into four sections for description purposes.

Section 1: Independence Arch to Ako-Adjei

This existing two lane single carriageway road section has along some section an old building which dates back to the era of the slave trade. It was used as a holding house for slaves before they were sent to the Christiansborg Castle through a tunnel. This building has now been declared a monument and so care has to be taken to protect it from any negative impact resulting from road improvement measures. Provision is to be made to enhance its accessibility to the public since it has a high tourism potential.

This section of the road also has a junction with the access road to Osu Castle. Close to the Ako-Adjei junction the road is intersected by the Osu-Clotney drain.

Section 2: Ako-Adjei to the Outskirts of Teshie Town

This road section is an existing two lane dual carriageway of approximate length 5.2km. The section between Ring Road East and the La Road is approximate length 0.8km. The Tema Road crosses the Kpeshie Lagoon within this section. This section of the Tema Road meets the Giffard Road at a location close to La Palm Royal Beach Hotel.

Section 3: Teshie Link Intersection to Fertilizer Road Intersection – 2.0km

This section is an existing two lane single carriageway with service roads on either side. Footways are also provided, together with pedestrian guard railing and crossing facilities.

Section 4: Fertilizer Road Intersection to the Coastal Road Intersection

This section is an existing two lane single carriageway and is intersected by two streams, the Songhor Stream at a location close to the junction leading to Koko Beach Resort and the Mokwe Stream at the foot of the valley leading to the Royal Ravico Hotel.

The scope of works include the

- Dualization of entire stretch to increase the capacity of the road.
- Construction of Bridge over Kpeshie Lagoon
- Strengthening of the entire pavement with crushed Rock Base & Asphaltic Bitumen.
- Improvement of the drainage and other ancillary works
- Provision & erection of road furniture and;
- All other works required to be done or ordered by the Engineer under the provisions of the Contract.

1.5.S Submissions to the Engineer

Add the following:

The Contractor shall deposit with the Engineer samples of materials and manufactured articles when requested and where appropriate, manufacturer's certificates of recent tests carried out on similar materials and manufactured articles.

1.6.S Programme

Amend Paragraph 1 as follows:

- (i) Replace "..... within 28 days after receiving notice of the Commencement Date" with "..... within 28 days after receiving the Letter of Acceptance"
- (ii) The programme shall show:
 - The Order of work
 - Planned rate of progress
 - Amount and type of equipment proposed
 - Details of labour strength, skilled and unskilled
 - Details of supervision arrangements
 - Details of methods to be employed
 - Details of Temporary Works

Amend Paragraph 3 as follows:

- (i) Replace "... without prejudice to his rights in terms of the relevant clause of the Conditions of Contract, require the Contractor to submit within seven days of the date on which he has received a notice to this effect" with "..... require the Contractor to submit"

Add the following as Paragraphs 4 and 5 before the last paragraph:

The order in which it is proposed to execute the permanent works shall be subject to adjustment and approval by the Engineer, and the Contract Price shall be held

to include for any reasonable and necessary adjustments required by the Engineer during the course of the Works.

The Contractor shall carry out the Contract in accordance with the programme agreed with the Engineer but he shall in no manner be relieved by the Engineer's acceptance of the programme of his obligations to complete the Works in prescribed order and by the prescribed completion date, and he shall from time to time review his progress and make such amendments to his rate of execution of the Works as may be necessary to fulfill these obligations.

Once the proposed programme is accepted by the Engineer, the Contractor shall not depart from the programme without the written consent of the Engineer. In the event of unforeseen difficulties or disturbance arising which cause the Contractor to depart from the accepted Programme of Works, he shall advise the Engineer in writing of such occurrences without delay and submit proposals for any necessary remedial measures, for which he shall obtain the Engineer's approval before putting such measures into effect.

1.8.S Method of Construction

Amend Paragraph 1 by inserting the words “..... for approval” after “..... the Engineer” in the first sentence.

1.10.S Site

Amend Paragraph 10 of Sub-Clause 1.10 as follows:

The Contractor will be given possession of site for the entire stretch of works covered in the Contract.

The Contractor's Yard including his installations, storage areas, camp sites, laboratories and accommodation, offices, stores, plant, workshops, latrines and messing accommodation shall not be located in the project Right-of-Way.

1.12.S Protection from Water

Add the following:

On cessation of the works each day the surface of each completed layer shall be trimmed so that ponding and concentration of surface run-off does not occur. Should any water accumulate on any part of the Works either during construction or after construction until the end of the Defects Notification Period, giving rise to soaking or eroding conditions, the Engineer may order the Contractor to remove and replace at no extra cost to the Employer any material or Works that has been so affected.

1.15.S Diversion of Services

Add the following to Clause 1.15 of the Standard Specification

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The Contractor shall carry out civil works as instructed by the Engineer. Any cost involved shall be reimbursed to the Contractor.

1.17.S Storage of Materials and Manufactured Articles

Add the following to Clause 1.17 of the Standard Specification.

This method of storage does not relieve the Contractor of his responsibilities as far as the quality of the materials is concerned.

1.18.S Progress Photographs

Add the following to Clause 1.18 of the Standard Specification.

Progress Photographs as specified in the Standard Specifications shall be approximately 175mm x 125mm in colour

1.19.S Signboards

Amend Paragraph 1 of Clause 1.19 of the Standard Specification by inserting the words '..... at his own cost' after "..... Drawings." In the first sentence.

1.21S FACILITIES FOR THE ENGINEER AND HIS STAFF

Supplement Clause 1.21 of the Standard Specification with the following:

(a) General

"The Contractor shall provide, erect and maintain for the use of the Engineer and his staff for the duration of the Contract, site offices and laboratory. A description of the offices and laboratory is given below.

In all cases, the Contractor shall maintain the buildings, furniture and equipment until the expiry of the Defects Notification Period or such other time as agreed with the Engineer and shall insure all buildings, furniture and equipment against fire, theft, loss or damage.

All buildings shall be of a design and construction suitable for the environment and to the approval of the Engineer and shall be of new, strong, durable and waterproof materials with walls, ceilings and floors adequately insulated against heat.

The Contractor shall provide electricity continuously and shall arrange for the offices and laboratory to be connected to an available public supply or to a generating plant of an approved type and power rating (sufficient to serve all buildings) where mains power supply does not exist, and shall ensure that each building shall be provided with a main switch and fuse box through which all power supplied to it shall pass and that these shall be of a standard approved by the public supplier.

Where the offices and laboratory are connected to a generating plant or where the public supplies are unstable, appropriate means shall be provided to ensure a stable voltage and frequency of the electricity supply to these buildings at all times. The entire wiring system for each building shall be properly earthed in accordance with recognized practice, and to the satisfaction of the Engineer.

All doors shall be fitted with approved locks and all keys for such locks shall be surrendered to the Engineer following installation.

Curtains or blinds shall be provided and fitted to all windows.

Fire extinguishers shall be provided for each building, in the number and locations as directed by the Engineer.

The costs for complying with the requirements of this clause shall be deemed to be included in the relevant rates entered in the Bills of Quantities.

(b) Engineer's Offices

The Contractor shall provide, erect and maintain for the duration of the Contract, a site office for the Engineer of weatherproof construction, with windows and doors suitably insulated against heat, all to the satisfaction of the Engineer in respect of the condition, design and siting. The offices shall be partitioned as shown on Drawing No., or as otherwise directed by the Engineer, with a clear inside height of 2.7 m. The floor shall be of steel-floated concrete, adequately damp and ant proofed.

The offices of the Engineer shall be completely separate from that of the Contractor and shall be sited on a plot of reasonable size satisfactory to the Engineer. The Contractor shall provide access to the Engineer's office and a car parking area. The access and car parking shall be surfaced with a minimum of 150 mm consolidated thickness of gravel. In addition, the Contractor shall provide sufficient carports, to be located as directed by the Engineer, to accommodate the Engineer's vehicles.

If required for security purposes, the offices for the Engineer shall be fenced with a 2 m high chain link fence and gate, with padlock and chain. In addition, day and night security guards shall be provided, to the satisfaction of the Engineer. External security lights shall be provided and maintained.

Each office shall be provided with electric lighting and 2 double power points, to be sited and to the satisfaction of the Engineer.

Each office shall be provided with electric lighting and 2 double power points, to be sited and to the satisfaction of the Engineer.

A potable water supply shall be provided with at least one outside water tap. Latrines shall have a water-borne sewage disposal system. The Contractor shall furnish and equip the Engineer's Offices as per Schedules 2 and 3 that are included at the end of these Special Specifications.

Two telephone lines shall be provided for the use of the Engineer and his staff. In addition, the Engineer's office and laboratory shall be provided with internet access, inclusive of all connections.

The Engineer's office and the laboratory shall be connected by a local fixed line telephone and by local LAN.

(c) Engineer's Laboratory

The Contractor shall provide, erect and maintain for the duration of the Contract, a laboratory adjacent to the Engineer's office. The Contractor shall provide access to his laboratory when necessary.

The Contractor shall provide and maintain in a good state of repair for the duration of the Contract, the laboratory equipment listed in Schedule 5 appended hereto. Such equipment shall be of approved manufacture and shall be made available to the Engineer for the Engineer's exclusive use throughout the Contract, not later than 3 (three) months of the start date in the SCC according to Clause 17.1 of the Conditions of Contract. All equipment shall be ready to use and complete to perform the tests. The equipment shall be purpose-made for use in highway materials testing laboratories and shall comply with the relevant British (BS) or American (AASHTO) Standard. All equipment to be supplied shall be subject to the prior approval of the Engineer and shall revert to the Employer on completion of the Contract.

The Contractor shall also make provision for the occasional use by the Engineer, as and when required, of any of the scheduled equipment during the Defects Notification Period.

Any delays to the Contractor or the Contractor's activities caused by the Engineer being unable to perform field or laboratory tests due to the Contractor's failure to supply the scheduled equipment in timely fashion and/or to keep it adequately maintained shall be deemed to have been caused entirely by the Contractor's own actions, and any consequences of such delays shall be interpreted with this.

(d) Safety Equipment

The Contractor shall allow in his rates and prices for the provision and replacement as necessary of approved personal safety equipment for the sole use of the Engineer and his staff for the duration of the Contract including reflective waistcoats and waterproof clothing, safety harnesses for working at heights, breathing apparatus, safety and tinted goggles, face masks, ear protectors and safety hats."

1.22S TIME FOR ERECTION OF THE ENGINEER'S STAFF HOUSES, OFFICES AND LABORATORIES

Amend paragraph 1 of Clause 1.22 as follows:

"All houses, offices and laboratories to be provided under the Contract shall be handed over to the Engineer in finished and fully habitable condition, not later than 3 (three) months of the Commencement Date according with SCC.

Whilst in the process of providing houses and office accommodation for the Engineer, the Contractor shall make temporary arrangements to provide housing and office accommodation for the Engineer's staff, both near the site and in Accra."

Amend paragraph 3 of Clause 1.22 as follows:

"Should the Contractor fail to hand over the houses and offices within the 3 month period specified, the Contractor shall make such alternative interim arrangements as agreed with the Engineer. These arrangements may include the use of hotels, rented accommodation, and/or the hire or purchase of caravans, port cabins, etc. The Contractor shall be responsible for the costs of all such interim arrangements, including that of additional transport".

1.23S MAINTENANCE OF ENGINEER'S STAFF HOUSES, OFFICES, LABORATORIES, FURNITURE AND EQUIPMENT

Add the following at the end of Clause 1.23:

"All costs associated with complying with the requirements of Clause 1.23, including the costs for all consumable items, adequate numbers of house staff and office attendants shall be deemed to have been included by the Contractor in the relevant Items in the Bills of Quantities."

1.24S PROVISION OF VEHICLES

Amend paragraphs 1 and 2 of Clause 1.24 as follows:

"The Contractor shall provide and maintain for the duration of the contract, new vehicles for the exclusive use at all times by the Engineer and his staff. All vehicles shall be to the Engineer's prior approval.

The vehicles offered should be based on the manufacturer's current standard production models that conforms as near as possible to the minimum specifications as listed in **Schedule 1** included at the end of these Special Specifications.

One Type 1 vehicle, including all specified provisions, shall be made available to the Engineer intermittently during the Defects Liability Period."

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1.31.3.S Protection of Trees

Add the following as paragraph two:

The removal of trees and revegetation shall be kept to the minimum necessary to accommodate the permanent works. The Contractor shall be responsible for ensuring that exposed surfaces are revegetated as construction progresses. This shall be to the satisfaction of the Engineer.

1.31.5.S Fire Prevention

Add the following as paragraph two:

The Contractor shall ensure that fires, except for controlled fires for burning rubbish, do not start within the site or in the environs thereto as a result of the works or from the actions of his employees. The burning of waste such as vehicle tyres causing noxious emissions is prohibited. The Contractor shall have available at all times trained fire-fighting personnel provided with adequate fire-fighting equipment to deal with all fires. The Contractor shall additionally at all times provide sufficient fire protection and fighting equipment local to parts of the works which constitute particular fire hazard.

1.31.7.S Protection of Environmentally Sensitive Areas

Add the following as paragraph two:

The Contractor shall take all reasonable measures, at all sites under his control, to prevent spillage, silting, flooding, erosion of beds and banks and leakage of materials likely to cause pollution of or interference in the supply of water resources. Such measures shall include, but not be limited to the provision of bunds around fuel, oil and bitumen storage facilities, and oil and grease traps in drainage systems associated with vehicle and plant washing bays, servicing and fueling areas. Prior to construction of such facilities, the Contractor shall submit details of pollution prevention measures to the Engineer for approval.

The Contractor shall provide, maintain and remove on completion of the Works, settling lagoons and other facilities to minimize pollution due to the Contractor's operations including, but not limited to quarrying, aggregate washing, concrete mixing and grouting.

1.32 Environmental Management and Monitoring**1.32.1 General****(a) National and Provisional Legislation**

Further to the requirements of Clause 19.1 of the Conditions of Contract and of the Specification Clause relating to the environment, the Contractor shall be responsible for familiarizing himself with all national and provisional legislation relating to environmental protection which is relevant to his activities.

(b) **Cost of Cleaning up**

The Contractor shall be responsible for the cost of cleaning up any environmental pollution resulting from his activities and payment of compensation for any damage caused thereby.

1.32.2 **Waste Disposal**

(a) **Maintenance of Sites**

The Contractor shall at all times maintain all sites under his control in a clean and tidy condition and shall provide appropriate and adequate facilities for the temporary storage of all wastes prior to disposal.

(b) **Transportation and Disposal of Waste**

The Contractor shall be responsible for the safe transportation and disposal of all waste generated as a result of his activities in such a manner as will not give rise to environmental pollution in any form, or hazard to human or animal health. In the event of any third party being employed to dispose waste, the Contractor shall be considered to have discharged his responsibilities under this clause from the time at which waste leaves the site under his control, provided that he has satisfied himself that the proposed transportation and disposal arrangements are such as will not give rise to pollution or health hazard.

(c) **Sanitary Facilities**

The Contractor shall be responsible for the provision of adequate sanitary facilities for his workforce and that of his sub-contractors at the base camp and at all construction and ancillary sites. The Contractor shall not allow the discharge of any untreated sanitary waste to ground water or any surface watercourse. Prior to the mobilization of the workforce the Contractor shall provide details of sanitary arrangements to the Engineer for approval, such as to allow him to assess whether or not the proposed facilities are adequate and are unlikely to pollute water sources, if properly operated and maintained.

1.32.3 **Storage of Top Soil**

The Contractor shall make arrangements to store any top soil suitable for later re-use. Where relevant, soil should be taken out in horizons and each horizon stored in a separate pile, the pile being grassed over to prevent erosion. This shall be to the satisfaction of the Engineer.

1.32.4 **Noise and Air Pollution**

(a) **Vehicles and Plant**

All construction activities shall be carried out using the best possible means to reduce environmental pollution such as noise, dust and smoke. All vehicles and plant operated by the Contractor or his sub-contractors shall at all times be maintained in accordance with the original manufacturer's specifications and

service manuals, with particular regard to the control of noise and diesel particulate emissions. The Engineer shall have the right to require the Contractor to replace or temporary cease operation in order to rectify any vehicle or plant which in his opinion emits excessive noise or smoke within 24 hours of the Contractor being so notified.

(b) **Asphalt Plant**

All asphalt plants shall be operated and maintained in accordance with the original manufacturer's specifications and manuals, and in such a manner as to minimise emissions of hydrocarbons and particulates. If in the opinion of the Engineer, the operation of such plant is causing, or is likely to cause, nuisance or health hazard to site staff or the general public, the Contractor shall be required to carry out such work as is necessary to reduce emissions to an acceptable level within a timescale agreed with the Engineer.

1.32.5 **Transport of Materials**

The Contractor shall ensure that vehicles using the proposed borrow pits, quarry and asphalt plant do not cause any safety hazard, noise, dust, or disturbance to any local inhabitants. The Engineer shall have the right to require the Contractor to carry out improvement to the access road to the borrow pits, quarry and asphalt plant in consultation with any local inhabitants if necessary.

1.32.6 **Restoration of Borrow Pits**

The Contractor shall be responsible for ensuring that the gravel borrow pits are regarded and covered with topsoil to ensure their natural regeneration.

(ii) For borrow pits, 150mm topsoil should be stripped and stockpiled for re-use. After completion of the use of borrows pits, the same shall be graded to avoid water stagnating on it and the topsoil shall be returned from the stockpile and spread in 150mm layer thickness.

(iii) The reinstatement of borrow pits as indicated in Clause 1.32.6 (ii) above, shall be one of the pre-conditions for issuing Substantial Completion Certificates to the Contractor.

1.32.9 **Traffic Management during Construction**

The Contractor shall take responsible precautions to keep all public and private roads clear of any spillage of material from his traffic to the satisfaction of the Engineer. All such spillage whenever they occur shall be cleared without delay.

The Contractor shall provide, erect and maintain on the site and at such positions on the approaches to the site, traffic signs and traffic control signals necessary for the direction and control of traffic. The signs shall be reflectorised or adequately illuminated by night in a manner approved by the Engineer and kept clean and

legible at all times. The Contractor shall reposition, cover or remove signs as required during the progress of the works.

The Contractor's operations throughout the Contract shall be so conducted as to maintain the flow of existing road traffic. The Contractor's method of working and traffic diversion plans within the existing road area shall be to the approval of the Engineer.

The Contractor shall construct and maintain temporary diversion ways wherever the Works will interfere with existing public or private roads or other ways over which there is a public or private right of way for any traffic, to the satisfaction of the Engineer and the approval of the Police.

The Contractor in preparing his diversion plan can refer to the Engineer's plan for diversion and make appropriate modifications to suit his work method and plan. The surfacing of the road diversion should be to a first seal of surface dressing.

1.33 Employment

The Contractor shall use all reasonable endeavors' to give priority in workforce recruitment to those who live in the vicinity of the project.

1.34 Engineer's Normal Working Hours

The Engineer's normal working hours shall be from 7.00 a.m. to 5.00 p.m. on week days with Saturday and Sunday set aside for rest. If the Contractor wishes to execute Permanent Works outside these hours he shall obtain the written permission of the Engineer at least one full working day in advance in order to enable the Engineer to make provision for such work.

Should the Engineer's Junior Staff be required, for any reason which relates to the Supervision of the Works, to work hours which are additional to the normal working hours the full cost of such overtime shall be reimbursed by the Contractor to the Engineer at no extra cost to the Employer. In addition a 25% mark up shall be paid to the Engineer to cover his administrative costs.

1.35 Construction Generally

The following general requirements shall apply:-

- (a) The Contractor shall provide adequate lighting where work is being executed at night and shall provide and install any additional lighting which the Engineer may require in order to gain access to, watch and supervise the Works and carry out any testing and examination of materials.

- (b) Materials available on the Site or materials made available or supplied by the Employer shall be used solely for the execution of the Works.
- (c) The Contractor shall ensure that access is provided to all properties adjacent to the Site for the duration of the Contract.
- (d) The Contractor shall comply with the current Government regulations with regard to the transport, storage and use of explosives and radioactive materials.
- (e) The Contractor shall provide, maintain and remove on completion of the Works appropriate security measures at the site and on access roads, but without prejudice to his obligations including maintenance of free access for the Employer, the Engineer, other contractors and any other persons entitled to such access.
- (f) The Contractor shall be responsible for acquainting himself with and observing all current Statute Ordinance, Bye-laws or Regulations, both national and local.

All buildings erected by the Contractor upon the Site and camp sites, and the layout of the buildings and the sites, shall comply with Laws of Ghana and all local Bye-laws in so far as they are applicable.

- (g) The Contractor shall be absolutely and solely responsible for the adequacy, safety and security of Temporary Works including (but not limited to) all work yards, piling, staging, dams, cofferdams, trenches, fencing or other works and for the plant in connection therewith which may be erected or provided for the carrying out of the Contract and for the execution of the Works.
This provision shall be applicable to all Temporary Works and Constructional Plant. Whenever provided and erected by the Contractor and/or his sub-contractors for the Purpose of or in connection with the Works.

Examination and approval by the Engineer of the Contractor's and/or his sub-contractors' Temporary Work or of the drawings connected therewith shall not absolve the Contractor from any liability imposed upon him by the provisions of the Contract.

1.36 Temporary Services

The Contractor shall be responsible for the provision of clean, sufficient and continuous supply of potable water, electricity, telephone, sanitary and all other services necessary for constructional and domestic purposes for the duration of the contract. He shall undertake all arrangements including pipelines and meters for connection to local mains, and the provision of pumps, storage tanks or water conveyance where necessary, payment of all fees and charges and the satisfactory removal of all such arrangements and provisions on completion of the Works.

As in the case of any other supplies, a failure on the part of a supplier of these services will not relieve the Contractor of any of his duties or responsibilities under the contract, nor in respect of such failure shall the Contractor have any claim under the contract.

With regard to power supplies the Contractor shall be responsible for also maintaining the facility and take all reasonable precautions to ensure the safety of every person on the site. The Engineer may require the disconnection or alteration of any parts which he considers may be dangerous. Such installations shall comply with all appropriate statutory requirements and with the latest edition of the

Electricity Supply Regulations. All costs incurred shall be deemed to have been included in the rate quoted for the provision and maintenance of the facilities which they serve i.e., Offices, Laboratories etc.

1.37 **Sufficiency of Specifications**

Where the Drawings and Specifications describe a work in only general terms and not in complete detail, it shall be understood that the best general practice is to prevail. Materials and Workmanship of the best quality are to be employed and the instructions of the Engineer are to be fully complied with.

1.38 **Liaison with Government Officials**

The Contractor shall keep close contact with the Police and other Government officials in the area, concerning traffic control requirements and other matters. The Contractor shall provide for all reasonable assistance or facilities which may be required by such officials in the execution of their duties.

2. **TESTING OF MATERIALS AND WORKMANSHIP**

2.2.S **Testing by the Contractor**

Add the following to Clause 2.2.

2.2.1S **Testing**

Testing shall be carried out for three purposes, viz.:

- **Acceptance or Trial testing** - to demonstrate by means of the testing specified herein that the materials and/or methods of construction proposed are appropriate for the works and will result in a product fully in conformity with the requirements of this specification.
- **Production testing** - to ensure that the materials production and methods of working are producing materials and workmanship which are in conformity with the requirements of this specification;

and

- **Control testing or quality monitoring** - to demonstrate that the materials used and the resultant product is fully in conformity with the requirements of this specification.

The Contractor shall be responsible for all Acceptance and Production testing and the number and frequency of these tests shall be determined by the Contractor having regard to the number of sources of materials and the methods of working proposed. The amount of testing of this type undertaken by the contractor shall be sufficient to enable him to control the quality of the works without any reliance on testing carried out by the Engineer for other purposes. The Contractor shall report the results of all relevant tests to the Engineer before submitting materials and finished work to the Engineer for approval. All samples of materials proposed to be used shall be submitted to the Engineer for approval before use.

Notwithstanding statements to the contrary elsewhere in the documents the Engineer will be responsible for carrying out Quality Assurance Test.

The type and approximate frequency of such testing is specified in clause 2.20 and elsewhere in this specification. The Contractor shall provide all such samples and assistance as is required by the Engineer in the execution of this testing. The Contractor shall not rely on the results of testing carried out by the Engineer for production control.

When the Contractor instructed by the Engineer shall submit to him Certificates of Test from the suppliers of materials and manufactured articles to be used for the Contract. Such Certificates shall certify that the materials and manufactured articles concerned have been tested in accordance with the requirement of the Specifications and shall give the results of all the tests carried out. The contractor shall provide adequate means of identifying the materials and manufactured articles delivered to the Site with the corresponding Certificates.

Where such Certificate is not available a representative sample of the material shall be tested by an approved laboratory or, subject to the approval of the Engineer, by the Contractor and a copy of the test result submitted to the Engineer's Representative who shall decide whether the material conforms to the required standard.

2.2.2.S **Standards**

Where the specification requires that testing, materials or goods shall be in accordance with a standard or code of practice then the relevant standard or code of practice shall be that current at the date 28 days prior to that set for submission of Tenders.

2.2.3.S Contractor's Laboratory

The Contractor shall provide and maintain on the Site throughout the period of execution of the Works a laboratory for the combined use of both the Engineer and himself. The Contractor shall thus provide experienced engineers, foremen, surveyors, materials' technicians, and other competent technical staff together with all transport, instruments and adequate equipments at the appropriate time for the selection and control of the quality of natural and processed natural materials such as fill materials, natural gravel materials, crushed stone base materials, concrete chippings and asphalt to be incorporated to the Works and also for the control of the workmanship of the works.

No work shall be covered up prior to acceptance by the Engineer of the required test certificates and results of testing. Any delays to the works caused by provision of inadequate testing facilities will not be considered as justifiable grounds for an extension of time.

The full cost incurred by the Contractor in complying with sub-clause 2.2.3S, including the provision of all samples delivered to the Engineer, the repair of places from which samples were taken and the provision of the necessary personnel and testing apparatus and facilities, as well as the use of the Contractor's Laboratory by the Engineer's Representative Staff shall be reimbursed through the Bill of Quantities.

For the guidance of the Contractor, the recommended list of his Laboratory Equipment is shown in Appendix A of this section.

The Contractor shall within 30 days after the notice to commence the Works, submit a Quality Management System, including the Work Method Statements and Quality Audit for the major items of work to the Engineer for approval.

2.6.2.S Stone, Aggregate, Sand and Filler for Concrete

Add to Table 2.2 - Test Procedures Applicable to Stone, Aggregate, Sands and Fillers, the following:-

(Determination of)	(Test Procedure)
Stripping	ASTM D1644 – 80

2.20.S Frequency of Testing

- Add to list of tests under 2.20(i) the following:-
Stripping
- Add the following additional Sub-Clause 2.20(k)
2.20(k) **Concrete**

(a) **Coarse Aggregate**

The aggregate properties listed below, as appropriate to the type of mix specified, shall be determined on opening up of each new source of aggregate, also every second week and whenever the Engineer considers that the aggregate properties may have altered:-

Grading
ACV or AIV
SSS
FI
Chloride Content
Sulphate Content
Water Absorption

(b) **Fine Aggregate**

The aggregate properties listed below, as appropriate to the type of mix specified, shall be determined on opening up of each new source of aggregate, also every second week and whenever the Engineer considers that the aggregate properties may have altered:-

Grading
Chloride Content
Sulphate Content
SSS
Organic Impurities in Sands

(c) **Cement**

As per BS12. Frequency is one (1) set of tests per 200 tonnes from each cement plant and tested every month.

(d) **Water**

PH Value
Sulphate Content
Chloride Content
Frequency as instructed by the Engineer

(e) **Slump/Cube Tests**

Samples to be tested for each batch of not more than 20m³ or 1 day's production whichever is less or as instructed by the Engineer.

3. SETTING OUT, GEOMETRIC TOLERANCES AND RECTIFICATION

3.3.5 Geometric Tolerances

Delete Table 3.1 of Clause 3.3 of the Standard Specification and substitute the following:-

Table 3.1S - Geometric Tolerances

LAYER	LEVEL		STRAIGHT EDGE mm	SLOPE OF CROSS FALL %
	mm			
TRUNK & URBAN ROADS				
Bituminous Wearing Course (AC)	+ 10	- 10	6	
Bituminous Binder Course (AC)	+ 0	- 15	6	
Bituminous Surface Dressing	+ 10	- 10	8	
Gravel Wearing Course	+ 15	- 15	15	
Base	+ 0	- 20	12	±0.25
Sub-base	+ 0	- 25	15	±0.50
Formation	+ 0	- 35	20	±0.50
Footpath Paving Slabs	+ 15	- 15	6	

Add the following:-

- 3.3.3(i) In addition, the thickness of any pavement layer measured at any point shall not be less than 98% or more than 125% of the thickness specified or ordered by the Engineer.

Should the completed surface of any sub grade, sub base, base or surfacing fail to comply with the appropriate tolerances specified herein, the sub grade, sub-base, or surfacing shall be corrected to the satisfaction of the Engineer in accordance with the relevant clauses of the Specification or as ordered by the Engineer's Representative.

3.5 Engineer's Approval of Method

Before commencing the construction of any layer of pavement construction including bituminous surfacing the contractor shall construct trial sections of the material to be used in order to demonstrate the adequacy of his proposed resources and techniques for achieving the Specification Standards. Each trial section shall extend over an area of not less than 300 square meters and shall be subjected to the approval of the Engineer and all costs shall be considered to be included in the Contractor's tendered rates and prices.

At the discretion of the Engineer a trial section may be incorporated within the permanent works. The techniques demonstrated in successful trials section construction shall be applied in general construction and in the event of a change of material or equipment or standard of performance the Contractor shall carry out such further trials as may be instructed by the Engineer.

The contractor's proposals for any trial section shall include all necessary testing for an assessment directed by the Engineer.

4. SITE CLEARANCE

Add the following Sub-Clause 4.2.6 to Clause 4.2.

4.2.6 Removal of Anthills

All Anthills where encountered within the works shall be excavated to a depth to be determined on Site. The Queen shall be removed and the hole treated with a suitable chemical to the approval of the Engineer's Representative before backfilling in accordance with Clause 2.18.

4.4.S Removal of Structures, Fences and Obstructions

Add the following:-

The timing of the demolition by the contractor of existing bridge structures and culverts shall be subject to the approval of the Engineer. The Contractor's programme shall provide details of his proposals in this respect.

5. EARTHWORKS

5.2.S Definitions and Classifications

Delete Clauses 5.2(c) and substitute the following:-

(c) Formation Level:

Means the level at the completion of Earthworks for Roadwork's prior to the laying of the pavement. The Earthworks immediately below Formation Level is known as Sub grade.

(f) Add to Clauses 5.2(f) the following:-

The material shall have a CBR of not less than 15% measured after a 4-day soak on a laboratory mix compacted to a dry density of 95% MDD (AASHTO), a swell of less than 1.5% and a Plasticity Index of less than 30%.

The Contractor has the responsibility to source for selected fill material to meet the requirement of this project.

5.5.S Construction of Embankments and Cuttings

Add the following:

The Contractor shall programme his operations such that, where substantial widening of the existing road is required and in marshy areas, the associated earthworks shall be completed to formation level at least 6 months prior to the

construction of any of the pavement layers, unless otherwise instructed by the Engineer's Representative.

The Contractor shall so programme his operations such that embankments of fill height greater than 4 meters shall be completed to formation level at least 6 months prior to the construction of any of the pavement layers, in order to allow a reasonable time period for any settlement to take place. Notwithstanding the foregoing, the Contractor shall obtain the Engineer's Representative permission before commencing with pavement construction on such embankments. The Engineer's permission may be withheld if in his opinion settlement is still taking place.

5.6. S **Swamps**

Add the following:-

The contractor shall so programme his work so that where possible removable of unsuitable and compaction of material in swamps is carried out in the dry season.

Backfill of Swamps

The Contractor shall so programme his works so that any rock excavated in cuttings shall be available for filling in swamps when instructed by the Engineer.

5.7. S **Rockfill on Swamps and Soft Ground**

Add the following:-

In areas designated on the drawings as swampy or marshy, the Contractor shall, unless otherwise instructed by the Engineer, carry out the following:

- Drain the area, where practicable, by the excavation of ditches and, if necessary, the construction of temporary culverts or pipes through the existing road embankment.
- Remove vegetation and unsuitable material from the sites of embankments, to depths to be determined by the Engineer.
- If at this stage the embankment formation is:
 - a) Firm and dry: the Contractor shall construct the embankment of rock fill up to a level 500mm above the normal wet season standing water level.
 - b) Below standing water: the Contractor shall form the lower layer, up to standing water levels, of the embankment of free draining rock fill of maximum size not greater than 400mm and not less than 150mm.

Such material may be deposited below water without the associated use of compaction plant. The embankment shall then be completed up to 500mm above wet season standing water level with normal rock fill.

- c) At or above standing water level: the Contractor shall place a geotextile separation membrane complying with the requirements of Clause 5.7S.1 transversely over the entire width of the embankment base with minimum overlaps of 300mm. The membrane shall then be covered by a layer of free draining granular material, complying with the requirements of Clause 5.7.S.2 of thickness not less than 500mm.

The embankment shall then be completed up to a level of 500mm above the normal wet season standing water level with rock fill.

- The embankments shall be completed to formation level with normal fill.

If no rock fill is available on site it shall, where instructed by the Engineer, be replaced by common fill material, except that the outer half meter (measured at right angles to the slope) of the embankment shall be formed of free draining granular material. Where directed a separation membrane shall be placed under the free draining granular material and between that material and the common fill.

5.7.2 Free Draining Granular Material

Free draining granular material shall be clean hard and durable with a minimum wet 10% fines value of 50KN when tested in accordance with the requirements of BS 812. the materials shall comply with the following grading requirements:

<u>Sieve Size</u>	<u>% Passing</u>
75mm	100
20mm	60-100
5mm	30-100
2mm	20-60
600 micron	0-25
75 micron	0-5

5.11.S Proof rolling

Replace “.... Minimum axle load of 8tonnes” with “..... minimum axle load of 13 tonnes”.

5.13.S Topsoil and Grassing

Add the following:

No bushes of any sort whatsoever shall be planted on earthworks slopes.

5.15 Filling to Structures - Structural Backfill

Filling to structures - structural backfill, (including backfill material behind abutments and wing walls), shall be selected granular material equivalent of Class 6P Table 6/1 of UK DTp Specification for Highway Works, in horizontal layers, not exceeding 150 mm loose depth, moistened or dried as required and thoroughly compacted with mechanical tampers for a distance away from the structure as specified on the drawings or directed by the Engineer.

The structural backfill shall be carried out and compacted as follows: -

The structural backfilling shall be deposited in layers not exceeding 150 mm loose thickness, evenly spread and each layer thoroughly compacted before the addition of other layers.

The Contractor shall restrict the compaction plant used on structural backfill, within 2m of a structure to the following items: -

- i) Vibratory roller having a mass per metre width of roll not exceeding 1300 kg with a total mass not exceeding 1000 kg.
- ii) Vibrating plate compactor having a mass not exceeding 1000 kg.
- iii) Vibro-tamper having a mass not exceeding 75 kg.

The finally compacted density of all backfill behind and around structures shall not be less than 95% of the maximum obtained from BS 1377 Test 13.

In placing structural backfill, the material shall be placed simultaneously in so far as possible to approximately the same elevation on both sides of a pier or wall. If conditions require placing backfill appreciably higher on one side than on the opposite side, the additional material on the higher side shall not be placed until permission has been given by the Engineer and after tests made in the laboratory under the supervision of the Engineer establishes that the concrete has attained sufficient strength to withstand pressures created by the methods used and materials placed without damage.

5.16 Structural Excavation

This work shall include all necessary bailing, pumping, draining, sheeting, bracing and the necessary construction of cribs, and cofferdams, and furnishing the materials therefor, and the subsequent removal of cribs and cofferdams in a way, which will not hinder the construction of subsequent work.

The Contractor shall notify the Engineer sufficiently in advance of the beginning of any excavation, so that cross-sections and measurements can be taken of the undisturbed ground. The natural ground adjacent to the structure shall not be disturbed without permission of the Engineer.

Trenches of foundation pits for structures or structure footings shall be excavated to the lines and grades or elevations shown on the Drawings or as directed by the Engineer. The elevations of the bottoms of footings, as shown on the Drawings, shall be considered as approximate only and the Engineer may order, in writing, such changes in dimensions or elevations of footings as may be deemed necessary to secure a satisfactory foundation.

When the footing is on material other than rock, the excavation to the final grade shall not be made until just before the footing is to be placed.

After each excavation is completed, the Contractor shall notify the Engineer to that effect, and no footing or bedding material shall be placed until the Engineer has approved the depth of excavation and the character of the foundation material.

Any over excavation for structural foundation or base slabs below the levels indicated on the Drawings or directed by the Engineer shall be backfilled with Grade NS15 concrete at the Contractor's expense.

All bases for structural foundation or base slabs shall be compacted to a density not less than 95% of the maximum dry density as determined by BS 1377 Test 13.

Beneath all reinforced concrete foundation slabs there will be a 75 mm thick concrete Grade NS15 blinding as specified in Section 18.

Structures with Foundation Problems

In cases where the specified density at foundation level is not achieved or the material is classified by the Engineer as unsuitable the Engineer shall direct to extend the depth of the structural excavation as necessary and backfill with Concrete Grade NS15 as specified in Section 18.

All rock or other hard foundation material shall be cleaned of all loose material and be cut to a firm surface either, level, stepped or serrated as directed by the Engineer.

Where it is necessary to use dewatering devices to lower the water table during the construction, the Contractor shall lower and maintain the water table at least 300 mm below the formation level of the structural excavation. All temporary drain pits shall eventually be backfilled and compacted to the same density as the surrounding material.

6. QUARRIES, BORROW PITS, STOCK PILES, SPOIL AREAS AND EXISTING LAYERS

6.2.S General

Add the following:

Information relating to the locations of trial pits and other geotechnical investigations, together with the records and results of tests carried out on various samples is summarized in the Materials Report.

The Contractor may examine the information and carry out such further tests as he may consider necessary in order to fully acquaint himself with any aspect which will influence his satisfactory performance of the Contract at the rates and prices stated by him in the Bill of Quantities. No claims from the Contractor for additional payment for sampling and testing will be considered by the Engineer on the grounds that the above information is insufficient.

6.4.S Provision of Land

Add the following as the last paragraph to Clause 6.4:

Where it is necessary for the Employer in fulfilling his obligations to acquire land which he is expected to give out to the Contractor as mentioned above, during the Contract for any additional work, the Contractor shall determine the ownership of the land and shall pay any compensation as required and valued by the Land Valuation Board. Any expenses arising out of this acquisition shall be considered additional to the contract and the Contractor shall, accordingly be reimbursed for it.

Although the Contractor may, in the first instance provide the money for the purchase of the land, all such land shall be the property of the Employer, as the Contractor shall be duly reimbursed for all expenses incurred in its acquisition.

7. EXCAVATION AND FILLING FOR STRUCTURES

7.3.S Excavation of Foundations for Structures

In Paragraphs 17 and 18 of Sub-Clause 7.3.2, replace “..... 93% MDD (GHA S1) ... “ with “..... 95% MDD (GHA S1)”.

7.5.S Backfilling and Filling Against Structures

In Paragraphs 3 and 5 of Sub-Clause 7.5, replace “..... 93% MDD (GHA S1) ... “ with “..... 95% MDD (GHA S1)”.

8. CULVERT AND DRAINAGE WORKS

8.1.S Scope of Section

Add the following Sub-Clause 8.1(e):-

8.1(e) The drainage works comprise the construction of intercepting ditches, turn-outs, stream channels, and ancillary works, together with rehabilitation of existing drainage systems as directed by the Engineer.

8.5.4.S Excavation in Hard Material

In Sub-Clauses 8.5.4(a)(iii) and 8.5.4(b)ii), replace “.....93% MDD (GHA S1) ... ” with “..... 95% MDD (GHA S1)”.

8.6.S Bedding and Laying of Pipe Culverts

In Sub-Clause 8.6(e), replace “Class C20/25.” with “..... Class C25/20.”

8.8.S Backfill

In paragraph 1 replace “.....93% MDD (GHA S1) ... ” with “..... 95% MDD (GHA S1)”.

8.10.S Sub-soil Drains**8.10(a)S Filter Material**

The stone filter material shall be free-draining notwithstanding anything stated herein, and the Engineer’s Representative may reject any material which he considers unsuitable for the purpose.

The ACV of the stone filter material shall be not greater than 35%.

The Engineer’s Representative shall provide the Contractor on site with details of the outfall of each subsoil drain, depending on its precise locational circumstances.

8.10(b)S No-Fines Concrete

No-fines concrete shall comply with the provisions of Section 18 of the Specifications subject to the following amendments.

The aggregates shall be of 40mm single size.

Batching shall be by weight in the proportions of 50kg of cement to the weight equivalent of 0.28m^3 of the aggregate approved for this material.

The free water/cement ratio shall be not greater than required to coat all the aggregate particles without forming excess grout, or as otherwise directed by the Engineer’ Representative’.

The minimum cube strength at seven days shall be $4.0\text{N}/\text{mm}^2$.

The no-fines concrete shall be placed as soon as possible after mixing; any concrete which has dried out between mixing and placing will be rejected.

No pumping, ramming or mechanical vibration shall be permitted, but the placed concrete shall be lightly rodded into position.

8.10(c)S Stone Drainage Layer Behind Concrete Retaining Walls

The stone used for the stone drainage layer behind concrete retaining walls shall be of ACV not greater than 40%.

The 40mm nominal single size stone shall be such that 100% by weight shall pass the 50mm sieve and be retained on the 28mm sieve.

The 100mm nominal single size stone shall be such that no dimension of any individual piece of stone shall be less than 80mm nor greater than 120mm.

The 100mm size stone shall be hand-packed in such a way as to produce a stable structure to the satisfaction of the Engineer's Representative. In order to achieve the same objective the 40mm size stone shall be compacted using a light vibratory compactor until such time that visual consolidation of the stone layer has ceased.

8.21S Scour Check

Add the following to Clause 8.21.

The soil core of the scour check shall be constructed from selected fill material and compacted to 95% MDD (GHA S1) compaction.

8.23 Surface Finish to In-situ Concrete Drainage Works

Surface finish to in-situ concrete drainage works shall be as specified hereunder:-

(a) Formed Surfaces:

exposed: Class F2 (except as separately provided for hereunder)

non-exposed: Class F1

The faces of pipe culvert headwalls and aprons which form part of the conduit; the conduit of the concrete channels; and the areas of concrete upon which precast concrete lids shall be seated, shall all be to Class F3 finish.

(b) Unformed Surfaces:

All unformed surfaces shall be to Class UF1 finish.

8.24 Final Location of Box Culverts and Pipe Culverts

Notwithstanding the information contained in the Drawings the final locations and invert levels of box culverts and pipe culverts shall be subject to confirmation or adjustment by the Engineer as he shall deem appropriate, prior to commencement of construction.

8.25 Construction of Pipe Culverts

Immediately after the preparation of the trench for pipe culverts including the excavation and replacement of any soft material a 75mm blinding layer of class NS15 concrete shall be laid to provide a firm support for the subsequent laying of pipes.

The pipes shall be laid true to line and level supported on hardwood or concrete wedges. The joints shall be properly seated and filled flush inside and outside with 1:3 cement mortar. The pipes shall be provided with a complete surround of class 20/25 concrete as indicated in the Drawings. No part of the surround shall be placed until the Engineer's Representative has approved the laying and jointing of the pipes.

The concrete shall be well compacted beneath the pipe but care shall be taken to ensure that the pipes are not displaced during the placing of the surround.

8.26 Concrete Pipes

- a) Concrete pipes shall comply with the requirements of BS 5911 Parts 1 and 3.
- b) Concrete for concrete pipes shall be Class C35/45.
- c) The pipes shall have rigid joints in accordance with BS 5911 Part 3.
- d) Reinforcement may be inserted in the pipes to strengthen them for handling, but the size, spacing and placing of reinforcement shall be to the approval of the Engineer.
- e) All concrete shall be compacted either by spinning or vibrating.
- f) All concrete pipes shall be cured by keeping them saturated with water for at least seven days after casting and protected from the sun and drying winds for at least fourteen days after casting. No pipe shall be used in the work until it is twenty-one days old. The date of casting shall be painted on the outside of the barrel.
A minimum of 10% (ten per cent) of the pipes, but not less than five, shall be tested from initial batches prepared by the Contractor and thereafter the frequency of testing shall be decided by the Engineer.

All pipes shall be capable of supporting the works proof loads set out in Table 2 of BS5911 Part 1 for Class M pipes when tested in accordance with Paragraph 25.4 of BS 5911 Part 1.

A set of six concrete cubes shall be made for each day's manufacturing of concrete pipes. Where the crushing strength does not reach the Class C35/45 requirement, or if pipes appear sub-standard, the Engineer may order the above load tests on a set of three pipes from the suspect batch.

- g) Concrete pipes for use in subsoil drains shall be one of the following:

- (i) Porous concrete pipes to BS 1194;

- (ii) Concrete pipes to BS 5911 Parts 1 and 3 with a maximum length of 1.5m laid with open joints.
- h) The Engineer's Representative shall reject any cracked pipes, which shall be destroyed or removed from the Site.

8.27 Headwalls, Wingwalls and Aprons

Culverts shall be provided with headwalls, wingwalls and aprons as shown in the Drawings or directed by the Engineer Representative.

8.28 Miscellaneous Drainage

8.28(i) Concrete Inlet Chamber

The back and front faces of all walls and the top and bottom of the base slab of the concrete inlet chamber shall be reinforced using 10mm dia. mild steel bars placed at 200mm centres both horizontally and vertically to form a mesh. The reinforcement shall be fixed in accordance with, and shall comply with the requirements of Section 20 of the Specifications. The cover to the steel shall be 30mm.

8.28(ii) Drainage Blanket

The drainage blanket to earth retaining structures shall consist of precast hollow concrete blocks complying with the BS 6073: Part 1 laid in stretcher bond with dry joints in 225 mm thick walling with holes vertical.

8.30 Riprap Protection

This work shall consist of slope protection courses in accordance with these specifications and in conformity with the lines, grades and thicknesses shown on the drawings or as directed by the Engineer.

Riprap protection shall be hand-placed riprap with voids filled with sand-cement grout consisting of one part Portland cement and three parts of sand, thoroughly mixed with water to produce workable mixture.

Larger stones shall be placed first with close joints. Stones shall be placed with their longitudinal axis normal to the embankment face and arranged so that each stone above the foundation course has a three-point bearing on the underlying stones. The foundation course is the course placed on the slope in contact with the ground surface. Placing of stones by dumping will not be permitted.

Stones shall be thoroughly moistened with water after placement. Grout shall be applied while the stone is moist and shall be worked into the interstices to completely fill the voids.

Grout shall be placed only when the weather is suitable and the surface shall be cured by covering with curing blankets for at least 3 days after grout placement. Weep holes shall be provided through the riprap as directed by the Engineer.

9.S PASSAGE OF TRAFFIC

9.3.S Improvements to Existing Roads

Delete Clause 9.3.b of the Standard Specification and substitute the following:

- (b) Scarifying, re-shaping, widening, watering and compacting the top 150mm of the existing road to 98% MDD (GHA S1).

11. SHOULDERS, FOOTPATHS, BICYCLE LANES AND BLOCK PAVING

11.2.S Materials for Construction of Shoulders

Amend the list of materials for construction of shoulders by replacing with the following:

- (a) Gravel wearing course or natural material in accordance with Sections 10 and 12 of the Specification.
- (b) Graded crushed stone in accordance with Section 13 of the Specification.
- (c) Cement or lime treated material or lean concrete in accordance with Section 14 or 15 of the Specification.
- (d) A bituminous mix in accordance with Section 16 or 17 of the Specification.
- (e) Concrete paving Blocks in accordance with Clause 11.5.S of this Specification.
- (f) A combination of (a) to (e) above

11.8.S Paving Blocks for Footpaths and Bicycle Lanes

In paragraph 3, replace “.....95% MDD (GHA S1) ... ” with “..... 98% MDD (GHA S1)”.

12. NATURAL MATERIALS FOR SUB-BASE AND BASE

12.2.2.S Sources of Materials

Add the following as an additional last paragraph:

The Contractor has the responsibility to source for Subbase material to meet the requirement of this project.

Delete Sub-Clause 12.3.2 and substitute with the following:

12.3.2.S Material Requirements for Natural Gravel Base Course

Material for base course (including mechanical stabilisation shall comply with Class G80 of Table 12.1.

Delete Sub-Clause 12.3.3 and substitute with the following:

12.3.3.S Material Requirements for Natural Gravel Subbase

Material for subbase layers shall comply with Class G60 of Table 12.1.

13. GRADED CRUSHED STONE SUB-BASE AND BASE

13.2.S Definitions

The stone class shall be "A" and the nominal size 0/40mm.

13.4.1.S Compaction

Delete paragraph 5, sub-sections (i) and (ii) of the Standard Specification and substitute with the following:-

- (i) Base: average dry density not less than 100% MDD with no result less than 98% MDD.
- (ii) Sub-base: Average dry density not less than 98% MDD with no result less than 96% MDD.

16. BITUMINOUS SURFACE TREATMENTS

16.1.S Scope

Add to last sentence of Sub-section 16.1 of the Standard Specification the following:

The Contractor must therefore obtain a copy of this document and should refer to it accordingly when carrying out Bituminous Surface Treatment on this project

17. BITUMINOUS MIX BASES, BINDER COURSES AND WEARING COURSES

17.2.1S Asphalt Concrete Mixtures

Delete paragraph one of Clause 17.2.1 of the Standard Specification and substitute the following "Asphalt Concrete for surfacing shall be designed according to the Marshall Method of mix design; outlined in the Asphalt Institute Manual MS-2 Sixth Edition".

17.2.11.S Compaction

Add the following to the last sentence of Sub-Clause 17.2.11.

The Contractor shall establish his Compaction method during the site trials, such Compaction method shall not be varied in any form or shape without the approval of the Engineer.

Should the need arise for the Contractor to change compaction equipment, the Engineer shall be informed immediately and a new Compaction method through a new site trial shall be established.

Rolling in the FIELD shall continue until the AIR VOIDS CONTENT OF THE LAYER OF BINDER AND WEARING COURSE IS:

BETWEEN 6% - 8% of the DAILY Gmm at the Optimum bitumen content.

Note that any Layer, which fails this field air voids content shall be removed, replaced at no cost to the Client.

17.3.1S

Scope

The asphaltic concrete shall be Type 1 (High Stability).

17.3.2S

Materials for Asphaltic concrete

(a) Bitumen shall be AC-20 Viscosity Grade.

(b) All aggregate shall be Class A.

The Binder and Wearing Course mixes shall have maximum of 10% by weight of Total Aggregate as Natural Sand.

17.3.3S

Grading Requirements

The surfacing shall be a wearing course with a maximum stone size of 14mm. The binder course shall have a maximum stone size of 20mm. The gradings must be within the envelope given in Table 17.3 for wearing course, use column under 0/14 and for binder course, use column under 0/20.

17.3.4S

Requirements for Asphalt Concrete

For Wearing Course use type 1 of table 17.5

For Binder Course use type 1 of table 17.5

The nominal binder content shall be 5.5% for wearing course and 5.0% for binder course.

The Contractor shall be responsible for designing the mix and shall be **approved by the Engineer**.

The proportions by weight of Total Mixture shall be determined for all constituents of the mixture and shall constitute the nominal constituents.

This new grading shall be called the Job Mix Formula (JMF) and at no instance shall the mix be accepted if any part of grading curve falls outside the limits of the **JMF**.

If any works are executed with an unacceptable mix, the Engineer shall order their removal and be replaced at the cost of the Contractor.

With the exception of the Natural Sand, all aggregate constituents of the Asphalt Concrete shall be fully crushed.

18. CONCRETE WORKS

18.3.3S Aggregate

Add the following to the last sentence of paragraph 2:

Under no circumstances shall Quartzite, Granite-gneiss, Andesite, Graywackes, Dacites, Argillite, Chalcedony, Opaline-shale and Chalcedonic-chert aggregates (Coarse or fine) shall be permitted on site or included as aggregates for concrete for all works either in-situ or precast under this contract.

23.S ROAD FURNITURE

23.2.S Road Reserve Boundary Posts

Delete paragraph 5 of Clause 23.2 of the Standard Specification and substitute the following:-

The posts shall be maintained in position and kept in a clean and legible state until the issuance of the Taking-over Certificate.

24. MISCELLANEOUS BRIDGE WORKS

24.5.1.S Materials

Delete Sub-Clause 24.5.1(d) and substitute with the following:

24.5.1(d) Bedding Mortar

Bedding mortar shall satisfy the following performance requirements:

- i) Bedding mortar shall have a compressive strength not less than 50 N/mm².
- ii) The flow characteristics shall be such that the volume of the bed or plinth as shown on the Drawings is completely filled with homogeneous material when placed within the range of ambient temperature between 5 °C and 25 °C.
- iii) The physical and chemical properties shall be compatible with those of all adjoining surfaces

Where the mortar is required to resist stress before attaining its 28-day strength the compressive strength shall be confirmed by tests on mortar cubes stored under conditions or by a method approved by the Engineer. The assessment of the strength of the bedding mortar and the stresses produced by the loads shall be subject to the agreement of the Engineer.

24.5.1(d) Bedding Mortar (Cont'd)

Materials

The minimum thickness of bedding mortar shall be 10 mm and the maximum thickness without reinforcement shall be 30 mm.

- i) The maximum aggregate size in bedding mortar shall be 2.36 mm.
- ii) Proprietary materials shall be stored as follows:
 - a) The materials shall be stored in a dry environment at a temperature of between 10°C and 27°C.
 - b) The containers shall be damp-proof, leak-proof and readily emptied of their contents.
 - c) Containers shall be marked with the batch reference number, component identification, manufacturer's name, net weight and such warnings or precautions concerning the contents as are required.
- iii) The material shall not be removed from the store for use in the Works until immediately prior to mixing.
- iv) Material shall not be used more than six months after the date of manufacture or any lesser period specified by the manufacturer or supplier.
- v) The Contractor shall supply with each batch or part of a batch of the material delivered to the Site, certificates furnished by the supplier or manufacturer stating the following:
 - a) Manufacturer's name and address.
 - b) Manufacturer's agent's name and address where applicable.
 - c) Description of material and brand name.
 - d) Batch reference number, size of batch and number of containers in the delivery order.
 - e) Date of manufacture.
 - f) The chloride ion content, expressed as a percentage by mass of cement.
- i) Calcium chloride or admixtures containing chloride salts shall not be used and the total chloride ion cement shall not exceed 0.1% of the mass of cement.
- vii) Portland cement shall comply with BS 12.
 - viii) The total acid-soluble sulphate content of the mix expressed as SO₃ shall not exceed 4% of the mass of cement in the mix. The sulphate content shall be calculated as the total from the various constituents of the mix.

- ix) If water for the Works is not available from a water company's supply, the Engineer's approval shall be obtained regarding the source of supply and manner of its use. When required by the Engineer, the Contractor shall arrange for tests of the water to be carried out in accordance with BS 3148. Water from the sea or tidal rivers shall not be used.

24.5.1(d) Bedding Mortar (Cont'd)

- x) Resinous bedding mortars shall be based on thermosetting organic polymers consisting of stable fluid and/or solid components, which on mixing react chemically to form a hardened solid mass. Products shall be formulated from epoxide, polyester, polyurethane or acrylic resin systems or such other formulation as is approved by the Engineer. Fillers or aggregates to be incorporated in accordance with the manufacturer's recommendations, to extend or modify the properties of the resinous composition, shall be pre-bagged, dry and factory proportioned. The addition of other fillers or aggregates shall not be permitted.

Site Mixing, Placing and Curing

- i) Mixing, placing and curing of proprietary bedding mortar shall be carried out in accordance with the manufacturer's written instructions together with the following:
- (a) The material shall not be mixed or placed in the Works at ambient temperatures of less than 5°C. If for 24 hours before, during or after placing, the ambient temperature falls below 5°C the Contractor shall maintain the temperature of the substrate and other adjoining surfaces at not less than 5°C for the duration of the curing period recommended by the manufacturer.
 - (b) For cementitious bedding mortars the water/cement ratio shall not exceed 0.4. The water content shall be confirmed during the approval tests and maintained within ± 1 per cent of quantity approved by the Engineer in mortars placed in the works.
 - (c) Only full packs of mortar as supplied shall be mixed. On-site proportioning shall not be permitted.
 - (d) The temperature of the mortar on completion of mixing shall be between 5°C and 25°C.
- i) For cementitious bedding mortars, the substrate shall be flushed clean with water two hours before placing and maintained wet until placing commences. Any free water on the surface of the substrate shall be removed before placing the mortar. The underside of the base plate shall be clean and free from loose

rust and loose mill scale at the time of bedding. The mortar shall be placed in its final position within 25 minutes of commencement of mixing. Immediately after casting, the mortar shall be protected to prevent evaporation for at least three days.

24.5.1(d) Bedding Mortar (Cont'd)

- iii) For resinous bedding mortars the substrate shall be dry, free from loose dirt and dust and shall meet the conditions specified by the manufacturer. The underside of the base plate shall be clean and free from loose rust and loose mill scale at the time of bedding. The mortar shall be placed in its final position within one hour, or lesser period specified by the manufacturer, of commencement of mixing.
- iv) The mortar shall be poured in one corner of the plinth. The addition of mortar to the sides of the plinth shall only be permitted after the mortar has flowed completely under the plinth.
- v) When the mix proportions have been approved by the Engineer no variations shall be made in the manufacture, supply, mix proportions or method of mixing of the material without the consent of the Engineer.

Laboratory Approval Tests

i) General

Mortar shall not be used in the Works until it has been approved by the Engineer. Every batch of mortar to be used in the Works shall be tested by the Contractor.

Where more than one batch of mortar is to be used in the Works the Elastic Stability Test may be omitted, with the consent of the Engineer, from the testing regime subsequent to the initial laboratory approval tests.

The Contractor shall state the water content to be used, expressed as a percentage by weight of the material. Mixing shall be carried out in accordance with the manufacturer's written instructions.

ii) Flow Cone Test, Calibration of Flow

- a) The flow characteristics of the mortar shall be determined by the Flow cone Test method described in ASTM Standard C939-87.
- b) Tests shall be conducted at ambient temperatures of 5°C and 20°C within 15 minutes of commencement of mixing.

- c) For the test at 5°C the temperature of the flow cone and the mixer shall be 5°C, the temperature of the dry material 10°C and the temperature of the water where required 20°C.
- d) For the test at 20°C the temperature of the flow cone, the mixer, the dry material and the water where required shall be 20°C.

24.5.1(d) Bedding Mortar (Cont'd)

- e) For each temperature at least two tests having times of efflux within $\pm 5\%$ shall be made and the average time of efflux to the nearest 0.2 second shall be reported.

iii) Flow Between Glass Plates

- a) The flow characteristics of the mortar between glass plates shall be determined using the apparatus shown in Drawing Number K2 of Volume 3 of the UK DTp Manual of Contract Documents for Highway Works.
- b) Tests shall be conducted at ambient temperatures of 5°C and 20°C.
- c) The mortar shall be poured in one corner of the apparatus commencing between 18 minutes and 20 minutes after commencement of mixing.
- d) A satisfactory flow shall be achieved when the mortar flows under the glass plate and rises at least 10 mm above the underside of the top plate at all positions, without signs of segregation, bleeding, effervescence or air inclusions.

iv) Compressive Strength (Cementitious)

- a) The compressive strength of cementitious bedding mortars shall be carried out on six 70 mm cubes at an age of 28 days.
- b) The temperature of the mixer, the dry material, the water and the moulds shall be 20°C.
- c) The 70 mm cube moulds shall comply with BS 1881: Part 108. Test specimens shall be made by filling the moulds carefully through a funnel to produce a void-free mortar. The moulds shall be covered by a steel plate to prevent expansion of the mortar.
- d) There shall be no compaction. Specimens shall be damp-cured for the first 24 hours removed from the moulds and then water cured. Curing shall comply with BS 1881: Part 111.
- e) Testing shall comply with BS 1881: Part 116.

- f) The strength requirement shall be satisfied if none of the compressive strengths obtained is lower than 50 N/mm^2 and the difference between the highest and lowest values is not more than 20% of the average. All results shall be reported.

24.5.1(d) Bedding Mortar (Cont'd)

v) Compressive Strength (Resinous)

- a) The compressive strength for resinous bedding mortars shall be carried out on six 40 mm cubes at an age of 24 hours.
- b) The 40 mm cube moulds shall comply with BS 6319: Part 1 and shall be carefully filled using a funnel to ensure void-free cubes. There shall be no compaction.
- c) Testing shall comply with BS 6319: Part 2.
- d) The strength requirement shall be satisfied if none of the compressive strengths obtained is lower than 50 N/mm^2 and the difference between the highest and lowest values is not more than 20% of the average. All results shall be reported.

vi) Expansion Test

- a) Short term expansion shall be determined by the method described in ASTM Standard C827-87. Results shall be determined from the mean of two tests.
- b) The expansion of cementitious bedding mortars at 24 hours shall be less than 2.5% and greater than 0.25%.
- c) The volume change of resinous bedding mortars at 24 hours shall be between -0.6% and +1.0%.

vii) Water Absorption Test

- a) Absorption of water by resinous bedding mortars shall be determined by the method described in ASTM Standard C413-83. The absorption shall be not more than 0.4%.

viii) Elastic stability tests for cementitious bedding mortars shall be carried out on one set of three cubes made at 20°C.

- a) Curing shall comply with BS 1881: Part 111. After a minimum of 28 days, the cubes shall be placed in water at 20°C heated at a uniform rate to 45°C in 24 hours.

- b) Upon attaining 45°C the cubes shall be sealed in a plastic bag and then loaded at a compressive stress of 30 N/mm² maintained for 6 hours at 45°C and the strain measured.
- c) The total compressive strain shall not exceed 1% on each cube.

24.5.1(d) Bedding Mortar (Cont'd)

- ix) Elastic stability tests for resinous bedding mortars shall be carried out on one set of two 40 mm cubes complying with BS 6319: Part 1.
 - a) On removing the cubes from the moulds after 24 hours they shall be heated at a uniform rate to 45°C in a further 24 hours.
 - b) Upon attaining 45°C the cubes shall be loaded at a compressive stress of 30 N/mm² maintained for 6 hours at 45°C and the strain measured.
 - c) The total compressive strain shall not exceed 1% on each cube.

24.6.S Movement Joints and Sealants

Add the following Sub-Clause 24.6.8:

24.6.8 Bridge Deck Expansion Joints

Bridge deck expansion joints, and sealing of gaps in bridges shall be as shown on the Drawings and shall comply with the requirements of this Specification.

Only bridge deck expansion joints which have received approval in accordance with the requirements of UK DTp Departmental Standard BD 33/88 shall be incorporated into the Works.

Storage and installation of joints, jointing materials, sealants and other associated items shall be in accordance with the manufacturer's recommendations.

The same joint system, seal or sealant shall continue across the full width of the deck including footway, verge, hard strip, hard shoulder and central reserve. Different joint systems shall not, except with the approval of the Engineer, be combined at one end of a deck.

Installation of Bridge Deck Expansion Joints

Where the surfacing and bridge deck waterproofing are to be removed to accommodate the bridge joint these shall be cut to a clean straight line for the full depth of the surfacing without damage to the concrete substrate.

Before installation of the joint, the concrete surfaces shall be free from laitence, sound, clean and comply with the manufacturer's requirements.

The expansion joint and the bridge deck waterproofing shall be formed so that a watertight seal is provided.

24.5.8 (Cont'd)

Expansion joints shall be of uniform width and straight alignment and shall be accurately set and finished and aligned with the finished surface.

During the placing and hardening of the bedding and bonding materials, movement between the joint and the substrate shall be prevented.

Where shown on the Drawings, subsurface and below joint drainage systems shall be provided and installed in accordance with the requirements therein, and the joint manufacturer's recommendations. On completion of the joint, the drainage system shall be checked and cleared of any obstructions.

Before vehicles traffic the joints, temporary covers capable of withstanding vehicular loading shall be provided over expansion joints during and after their installation for a period to be agreed by the Engineer.

Joint Filler Board

Joint filler board for expansion joints shall be as shown in the Drawings, within a tolerance of ± 1.5 mm. It shall be a self-expanding cork seal or a firm compressible material or a bonded combination of compressible and rigid materials.

The joint filler board shall meet the requirements given when tested in accordance with the procedures in the following clauses:

i) Weathering Test

- a) Three specimens, each 115 mm square ± 2.5 mm, shall be placed in a ventilated drying oven maintained at a temperature of $55^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 7 days, after which they shall immediately be immersed in water at room

temperature of between 16°C and 21°C for 24 hours. They shall then be subjected to five cycles of freezing and thawing in the following manner.

- b) The specimens shall be placed in a watertight weathering test pan having a ribbed bottom and a fitted slotted lid designed to hold the three specimens vertically on edge. The pan shall be filled with water to half the depth of the specimens and then frozen to minus 7°C or below, for at least four hours after the initial freezing of the water. The pan shall then be placed in a water bath maintained at 18°C to 38°C without disturbing the specimens and shall remain there for one hour after thawing has completed. The pan and specimens shall then be returned to the refrigerator and freezing and thawing shall be repeated in precisely the same manner until five cycles of the process have been completed. The specimens shall be removed from the pan and air dried at room temperature for 48 hours before examination.

24.5.8 (Cont'd)

- c) The material shall be deemed to have passed the weathering test if the specimens show no signs of disintegration or shrinkage.
- ii) **Compression and Recovery Test**
 - a) Two of the specimens which pass the weathering test, and two new specimens, each trimmed to 100 mm square ± 0.5 mm shall be subjected to three applications of load at 24 hour intervals in a compression test machine complying with BS 1610, with auxiliary platens 100 mm², minimum 13 mm thick. During each application of load each specimen shall be compressed to 50% of its original thickness at a rate of strain of 1.3 mm per minute. The load required to achieve this amount of compression shall be not less than 0.07 N/mm² and not more than 10 N/mm² for material to be used in pavements and not less than 0.07 N/mm² and not more than 0.4 N/mm² for material to be used in bridge joints. The load shall be released immediately the required degree of compression is reached and after the third application a recovery period of 30 minutes shall be allowed after which the thickness of the specimen shall be measured.
 - b) This thickness, expressed as a percentage of the original thickness, is the "recovery" value of the specimen. The thicknesses shall be measured to an accuracy of 25 micron. The two new specimens shall be weighed before and after testing. The difference in mass shall be determined with an

accuracy of 0.1% and shall be expressed as percentage of the original mass of the specimen.

- c) The material shall be deemed to have passed the test if all four specimens have recovery values of at least 70% and the two new specimens have not suffered a reduction of mass in excess of 1%.

iii) **Extrusion Test**

- a) The third sample which passes the weathering test shall be trimmed to 100 mm square ± 0.5 mm and be subjected to the following extrusion test.
- b) The extrusion mould shall be 100 mm x 100 mm tolerance of (-0.5 mm to 0) internally, of sufficient depth to test the sample as received, open on one side only and fixed rigidly to a base plate. The mould shall be provided with a closely fitting pressure plate which shall fit without binding, and with an accurate horizontal measuring dial gauge or measuring device accurate to 25 microns. The specimen shall be mounted in the extrusion mould and loaded once as described in the compression and recovery test.

The extrusion at the open side of the mould shall be measured with the gauge when the specimen is compressed to 50% of its original thickness and before release of the load.

- c) The material shall be deemed to have passed the test if the extrusion of the free edge does not exceed 6mm.

iv) **Immersion Test for Cork Filler Board**

- a) Two specimens each 115 mm x 115 mm ± 2.5 mm shall be prepared and the thickness of each specimen shall be determined to the nearest 25 microns before the specimens are immersed in boiling water for one hour. After removal from the water the specimens shall be allowed to cool to room temperature and after 15 minutes at this temperature their thickness shall be re-measured to the nearest 25 microns.
- b) The material shall be deemed to have passed the test if both specimens have a thickness of not less than 140% of their thickness before immersion.

v) **Acid Test for Cork Filler Board**

- a) Two specimens each 115 mm x 115 mm ± 2.5 mm shall be immersed in hydrochloric acid of a specific gravity of 1.18 at room temperature, which is

then brought to the boil and maintained thus for one hour when the specimens shall be removed and rinsed in water.

- b) The material shall be deemed to have passed the test when after examination the specimens show no evidence of serious disintegration, friability or lack of resilience. Discoloration or minor swelling shall not be considered as failure.

Sealing of Gaps

Sealant materials shall be as described on the Drawings.

Joint filler board and sealant materials shall be compatible and the Contractor shall submit to the Engineer for approval the manufacturer's specification for these materials.

Gunned or poured sealants shall be placed when the temperature of the structure is such that any movements which may take place will not cause the strain in the sealant to exceed the maximum value recommended by the manufacturer.

Immediately before sealing, the Contractor shall ensure that the sides of the joint gap are clean, dry and free from loose material. Any concrete projections into the gap shall be removed.

Where a bond breaker in the form of a compressible strip is placed between the filler board and the sealant it shall be compatible with both materials and agreed by the Engineer.

All seals shall, where practicable, be poured or fixed on one continuous length. The position and details of a joint in a seal shall be agreed by the Engineer and the joint shall be formed in accordance with the manufacturer's instructions unless otherwise directed by the Engineer.

Where gunned or poured sealants are visible, the concrete shall be masked on either side of the joint with suitable tape prior to the placement of the sealant to prevent its adherence to the exposed concrete surface. The tape shall not stain the concrete surface.

Add the following Sub-Clauses 24.9 and 24.10.

24.9 Contractor's Submittals

The Contractor shall submit, for the approval of the Engineer, complete details and information concerning the method, materials, equipment and procedures that the Contractor proposes to use in the construction of the bridge.

The submittals shall include, but shall not be limited, to the following information: -

- (a) Complete details of the Contractor's organization for the management of the construction of the bridge. The details shall cover the operation of the casting area.
- (b) Method Statement giving complete details of the proposed method of the foundations, abutments and columns including full details of any proposed dewatering method.
- (b) Method Statement giving complete details of beams casting, transportation and placing.

22.10 Composite Deck Bridge

The manufacturing tolerances for the precast members shall nowhere exceed those given for length, cross section straightness in BS 8110. In addition, where beams are laid side in a deck:

- i) The width of the deck shall be within ± 6 mm of that described in the Contract.
- ii) In adjacent spans, the continuity of line of the outside beams shall be maintained.
- iii) The ends of the beams shall be placed to within 6mm of their correct positions as shown on the Drawings.
- iv) The alignment of transverse holes shall permit the reinforcement or prestressing tendons to be placed without distortion.

The in-situ concrete shall be placed in such a sequence that the advancing edge of the freshly deposited concrete over the full width of deck or between longitudinal construction joints is approximately parallel to the deck supports.

Beams shall be prevented from moving laterally during the placing of the in-situ concrete.

The gaps between beams shall be suitably caulked or shuttered to the satisfaction of the Engineer before the in-situ concrete is placed.

SCHEDULE 1: MINIMUM SPECIFICATIONS FOR VEHICLE TYPE 1

Main Application: The vehicle offered should be based on the manufacturer's current standard production models, which conforms as near as possible to the following specifications for twin cab pick-ups. Vehicles should be suitable for continuous operations in tropical conditions, both on and off road

Brief Description of Vehicle Type I	Specifications	
4- Wheel- drive Double Cabin Pick-Up Vehicle	Body Type	Pick-up
	Seating Capacity	5 Seater
	Engine	
	Displacement cc	2500
	Max Power (hp/rpm)	172/4000
	Max Torque (Kgm/rpm)	42/2000
	Transmission	6 Speed Manual Transmission
	Steering	Power Assisted
	Fuel Tank Capacity (litres)	80
	Suspension	Front Double Wishbone
	Suspension	Rear Rigid + Leaf Spring
	Brakes	Front Disc
	Brakes	Rear Drum
	Tyres	255/70 R16
	Features	
	Power Assisted Tilt Steering	
	Alloy Wheels	
	Part time 4 wheel drive	
	3 spoke leather steering wheel	
	Power door locks	
2 DIN AM/FM/CD player		
Bed liner		

Brief Description of Vehicle Type I	Specifications
	Manual Air Conditioner
	Cup holder FR & RR X 2
	Power windows with auto Up/Down for driver
	Front Fog lamps
	Power outside mirrors
	Keyless Entry
	Dual Airbags
	Parking Sensors
	ABS
	Cruise control

Section VII - Drawings

List of Drawings

A complete set of Design Drawings is provided in Volume 2 of this Contract Documents. It is also available in soft-copy on CD

Section VIII – Bills of Quantities

BILLS OF QUANTITIES

4.1 PREAMBLE

- 4.1.1 The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, General Conditions, Particular Conditions Technical Specifications, Drawings and this Preamble to the Bill of Quantities.
- 4.1.2 The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for tendering. The basis of payment will be the actual quantities of Work ordered and carried out, as measured by the Contractor and verified by the Engineer and valued at the rates and prices entered in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.
- 4.1.3 The rates and prices entered in the priced Bill of Quantities, shall except insofar as it is otherwise provided under the Contract, include all Constructional Plant, labour, supervision, materials, erection, maintenance, preparation and supply of drawings to the extent required by the contract, waste, temporary works, responsibility for carrying out all necessary testing of materials for the Works and testing of any aspect of the works as required by the specification and or as ordered by the Engineer, attendance and transport for sampling and testing carried out by the Engineer, supplying results of tests carried out by the Contractor and provision of all samples and test certificates, insurance, overheads, profit, taxes and duties together with all general risks, liabilities and obligations set out or implied in the Contract.
- 4.1.4 A rate or price shall be entered against each item in the Bill of Quantities, whether quantities are stated or not. The cost of items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities.
- 4.1.5 The whole cost of complying with the provisions of the Contract shall be included in the items provided in the priced Bill of Quantities, and where no items are provided the cost shall be deemed to be distributed among the rates and priced entered for the related items of work.

- 4.1.6 General directions and descriptions of work and materials are not necessarily repeated or summarised in the Bill of quantities. References to the relevant sections of the contract documentation shall be made before entering prices against each item in the priced Bill of Quantities.
- 4.1.7 Provisional Sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with sub-clause 13.5 and Clause 13.6 of the General Conditions.
- 4.1.8 The Employer will correct any arithmetical errors in computation or summation as follows :
- (a) Where there is a discrepancy between amounts in figures and in words, the amount in words will govern ; and
 - (b) Where there is a discrepancy between the unit rate and the total amount derived from the multiplication of the unit rate and the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer, there is an obviously gross misplacement of the decimal point in the unit rate, in which event the total amount as quoted will govern and the unit rate will be corrected.
- 4.1.9 All items of work indicated in the Bill of Quantities shall be valued by measuring net, in the units of the Bill of Quantities, such actual quantities of the Permanent Works as have been executed strictly in accordance with the Tender Documents or further instructions issued in writing by the Engineer. Works which have been executed in excess of the dimensions shown on the drawings or not ordered by the Engineer shall not be paid for. In particular, no allowance shall be made in the measurement of any excavation for working space, temporary works or the operation of construction plant. The Bidder shall be required to give a breakdown of the rates or prices of specific items of work as per table 'D' of section IV (Bidding Forms).
- 4.1.10 In the Bill of Quantities, additional haulage will only be certified for those items expressly specified. All other haulage will be deemed to be included in the unit rates.
- 4.1.11 It is required that all roadways be kept open and access to private properties maintained at all times for the duration of construction, and the Contractor should have taken care of these in his rates.

- 4.1.12 The method of measurement of completed work for payment shall be in accordance with the « Civil Engineering Standard Method of Measurement » 3rd Edition (CESMM3) published in 1991 by the Institution of Civil Engineers, 1-7 Great George Street, London SW1P 3AA, as well as the Ministry of Roads and Highways Standard Specification for Roads and Bridge Works dated February 2007, supplemented by the Special Specification.

For this particular Contract, the CESMM3 is to be used in conjunction with the “Bank Harmonized Edition of the Conditions of Contract for Construction prepared and copyrighted by the Federation Internationale des Ingenieurs-Conseils (FIDIC), 2005,”. All references to clauses are as numbered in the FIDIC Conditions of Contract. The following amendments have also been made in the underlisted Work Classifications.

4.1.12.1 General Items (Class A)

The Bidder’s attention is drawn to the following;

(a) Specified Requirements

- Construction and maintenance of any diversions or access roads and all expenses incurred due to the passing of traffic through or around the site.
- Protection of the Works from water from any source.
- Provision of all Water supply and services, including electricity.
- Carrying out all necessary testing of materials for all the Works and testing of any aspect of the Works and as required by the Specifications or as ordered by the Engineer whether or not such requirements are itemized in the Bill of Quantities.

(b) Method – Related Charges

Notwithstanding the provisions of sub-section 7.2 of CESMM-3, the rates and prices shall be deemed to include all resources required and to include all intended method for the execution of the Works. The Bidder shall not list any additional items under the method related section of Class A of the Bill of Quantities.

4.1.12.2 Demolition and Site Clearance

The Bidder's attention is drawn to the following;

- a) The unit of measurement for the demolition of concrete drainage structures ("Other Structures" First Division) shall be the cubic metre (m³). The net volume of concrete (devoid of voids) contained in the structure shall be used in the classification.

4.1.12.3 Earthworks (Class E)

The Bidder's attention is drawn to the following:

- (a) Excavation for foundations and general excavation shall be to any depth
- (b) Rock is defined as all materials which, in the opinion of the Engineer, require blasting or the use of metal wedges and sledgehammers, or the use of compressed air drilling for its removal, and which cannot be extracted by ripping with a tractor of at least 150 brake hp with a single rear mounted heavy duty ripper or as defined in the technical specification.
- (c) Unless specified otherwise, the method of computation of volumes will be that of average end areas and centre line distances between cross-sections taken at 25m intervals. In irregular ground or tight curvature the Engineer may direct that ground cross-sections be taken at closer intervals.
- (d) Earthworks fill shall be measured by the cubic metre of compacted materials measured in the completed embankment.
- (e) any timbering required shall form part of the operation of excavation.
- (f) keeping excavation free from water and protection shall be deemed to be included.
- (g) Planning of the existing asphaltic concrete wearing course (if required), shall be measured by the area of material planed. The rate shall include the cost of pulverising the material for reuse, returning the material to the road and spreading.
- (h) Scarification of the existing road surface (whether laterite or bituminous) shall be measured by the area of material removed and the depth stated in accordance with the Specifications.
- (i) trimming of and preparation of excavated and filled surfaces shall be deemed to be included in the rate for excavation and filling items.
- (j) spreading, watering, compacting, shall form an integral part of filling, regravelling and grading.
- (k) where backfill and removal of surplus material are required these shall be part of excavation if not specifically itemized.

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- (l) Overhaul of Earthworks shall be measured by the $m^3.km$ calculated as the product of the volume of material (compacted) in cubic metres and the overhaul distance in kilometres

- (m) The distance between the centres of volume of cut and fill shall be measured along the centreline of the new road. Should the Contractor elect to haul by a different route no additional measurement or payment will be made.
- (n) Cut and fill volumes for ramps, service roads, junctions, roads approaches, and connections on either side of the road shall be considered as concentrated at the centre-line of the road.
- (o) The distance between the centres of volume of borrow pits and fills and for cut to spoil material shall be measured along the shortest route determined by the Engineer as feasible and satisfactory. If the Contractor chooses to haul earthworks material over some other longer route, computations for measurement shall nevertheless be based on the distance measured along the shortest route designated by the Engineer.
- (p) The mean "Free Haul Distance" for hauling cut material to fill beyond which "Overhaul" will apply shall be determined by the Engineer from the mass haul diagram.
- (q) Any change in earthworks material utilization shall be subject to the Engineer's approval.

4.1.12.4 In-situ Concrete (Class F):

The Bidder's attention is drawn to the following;

- (a) Placing of concrete shall be deemed to be for any thickness or cross-sectional area for all components.

4.1.12.5 Concrete Ancillaries (Class G):

The Bidder's attention is drawn to the following;

- (a) Plane formwork and formwork curved to one radius in one plane shall be measured in m² irrespective of width classification.
- (b) Joints are measured as one item irrespective of width classification.
- (c) Item descriptions for bar reinforcement shall cover bars of any length.
- (d) Reinforcement bars where measured as a single item are to cater for all sizes and bidders are required to have taken care of all required sizes in their rates.

4.1.12.6 Precast Concrete (Class H)

Bidder's attention is drawn to the following;

- (a) *The actual lengths are stated for beams in place of the length classifications in the second division.*
- (b) The actual dimensions of slabs are given in place of the area classifications in the second division.

4.1.12.7 Pipework - Pipes (Class I):

The Bidder's attention is drawn to the following;

- (a) Provision, laying and jointing of pipes is exclusive of excavations, backfilling and disposal of surplus material, which are treated separately under Class E (Earthworks).
- (b) The actual bore of pipe has been stated in place of the nominal bore classification in the second division.
- (c) The depth of trench in the third division is without any limit.

8.1.12.8 Pipework – Manholes and Pipework Ancillaries (Class K)

The Bidder's attention is drawn to the following;

- (a) Manholes and other chambers have been measured in detail as set out in other classes of the CESMM3.
- (b) Concrete drains (i.e. rectangular section lined ditches) have been measured in detail as set out in other classes of the CESMM3.

4.1.12.9 Pipework – Supports and Protection, Ancillaries to Laying and Excavation

The Bidder's attention is drawn to the following;

- (a) The formwork to concrete surrounds has been measured separately in accordance with the rules of Class G. (Concrete Ancillaries).

4.1.12.10 Roads and Pavings

The Bidder's attention is drawn to the following;

- (a) Provision of natural gravel subbase and base materials shall exclude the cost of excavation of the material which is included separately in Class E (Earthworks).
- (b) Provision of natural gravel subbase and base material as well as crushed rock base material is deemed to include the cost of hauling the material from the borrow pit or quarry to the site, except where separate items have been specifically provided for the purpose. The free haul distance will in such cases be stated in the item descriptions.
- (c) Surface Dressing – The bituminous binder content shall be measured in litres in accordance with the Republic of Ghana Ministry of Roads and Highways Standard Specification for Road and Bridges. In like manner, the aggregates for surface dressing shall be measured in cubic metres as per the Specification.

- (d) Prime Coat/Tack Coat – The respective bituminuous binders shall be measured in litres as per the Republic of Ghana Ministry of Roads and Highways Standard Specification for Road and Bridges.
- (e) The actual depths of subbases, flexible road bases and surfacing are stated in place of the depth classifications in the third division.
- (f) The actual depth of concrete pavement is stated in place of the depth classification in the third division.
- (g) Reinforcement bars where measured as a single item are to cater for all sizes, and bidders are required to take cognizance of all required sizes in their rates.
- (h) The actual depth of joint is stated in place of the depth classification in the third division.
- (i) The actual depth of light duty pavements is given in place of the depth classification in the third division.

4.2 Units of Measurement

<u>Unit</u>	<u>Abbreviation</u>
Millimetre	mm
Metre	m
Square Metre	m ² or sq.m.
Square Millimetre	mm ² or sq.mm.
Hectare	ha
Cubic Metre	m ³ or cu.m
Cubic metre .Kilometre	m ³ .km or cu.m.km
Kilogramme	kg
Tonne (1000kg)	t
Provisional Sum	Prov. Sum
Lump Sum	Sum or LS
Number	Nr.
Vehicle - Month	Veh.mth
House – Month	Hse-Mth
Man-Month	Mn-Mth
Hour	Hr

4.3 Abbreviations and Definitions

The following is a list of the more important abbreviations and definitions of terms to which frequent reference will be made in the Contract documents:

AWWA	..	..	..	..	American Water Works Association
ASTM	..	..	..	..	American Society for Testing Materials
BS and BSCP	..	..	..	..	British Standard and British Standard Code of Practice
AASHTO..	..	..	..	..	American Association of State Highway and Transport Officials
Prime Coat	..	..	..	..	Bituminous coat applied to gravel or crushed rock surfaces prior to asphalt surfacing or similar surface dressing.
Tack Coat	..	..	..	..	Similar to prime coat but applied to structural surfaces, and existing surface dressed surfaces.
C.S.A.	..	..	..	..	Canadian Standards Association
Concrete Grade 40/20	..	..	..	..	Means: 28 days strength = 40N/mm^2 . Max. aggregate size = 20mm
CESMM3	..	..	..	..	Civil Engineering Standard Method Measurements, Third Edition

Further abbreviations and definitions appear in Part 1 Clause 1 of the Conditions of Contract and Section 1 of the General Specifications.

4.4 Work Items

4.4.1 List of Principal Quantities

This list is given for the sole purpose of assisting bidders in making a rapid assessment of the general scale and character of the proposed Works prior to an examination of the remainder of the Bill of Quantities and other contractual

documents on which the Bid will be based. Attention is also drawn to Section 1 entitled "Instructions to Bidders" for a description of the Works.

The approximate quantities of the principal components of the Works are as follows:

Description	Quantity	Unit
<u>Road Works</u>		
Site Clearing	39	Ha
Excavation (general and foundations)	459,442	m ³
Excavation (rock)	4,288	m ³
Filling (embankment)	12,696	m ³
Filling (other works)	69,552	m ³
Gravel sub-base (excluding excavation)	457,056	m ³
Crushed Rock Base	173,880	m ³
Extra over for haulage of natural gravel material	2,325,024	m ³ .km
Extra over for haulage of chippings	66,565	m ³ .km
Concrete (in-situ)	555	m ³
Concrete (U-Channel drains -precast)	19,840	m
Precast Concrete Pipes (various sizes)	464	m
Precast Kerbs	90,230	m
Reinforcement (in insitu concrete)	36.30	Tonne
Formwork (to insitu concrete)	1,404	m ²
Asphaltic Concrete	13,910	m ³
Road Marking	25,334	m
Road Signs	87	Nr.
Concrete Median Barrier	00	m
Street Lights (single arm)	511	nr
Street Lights (double arm)	0	nr
Crash Barrier / Guard Rail	3,200	M
<u>Bridge Works</u>		
Bridges (road-over-rail)	2	nr
3-tier Interchange	1	nr

4.4.2 Contents of Bill of Quantities

The Bill of Quantities contains the following part Bills and Schedules:

Bill no. 1 - General Items

Bill no. 2 – The Road Works

La Beach Road Completion Project Ph.1

- Bill no. 2-1 - Demolition and Site clearance
- Bill no. 2-2 - Earthworks
- Bill no. 2-3 - Road and Pavings
- Bill no. 2-4 - Concrete Drain channels
- Bill no. 2-5 – Miscellaneous Works
- Bill no.2-6 - Street lighting

Bill no. 3 – The Bridge Works

Daywork Schedule

Summary of Specified Provisional Sums

Grand Summary of Bill of Quantities

- 4.5 The item for “Adjustment Allowance” in the GRAND SUMMARY has been inserted for the convenience of bidders in making last minute adjustments to their Bid Price without the necessity of altering the unit rates and prices within the actual Bills themselves.

Notwithstanding the provision of sub-clauses 6.4 and 6.5 of CESMM3, where any such allowance is entered, it shall be assessed by the Engineer as a percentage of subtotal (C) in the GRAND SUMMARY, and shall be deemed to apply uniformly to all unit rates and prices (as quoted by the Bidder) in the Bill of Quantities for the purpose of the Contract. It shall not apply to Provisional Sums and Contingency Allowances.

4.6 Daywork Schedule

4.6.1 General

Reference should be made to subclause 13.6 of the General Conditions. Work shall not be executed on a daywork basis except by written order of the Engineer. Bidders shall enter basic rates for daywork items in the Schedules, which rates shall apply to any quantity of daywork ordered by the Engineer. Nominal quantities have been indicated against each item of daywork, and the extended total for daywork shall be carried forward as a Provisional Sum to the Summary Total Bid Amount. Unless otherwise adjusted, payments for daywork shall be subject to price adjustments in accordance with the provisions in the Conditions of Contract.

4.6.2 Daywork Labour

In calculating payments due to the Contractor for the execution of dayworks, the hours for labour will be reckoned from time of arrival of the labour at the job site to execute the particular item of daywork to the time of return to the original place of departure,

but excluding meal breaks and rest periods. Only the time of classes of labour directly doing work ordered by the Engineer and for which they are competent to perform will be measured. The time of gangers (charge hands) actually doing work with the gangs will also be measured but not the time of supervisory personnel.

The Contractor shall be entitled to payment in respect of the total time that the labour is employed on daywork, calculated at the basic rates entered by him in the "Schedule of Daywork Rate, Labour", together with an additional percentage of payment on basic rates representing the Contractor's profit, overheads, etc. as described below:

- (a) the basic rates for labour shall cover all direct costs to the Contractor, including (but not limited to) the amount of wages paid to such labour, transportation, time, overtime, subsistence allowances and any such sums paid to or on behalf of such labour for social benefits in accordance with Ghanaian law. The basic rates will be paid in local currency: and
- (b) an additional percentage payment has been quoted for application to costs incurred under (a) above shall be deemed to cover the Contractor's profit, overheads, superintendence, liabilities and insurances and allowances to labour, time-keeping and clerical and office work, the use of consumable stores, water, lighting and power; the use and repair of stagings, scaffoldings, workshops and stores, portable power tools, manual plant and tools; supervision by the Contractor's staff, foreman and other supervisory personnel; and charges incidental to the foregoing.

4.6.3 Daywork Materials

The Contractor shall be entitled to payment in respect of materials used for daywork (except for materials for which the cost is included in the percentage addition to labour costs as detailed heretofore), at the basic rates entered by him in the "Schedule of Daywork Rates: 2. Materials" together with an additional percentage payment on the basic rates to cover overhead charges and profit, as follows:

- (a) the basic rates for materials shall be calculated on the basis of the invoiced price, freight, insurance, handling expenses, damage, losses, etc., and shall provide for delivery to store or stockpiling at the Site. The basic rates shall be stated in local currency and foreign currency, as applicable; and
- (b) an additional percentage payment to be quoted by the bidder and applied to the payments made under (a) above shall be deemed to cover the Contractor's profit, overhead, superintendence, liabilities and charges incidental to the foregoing.

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

4.6.4 Daywork Constructional Plant

The Contractor shall be entitled to payments in respect of Constructional Plant already on Site and employed on daywork basis at the rental rates entered by him in the "Schedule of Daywork Rates: 3. Constructional Plant" as described below:

- (a) The basic rate shall be deemed to include due and complete allowance for depreciation, interest, indemnity and insurance, repairs, maintenance, supplies, fuel, lubricants, and other consumables. The cost of drivers, operators and assistants will be paid for separately as described under the section on Daywork Labour.

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 in daywork and the time for the return journey thereto shall be included for payment, and

- (b) An additional percentage to be quoted by the bidder and applied to the payments made under (a) above shall be deemed to cover the Contractor's profit, overhead and administrative costs related to the use of the such equipment.

DETAILS OF BILL OF QUANTITIES

中国甘肃国际经济技术合作总公司

CHINA GANSU INTERNATIONAL CORPORATION FOR ECONOMIC AND TECHNICAL COOPERATION

No.575 Xijin East Road, Qilihe District

Tel: +86-931-2659950

Lanzhou City, Gansu Province, China

Fax: +86-931-2658644

LA BEACH ROAD COMPLETION PROJECT PH.1

(Tema Road: Indece Arch to Nungua Barrier – 16.00km)

16th October 2012

The Chief Director
Department of Urban Roads
Private Mail Bag, Ministries Post Office
Accra, Ghana

Subject: Revised Priced Bill of Quantities

Dear Sir,

We hereby submit our revised priced BOQ with total sum USD 46,800,000.00 (FORTY SIX MILLION, EIGHT HUNDRED THOUSAND UNITED STATES DOLLARS) through friendly discussion for your review and approval. Refer our revised priced BOQ to the attachment.

We count on your usual cooperation.

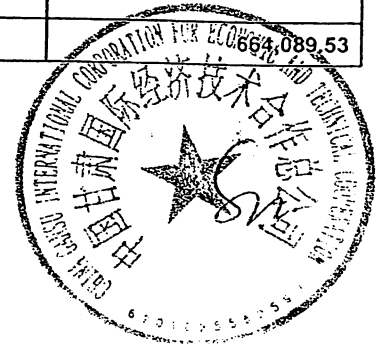
Yours faithfully,



Su Yuehua
Managing Director

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
BILL No. 1 - General Items

CESMM Ref	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	<u>CLASS A: GENERAL ITEMS</u>				
	<u>Contractual Requirements</u>				
A110	Performance Bond	sum	item		50,000.00
A120	Insurance of the Works.	sum	item		90,000.00
A130	Contractors All Risks and Third Party liability Insurance.	sum	item		45,000.00
	<u>Specified Requirements</u>				
A221.1	Allow for 1no. 4-wheel drive Vehicle Type I (Mid Range Vehicle) for use of DUR Head Office for monitoring as per special specs - Schedule 6	prov sum	item		90,000.00
A221.2	Allow for 2no. 4-wheel drive Vehicle Type II (Double cabin Pick-up) for use of DUR Head Office for monitoring as per special specs - Schedule 6	prov sum	item		96,000.00
A221.3	Allow for maintaining 4-wheel drive Vehicle Types I and II	prov sum	item		120,600.00
A221.4	Allow for percentage adjustment on items A221.1, A221.2 and A221.3	25%			76,650.00
A231.1	Logistics for monthly site meetings	prov sum	item		26,250.00
A231.2	Percentage adjustment on items A231.1	25%			6,562.50
A271.1	Provide equipment, precast barriers, warning signs for the management, diversion and regulation of traffic.	sum	item		27,027.03
A271.2	Maintain and move traffic management diversions and barriers.	months	24	1,500.00	36,000.00
Sub-totals carried to Collection					664,089.53



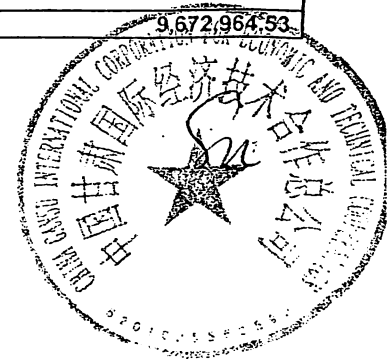
ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
BILL No. 1 - General Requirements

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
A279.1	<u>Specified Requirements cont'd</u> Provide, erect, maintain project sign boards and remove on completion of Contract.	sum	item		1,500.00
	<u>Provisional Sums</u> <u>Allow for the following:</u>				
A420.1	For the payment of compensation to property owners	prov sum	item		2,750,000.00
A420.2	Percentage adjustment on item A420.1 for administration by the Contractor.	10%			275,000.00
A420.3	For the construction of new boundary walls and relocation of existing gates to roadside properties.	prov sum	item		250,000.00
A420.4	For the provision of progress photographs	sum	item		1,000.00
A420.5	For the provision of Community upgrading road infrastructure at La, Teshie and Nungua	prov sum	item		2,200,000.00
A420.6	For the provision of Health promotion and education (HIV/Malaria) as directed	prov sum	item		30,000.00
A420.7	Percentage adjustment on item A420.3, item A420.5 and A420.6 for administration by the Contractor	25%			620,000.00
A420.8	For the relocation of utility services	prov sum	item		2,050,000.00
A420.9	For the payment of Dispute Board establishment under Clause 20 of the Conditions of Contract	prov sum	item		86,100.00
A420.10	Percentage adjustment on items A420.8 and A420.9 for administration by the Contractor.	25%			534,025.00
A420.11	For project management and maintenance support	prov sum	item		25,000.00
A420.12	Percentage adjustment on items A420.11 for administration by the Contractor.	25%			6,250.00
	<u>Method Related Charges</u> <u>Items for Method Related Charges, if any, shall be inserted by the Tenderer in accordance with Section 7 of the CESMM 3. Item description for such items shall be distinguished between Fixed and Time-related Charges</u>				
A311-5	Accommodation and Buildings	Sum	Item		120,000.00
A321-7	Services	Sum	Item		60,000.00
Sub-totals carried to Collection					9,008,875.00

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ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
BILL No. 1 - General Requirements

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	BILL No. 1 - General Items				
	<u>Collection</u>				
	Page No. 1/1				664,089.53
	Page No. 1/2				9,008,875.00
TOTAL CARRIED TO GRAND SUMMARY					9,672,964.53



**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
 A BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)**

**BILL NO. 2 - THE ROADWORKS
 Bill No. 2-1 - Demolition and Site Clearance**

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	<u>CLASS D: DEMOLITION AND SITE CLEARANCE</u>				
0100	General Clearance	ha	32	1,200.00	38,400.00
	<u>Buildings</u>				
0465	Allow a provisional sum for the demolition of existing buildings and dispose debris within 5km	prov sum	item		250,000.00
	<u>Other Structures</u>				
0521	Allow a provisional sum for the demolition of existing pipe culvert and other structures including mass or reinforced concrete drains and dispose debris, within 5km	prov sum	item		25,000.00
Sub-totals carried to Collection					313,400.00

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
 A BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)

BILL NO. 2 - THE ROADWORKS
Bill No. 2-1 - Demolition and Site Clearance

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	BILL No. 2 - Demolition and Site Clearance				
	<u>Collection</u>				
	Page No. 2/1				313,400.00
	TOTAL CARRIED TO GRAND SUMMARY				313,400.00

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
Bill No. 2-2 - Earthworks

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
<u>CLASS E: EARTHWORKS</u>					
<u>Excavation for Cuttings</u>					
E211	Excavate topsoil depth n.e 250mm	m3	58,588	2.00	117,176.00
E223	Excavate material other than topsoil, rock or artificial hard material depth 0.50 - 1m	m3	140,610	2.50	351,525.00
E224	Excavate material other than topsoil, rock or artificial hard material depth 1 - 2m	m3	7,031	7.26	51,045.06
E239	Excavate in rock at any depth broken up by ripper maximum depth not exceeding 1m.	m3	492	79.00	38,868.00
E299	Excavate unsuitable material maximum depth not exceeding 1m (PROVISIONAL).	m3	1,055	8.89	9,378.95
<u>General Excavation</u>					
E429	Excavate material other than topsoil, rock or artificial hard material in borrow pit at any depth.	m3	9,435	4.08	38,494.80
E441.1	Excavate precast concrete paving slabs exposed at commencing surface. Max depth not exceeding 0.25m	m3	500	16.00	8,000.00
E441.2	Excavate bituminous road surface exposed at commencing surface. Max depth n.e 0.25m	m3	31,754	10.00	317,540.00
<u>Excavation Ancillaries</u>					
E432	Disposal of excavated material other than topsoil, rock or artificial hard material	m3	73,821	2.75	203,007.75
E434	Disposal of concrete paving slabs and bituminous road surfacing to spoil hauling up to any distance.	m3	32,254	5.53	178,364.62
E439	Disposal of excavated unsuitable material to spoil hauling up to any distance (PROVISIONAL).	m3	1,055	2.75	2,901.25
E433	Disposal of excavated rock material to spoil hauling up to any distance (PROVISIONAL).	m3	492	5.53	2,720.76
Sub-total carried to Collection					1,319,022.19

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
 LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
 Bill No. 2-2 - Earthworks

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	<u>Filling</u>				
E623	Filling to embankments in non selected material other than topsoil or rock from cuttings or borrow pit.	m3	3,500	3.31	11,585.00
E624	Filling to subgrade in embankment in selected excavated material other than topsoil or rock from cuttings or borrow pit.	m3	2,500	3.31	8,275.00
E646	Excavated rock as stone pitching 150mm thick to embankment slopes and other slopes inclined at 0 degrees to 45 degrees to the to the horizontal.	m2	650	5.55	3,607.50
	<u>Filling Ancillaries</u>				
722	Preparation of embankment and other slopes to receive sub-base or topsoil inclined at 0 degrees to 45 degrees to the horizontal.	m2	800	1.39	1,112.00
	<u>Miscellaneous</u>				
900.1	Extra over items E623, E624 and E641 for haulage in excess of 1km (20-100km)	m3km	275,000	0.50	137,500.00
Sub-total carried to Collection					162,079.50

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
Bill No. 2-2 - Earthworks

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	Bill No. 2-2 - Earthworks <u>Collection</u> Page No. 2-2/1 Page No. 2-2/2				1,319,022.19 162,079.50
TOTAL CARRIED TO BILL NO. 2 SUMMARY					1,481,101.69

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
Bill No. 2-3 - Roads and Pavings

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	<u>Sub-base and Base</u>				
R114.1	Natural gravel material to sub-base layer. Compaction to at least 95% MDD (Mod AASHTO Compaction) not exceeding 300mm depth.	m2	529,993	3.50	1,854,975.50
R114.2	Natural gravel material to walkway. Compaction to at least 95% MDD (Mod AASHTO Compaction) not exceeding 150mm depth.	m2	79,060	2.78	219,786.80
R114.3	Natural gravel material to island and cycle way, depth not exceeding 250mm.	m2	64,512	4.60	296,755.20
R124.1	Approved crushed rock material to base course, thickness = 150mm	m2	184,480	8.50	1,568,080.00
R180.2	Crushed rock material to regulating course. Compaction to at least 95% MDD (Mod AASHTO Compaction) not exceeding 150mm depth.	m2	41,660	8.50	354,110.00
R900.1	Extra over Items R114.1 R114.2 R114.3 and R114.4 for haulage excess of 1km (20-100km)	m3km	2,154,736	0.50	1,077,368.00
R900.2	Extra over Items R124.1 and R180.2 for haulage excess of 1km (20-100km)	m3km	121,407	0.50	60,703.50
	<u>Kerbs, and Edgings</u>				
	<u>Precast Concrete Kerb (as shown in drg), bedded and backed with concrete, part backfill and compact and dispose old surplus material</u>				
R611.1	Type1, straight or curved to radius exceeding 12m.	m	75,862	19.00	1,441,378.00
R612.1	Type1, curved to radius not exceeding 12m.	m	150	20.00	3,000.00
R611.2	Type2, straight or curved to radius exceeding 12m.	m	31,754	19.00	603,326.00
R612.2	Type2, curved to radius not exceeding 12m.	m	120	20.00	2,400.00
R611.3	Type3, straight or curved to radius exceeding 12m.	m	31,754	19.00	603,326.00
R612.3	Type3, curved to radius not exceeding 12m.	m	110	20.00	2,200.00
R611.4	Type4(Edging), straight or curved to radius exceeding 12m.	m	Rate Only	39.31	
R612.4	Type4(Edging), curved to radius not exceeding 12m	m	Rate Only	39.31	
Sub-total carried to Collection					8,087,409.00

**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
Bill No. 2-3 - Roads and Pavings**

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	<u>Prime and Tack Coats</u>				
	<u>Prime surface of graded crushed stone base with AC-10 bitumen (with cutter oil).</u>				
R392	Supply, design spray rate and spray binder class AC - 10 (80 - 100 pen.) bitumen for priming work	litre	306,962	1.60	491,139.20
R394	Supply and incorporate cutter oil	litre	54,259	1.30	70,536.70
	<u>Tack coat to primed surface of pavement base consisting of Ac - 10 (80/100 pen) bitumen cationic emulsion at nominal spray rate of 0.3 litre/m2</u>				
R350	Over area to receive asphaltic concrete surfacing	m2	219,582	0.50	109,791.00
R350.2	Adjustment to item R350.5 for increase or decrease in rate of spray by 0.1 litre/m2	m2	54,896	0.33	18,115.68
	<u>Asphaltic Concrete</u>				
R322.1	Asphaltic concrete binder course layer 60mm compacted thickness.	m2	219,582	26.00	5,709,132.00
R322.2	Asphaltic concrete wearing course layer 40mm compacted thickness.	m2	219,582	19.00	4,172,058.00
	<u>Surface Dressing</u>				
R392.1	Supply, design spray rate and spray binder class AC-10 (80 - 100 pen.) for primer seal work	litres	Rate Only	1.87	
R393	Ditto for final seal work	litres	Rate Only	1.87	
R394.1	Supply and incorporate cutter oil	litres	Rate Only	1.68	
R397	Supply, precoat, design spray rate, apply and incorporate 10 mm aggregate for the primer seal work, haulage distance not exceeding 1 km	m3	Rate Only	198.83	
R398	Ditto 14 mm aggregate for the final seal work	m3	Rate Only	192.36	
R340	Double surface dressing with S125 bitumen at a nominal rate of 0.9 - 1.1 l/m2 per with 14mm size chippings at 83 - 111m ² /m ³	m2	Rate Only	5.26	
R900.3	Extra over items R397 and R398 for haulage in excess of 1km	m3km	Rate Only	0.54	
Sub total carried to Collection					10,570,772.58

**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)**

Bill No. 2-3 - Roads and Pavings

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	<u>Light Duty Pavement</u>				
R793.1	Concrete blockpaving 80mm thick on 50mm sand bed to footway	m2	95,262	25.13	2,393,934.06
R793.2	Concrete blockpaving 80mm thick on 50mm sand bed to islands	m2	8,441	25.13	212,122.33
	<u>Laybys with concrete pavement</u>				
R490	Construct Laybys with concrete pavement in accordance with the details given in the drawings	nr	28	9,020.00	252,560.00
	<u>Road Signs (in accordance with MRH standards)</u>				
R811.1	Provide and erect reflective rectangular multi post directional sign on steel plate size exceeding 2m2	nr	14	388.17	5,434.38
R811.2	Provide and erect reflective standard road 'warning' sign, triangular with 900mm side.	nr	68	120.00	8,160.00
R811.3	Provide and erect reflective standard road 'Mandatory' sign, with 900mm side.	nr	22	120.00	2,640.00
R811.4	Provide and erect reflective standard road 'Prohibitory' sign, circular with 600mm diameter.	nr	28	130.00	3,640.00
R811.5	Provide and erect reflective standard road rectangular 'Informatory' Sign as directed.	nr	60	130.00	7,800.00
	<u>Provide and install traffic signals at a three legged intersection</u>				
R830.1	Tema Rd / Ringroad East Intersection	prov sum	Item		40,000.00
R830.2	Tema Rd / La Rd Intersection	prov sum	Item		40,000.00
R830.3	Tema Rd / Teshie Link Intersection	prov sum	Item		40,000.00
R830.4	Tema Rd / Fertilizer Rd Intersection	prov sum	Item		40,000.00

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Road Markings (in accordance with MRH standards)					
R823.1	Single headed reflective white arrows 5m long with applied Balotini.	nr	40	10.00	400.00
R823.2	Single headed reflective white turn right/left arrows 5m long with applied Balotini.	nr	15	10.00	150.00
R823.3	Bifurcation reflective white arrow 5m long with applied Balotini.	nr	10	12.00	120.00
R823.4	Single headed reflective white deflecting arrows 5m long with applied Balotini.	nr	6	10.00	60.00
R823.7	Double headed reflective white straight, turn right/left arrows 5m long with applied Balotini.	nr	6	12.00	72.00
R823.5	White lining to chevrons 150mm wide with applied Balotini.	m	20	2.00	40.00
R823.6	Chevrons white 450mm wide with applied Balotini.	m	28	6.00	168.00
R824.1	Continuous reflective white lines 120mm wide with applied Balotini (L2A).	m	26,400	3.00	79,200.00
R824.2	Continuous reflective white edge lines 120mm wide with applied Balotini (L4).	m	52,800	3.00	158,400.00
R824.3	Continuous reflective white lines 300mm wide with applied Balotini (L7).	m	70	4.00	280.00
R825	Intermittent reflective white lines 120mm wide, 2m line, 6m gap with applied Balotini (L1)	m	2	2.00	4.00
R825.1	Intermittent reflective white lines 120mm wide, 6m line, 2m gap with applied Balotini (L2)	m	4,169	2.00	8,338.00
Sub-total carried to Collection					3,293,522.77

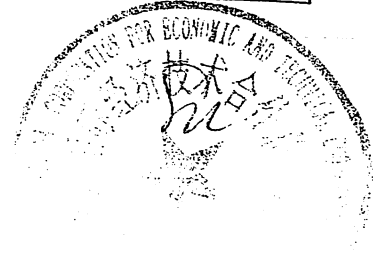


ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
Bill No. 2-3 - Roads and Pavings

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
R825.2	Intermittent reflective white lines 200mm wide, 1m line, 3m gap with applied Balotini (L5)	m	46	4.00	184.00
R825.3	Intermittent reflective white lines 200mm wide, 500mm line, 500mm gap with applied Balotini (L6).	m	Rate Only	9.20	
R825.4	Intermittent reflective white lines 300mm wide, 600mm line, 600mm gap with applied Balotini (L8).	m	Rate Only	8.40	
R825.5	Intermittent reflective white lines 120mm wide, 500mm line, 500mm gap with applied Balotini (L9).	m	Rate Only	6.50	
Sub-total carried to Collection					184.00

~~ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT~~
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
Bill No. 2-3 - Roads and Pavings

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	Bill No. 2-3 - Roads and Pavings				
	<u>Collection</u>				
	Page No. 2-3/1				8,087,409.00
	Page No. 2-3/2				10,570,772.58
	Page No. 2-3/3				3,293,522.77
	Page No. 2-3/4				184.00
TOTAL CARRIED TO BILL NO. 2 SUMMARY					21,951,888.35



**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
Bill No.2-4 - Concrete Drain Channels**

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
<u>EARTHWORKS</u>					
<u>Excavation</u>					
E423	Excavate for concrete channel drains in material other than topsoil, rock or artificial hard material, maximum depth not exceeding 1m.	m3	32,000	6.05	193,600.00
E424	Excavate for concrete channel drains in material other than topsoil, rock or artificial hard material, maximum depth exceeding 1m but not exceeding 2m.	m3	2,500	9.18	22,950.00
E433	Excavation in rock within trench for channel drains. (PROVISIONAL)	m3	893	79.00	70,547.00
<u>Excavation Ancillaries for Concrete Drain Channels</u>					
E522.1	Preparation of excavated surfaces in material other than topsoil, rock or artificial hard material.	m2	8,925	1.26	11,245.50
E523.1	Preparation of excavated surfaces in rock. (PROVISIONAL)	m2	1,339	1.44	1,928.16
E532.1	Disposal of excavated material; other than topsoil, rock or artificial hard material.	m3	4,165	2.75	11,453.75
E533.1	Disposal of excavated material; rock. (PROVISIONAL)	m3	893	5.53	4,938.29
E614	Back fill to U-drain with selected excavated material other than topsoil or rock	m3	1,785	6.76	12,066.60
<u>CONCRETE WORK</u>					
<u>PRECAST CONCRETE</u>					
<u>Designed mix concrete class C25/20</u>					
<u>U' Channel drains excluding cover slabs</u>					
H700.1	Internal size 600 x 900mm deep	m	16,000	130.00	2,080,000.00
H700.2	Internal size 900 x 900mm deep	m	550	170.00	93,500.00
<u>Cover Slabs Precast</u>					
H532.1	Reinforced concrete lid to concrete 'U' channel drains; 600mm wide	m	16,000	40.00	640,000.00
H532.2	Reinforced concrete lid to concrete 'U' channel drains; 900mm wide	m	550	45.00	24,750.00
<u>Miscellaneous Work</u>					
<u>Concrete Drain Channels</u>					
N310.1	Hinged grating cast iron with, frame; clear opening 600 x 350mm	nr	1,250	300.00	375,000.00
Sub-total carried to Collection					3,541,979.30

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
Bill No.2-4 - Concrete Drain Channels

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
E423.1	Culvert Inlet Chamber Excavate for culvert inlet chamber in material other than topsoil, rock or artificial hard material, maximum depth not exceeding 1m.	m3	48	7.36	353.28
E424.1	Excavate for culvert inlet chamber in material other than topsoil, rock or artificial hard material, maximum depth exceeding 1m but not exceeding 2m.	m3	12	10.49	125.88
E433.1	Excavation for culvert inlet chamber in rock or artificial hard material (PROVISIONAL)	m3	3	25.55	76.65
E532.2	Disposal of excavated material; other than topsoil, rock or artificial hard material.	m3	48	2.75	132.00
E533.2	Disposal of excavated material; rock. (PROVISIONAL)	m3	2	5.53	11.06
PIPEWORK - PIPES					
<u>Design mix concrete class 30/20</u>					
I242	Provide, lay and joint single 600mm diameter precast concrete pipes in culverts	m	160	90.97	14,555.20
I243	Provide, lay and joint single 900mm diameter precast concrete pipes in culverts	m	405	169.47	68,635.35
I245	Provide, lay and joint single 1200mm diameter precast concrete pipes in culverts	m	94	211.69	19,898.86
IN-SITU CONCRETE					
<u>Provision of Concrete</u>					
F234	Concrete class C7.5/40	m3	137	130.00	17,810.00
F263	Concrete class C30/20	m3	769	210.00	161,490.00
<u>Placing of Mass Concrete</u>					
F511	Mass concrete in blinding, 75mm	m3	137	20.79	2,848.23
F521	Mass concrete in base of trapezoidal drain	m3	100	24.36	2,436.00
L545.1	Mass concrete in surround to single 600mm diameter precast concrete pipes in culverts	m3	185	26.31	4,867.35
L545.2	Mass concrete in surround to single 900mm diameter precast concrete pipes in culverts	m3	326	26.31	8,577.06
L545.3	Mass concrete in surround to double 1200mm diameter precast concrete pipes in culverts	m3	29	26.67	773.43
<u>Placing of Reinforced Concrete</u>					
F622	Bases, footings, pile caps and ground slabs, thickness: 150 - 300mm	m3	Rate Only	20.12	
F641	Walls, thickness: 150 - 300mm	m3	Rate Only	26.32	
F163.1	Place concrete Class 30/20 and foundation in bottom slabs and aprons for drainage structures	m3	36	23.37	841.32
Sub-total carried to Collection					303,431.67

**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
Bill No.2-4 - Concrete Drain Channels**

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
F163.2	Place concrete Class 30/20 in end walls, wing walls and elevation for drainage structures	m3	63	25.67	1,617.21
F163.3	Place concrete Class 30/20 in upper slabs for drainage structures	m3	Rate Only	26.84	
F163.4	Place concrete Class 30/20 in other structures	m3	30	26.84	805.20
<u>Formwork: Fair Finish</u>					
G149	Rough finish plane vertical to sides of walls. Width not exceeding 0.1 m	m2	1,620	19.82	32,108.40
G241	Fair finish plane horizontal to sides of walls. width 0.1- 0.2 m	m2	60	26.30	1,578.00
G242	Fair finish plane vertical to sides of walls, wdth 0.1-0.2 m	m2	192	25.30	4,857.60
<u>Reinforcement</u>					
G515	Plain round steel bars to B.S 4449 nominal size 16mm	t	70.95	1,700.00	120,615.00
F900.1	Haulage in excess of 1km for aggregate (20-100km)	m3km	64,500	0.50	32,250.00
<u>PIPEWORK - PIPES</u>					
<u>Unplasticised Polyvinyl Chloride Pipes (UPVC) to BS5481with compressive joints nominal bore 300mm</u>					
I531	300mm pipe	m	99	91.35	9,043.65
<u>GULLIES</u>					
K351	Precast concrete gully trap with entry grating and frame and outlet to receive PVC size 300 x 300mm including all necessary excavations	nr	198	488.21	96,665.58
Sub-total carried to Collection					299,540.64

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
Bill No.2-4 - Concrete Drain Channels

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	Bill No.2-4 - Concrete Drain Channels				
	<u>Collection</u>				
	Page No. 2-4/1				3,541,979.30
	Page No. 2-4/2				303,431.67
	Page No. 2-4/3				299,540.64
	TOTAL CARRIED TO BILL NO. 2 SUMMARY				4,144,951.61



ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT

LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)

Bill No.2-5 - Miscellaneous Works

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
<u>Concrete Median Barrier</u>					
X191	Excavate for, provide all materials and construct concrete median barrier in accordance with the Drawings and Specification, height not exceeding 1m.	m	3,800	150.00	570,000.00
X191A	Extra over item X 191 for constructing special detail at ends of concrete median barrier and at pedestrian median refuges.	nr	15	120.00	1,800.00
<u>Safety Barrier</u>					
X181	Excavate for, provide all materials and install flexbeam barrier 600mm height from surface level to centre of beam with posts at nominal 4.0m centres.	m	160	108.71	17,393.60
X181A	Extra over item X 181 for bending down and anchoring end of flexbeam barrier over three sections as detailed.	nr	24	125.81	3,019.44
X181B	Provide and fix in position flared end section to flexbeam barrier	nr	24	40.00	960.00
<u>Pedestrian Guardrail</u>					
X171	Excavate for, provide and install complete as detailed in the Specification, aluminium pedestrian guardrail comprising assembled panels and posts bolted together and fixed in place.	m	1,200	95.00	114,000.00
<u>Fencing</u>					
X122	Excavate for, provide all materials and erect timber posts and 5-strand wire fencing as detailed, height 1 - 1.25m.	m	Rate Only	82.56	
<u>Bollards</u>					
X191'	Excavate for, provide and install bollards as detailed.	nr	110	28.05	3,085.50
<u>Cable Ducts and Marker Posts</u>					
I512	Excavate for, provide all materials and install one way 100mm diameter PVC ducts for cables, including concrete surround, draw-cords, plugs all as detailed in the Specification, in locations to be designated by the Engineer's Representative.	m	750	60.92	45,690.00
Sub-total carried to Collection					755,948.54

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
Bill No.2-5 - Miscellaneous Works

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
I512.1	Excavate for, provide all materials and install two way 100mm diameter PVC ducts for cables, including concrete surround, draw-cords, plugs all as detailed in the Specification, in locations to be designated by the Engineer's Representative.	m	300	110.56	33,168.00
K820	Excavate for, provide all materials and install duct mark posts at locations of cable ducts, Specification.	nr	70	76.91	5,383.70
	<u>Concrete Access Ramp</u>				
R777	Excavate for, provide and place mass concrete Class C25/20 to private access ramp across footpath. Surface finish to be Class UFI ridged finished with ridges running down slope of depth n.e. 300mm.	m3	45	256.91	11,560.95
Sub-total carried to Collection					50,112.65

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
 LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
 Bill No.2-5 - Miscellaneous Works

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	Bill No.2-5 - Miscellaneous Works				
	<u>Collection</u>				
	Page No. 2-6/1				755,948.54
	Page No. 2-6/2				50,112.65
TOTAL CARRIED TO BILL NO. 2 SUMMARY					806,061.19

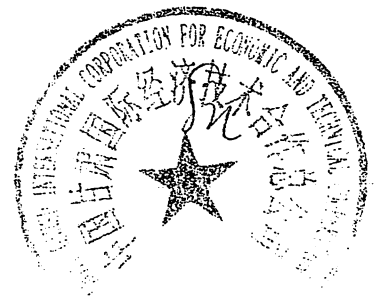


ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
Bill No.2-6 - Street Lighting

No.	Description	Quantity	Unit	Rate(US\$)	Amount(US\$)
	<u>Preliminaries</u>				
A900.1	Allow for mobilisation to and de-mobilisation from site of equipment, tools etc	item	sum	-	15,000.00
A900.2	Provide for 3No. Working and 3No. As-built Drawings	item	sum	-	5,000.00
A900.3	Allow for Insurance	item	sum	-	15,000.00
A900.4	Allow for design Supervision of the Works	item	prov sum	-	2,500.00
A900.5	Allow for Surveying and Pegging	item	sum	-	15,000.00
A900.6	Allow for ECG Engineering works and connection	item	prov sum	-	5,000.00
A900.8	Allow for Testing and Commissioning	item	prov sum	-	2,500.00
A900.7	Percentage adjustment for Item A900.4, item A900.6 and item A900.7		25%	-	2,500.00
	<u>Electrical Installation</u>				
1	9.2m Single Arm photometric height, roof mounted, glass fibre reinforced pole C/W. * buried base plate assembly * gland plate assembly * buried depth of 1.40m * Access door height 1.0m from ground * Cable entry depth of 6.0m * Outreach arm 1x42x500mm * tilt 15°	573	nr	1,077.59	617,459.07
2	-Ditto- but double outreach arm 2x42x500mm	110	nr	1,235.98	135,957.80
3(i)	250W HPS/T CO luminaire with high impact acrylic clear diffuser with IP66 control gear compartment (Ref. Beka Strada)	793	nr	216.84	171,954.12
(ii)	250W HSE lamp Tubular type.	793	nr	47.14	37,382.02
4	63A TP 415/240 50Hz Control Panel	10	nr	612.80	6,128.00
5	5A/6KA MCB	793	nr	10.61	8,413.73
6	Photocell	10	nr	20.39	203.90
7	Terminal plate to take 25mm ² Copper Cable	683	nr	30.64	20,927.12
8(i)	4x25mm ² pvc/swa/pvc Cu Cable	750	m	24.35	18,262.50
(ii)	4x16mm ² pvc/swa/pvc Cu Cable	32780	m	15.77	516,940.60
(iii)	1x4.0mm ² pvc insulated switch cable	32780	m	0.91	29,829.80
(iv)	3x2.5mm ² pvc/pvc flexible Cable	7140	m	2.30	16,422.00
(v)	4x2.5mm ² pvc/pvc flexible Cable	300	m	3.06	918.00
	<u>Civil Works</u>				
E900.1	Excavate cable trench 600mm deep	15900	m	6.96	110,664.00
E900.2	Excavation for pole foundation	683	nr	9.43	6,440.69
F900.1	Concrete foundation for Control Panels	10	nr	94.28	942.80
F900.2	Provide and place concrete foundation for poles including all necessary ancillary works	683	nr	23.57	16,098.31
U900	75mm diameter pvc pipe	15900	m	5.82	92,538.00
Z900.1	Housing for control Panel	10	nr	329.97	3,299.70
Z900.2	Metal gates for Panel housing	10	nr	70.71	707.10
Sub-total carried to Collection					1,873,989.26

ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT.
 LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
 Bill No.2-6 - Street Lighting

No.	Description	Quantity	Unit	Rate(US\$)	Amount(US\$)
<u>Extra Materials for Maintenance</u>					
1	9.2m single arm poles	8	nr	761.29	6,090.32
2	9.2m double arm poles	2	nr	829.65	1,659.30
3	250W HPS/T CO luminaire	12	nr	216.84	2,602.08
4	250 HSE lamps	12	nr	47.14	565.68
Sub-total carried to Collection					10,917.38



ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
 LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
 Bill No.2-6 - Street Lighting

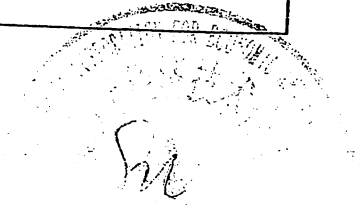
No.	Description	Quantity	Unit	Rate(US\$)	Amount(US\$)
	Bill No.2-6 - Street Lighting				
	Collection				
	Page No. 2-6/1				1,873,989.26
	Page No. 2-6/2				10,917.38
TOTAL CARRIED TO BILL NO. 2 SUMMARY					1,884,906.64



**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)**

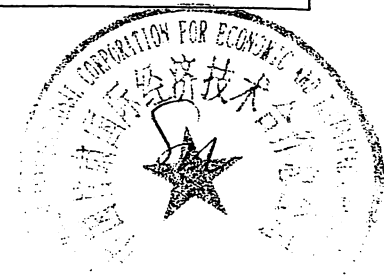
**BILL NO. 2 - THE ROADWORKS
SUMMARY**

BILL	Amount(US\$)
<u>SUMMARY</u>	
Bill No. 2-1 - Demolition and Site Clearance	313,400.00
Bill No. 2-2 - Earthworks	1,481,101.69
Bill No. 2-3 - Roads and Pavings	21,951,888.35
Bill No.2-4 - Concrete Drain Channels	4,144,951.61
Bill No.2-5 - Miscellaneous Works	806,061.19
Bill No.2-6 - Street Lighting	1,884,906.64
<u>TOTAL BILL NO.2 - THE ROADWORKS TO GRAND SUMMARY</u>	30,582,309.48



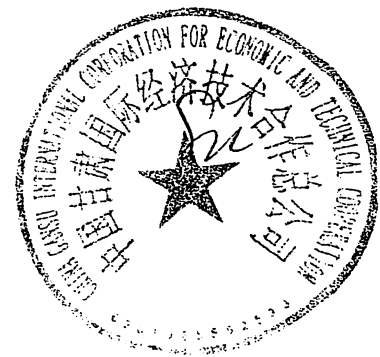
**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
 LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
 BILL NO. 3 - THE BRIDGE WORKS**

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
A420.1	Allow a provisional sum for the Construction of Kpeshie Bridge and A-Life Box culvert	prov sum	item		3,000,000.00
Sub-totals carried to Collection					3,000,000.00



**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
 LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
 BILL NO. 3 - THE BRIDGE WORKS**

No.	Description	Unit	Quantity	Rate(US\$)	Amount(US\$)
	<p>BILL NO. 3 - THE BRIDGE WORKS</p> <p><u>Collection</u></p> <p>Page No. 3/1</p>				3,000,000.00
LL NO. 3 - THE BRIDGE WORKS CARRIED TO GRAND SUMMARY					3,000,000.00



**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)**

SCHEDULE OF DAYWORK RATES

1. LABOUR

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Nominal Quantity</u>	<u>Rate(US\$)</u>	<u>Amount(US\$)</u>
A	Headman (Trades)	hr	10	1.37	13.70
B	Headman (Labourer)	hr	10	1.16	11.60
C	Labourer	hr	100	1.05	105.00
D	Driver (Light)	hr	10	1.58	15.80
E	Driver (Heavy-Licence A)	hr	50	1.68	84.00
F	Plant Operator, Light	hr	50	1.58	79.00
G	Plant Operator, Heavy	hr	50	1.68	84.00
H	Mason	hr	20	1.26	25.20
J	Carpenter	hr	20	1.26	25.20
K	Steel Fixer	hr	10	1.26	12.60
L	Welder	hr	5	1.26	6.30
M	Fitter	hr	5	1.26	6.30
N	Electrician	hr	5	1.32	6.60
O	Machine Attendant	hr	5	1.32	6.60
P	Watchman	hr	100	1.21	121.00
Q	Surveyor	hr	5	1.68	8.40
R	Surveying Assistant	hr	5	1.32	6.60

Sub-Total

617.90

Allow _____% of Subtotal for Contractor's Overheads,
Profit, etc., in accordance with subparagraph 3b above

154.475

**TOTAL FOR DAYWORK LABOUR
(Carried to Daywork Summary)**

772.38



ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)

SCHEDULE OF DAYWORK RATES

2. MATERIALS

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Nominal Quantity</u>	<u>Rate(US\$)</u>	<u>Amount(US\$)</u>
A	Cement, Ordinary Portland or equivalent in bags	t	5	168.42	842.10
B	Coarse Aggregate for concrete	m3	5	34.74	173.70
C	Mild Steel reinforcement bars to BS 4449 or equivalent (various sizes)	t	1	1026.32	1026.32
D	Sawn Hardwood (Redwood)	m3	1	342.11	342.11
E	Sawn Softwood (Wawa)	m3	1	289.47	289.47
F	Bitumen MC 70	litre	50	1.32	66.00
G	Bitumen MC 3000	litre	50	1.32	66.00
H	Plywood 6mm	Nr.	5	15.79	78.95
I	Road Chippings	m3	10	39.47	394.70
J	Sand	m3	10	14.21	142.10
K	Crusher Dust	m3	10	17.37	173.70
L	Pitching Stone	m3	10	31.58	315.80
M	Wire Nails (various sizes)	kg	5	1.16	5.80
N	Geotextile Filter membrane type Typar 3337 (110 gm/m2)	m ²	5	7.89	39.45
Sub-Total					3,956.20
Allow ____% of Sub-total for Contractor's Overheads and Profit					989.05
TOTAL FOR DAYWORK MATERIALS					4,945.25
(Carried to Daywork Summary)					



**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)**

SCHEDULE OF DAYWORK RATES

3. CONSTRUCTION PLANT

<u>Item</u>	<u>Description</u>	<u>Nominal Quantity (Hours)</u>	<u>Rate(US\$)</u>	<u>Amount(US\$)</u>
A	Dragline up to 1.5m3	5	105.26	526.30
B	Crawler Loader 1.5m3	5	94.74	473.70
C	Dumper Truck 5m3	10	28.95	289.50
D	Dumper Truck 8m3	10	34.21	342.10
E	Site Dumper	10	23.68	236.80
F	Crawler Dozer up to 140HP	2	73.68	147.36
G	Motor Grader	2	68.95	137.90
H	Water Tanker up to 1000 Gall.	2	50.00	100.00
J	Bitumen Distributor	2	105.26	210.52
K	Road Roller 10-12T (Pneumatic or Steel wheeled)	2	73.16	146.32
L	Concrete Mixer 10/17T	5	9.89	49.45
M	Air Compressor	2	42.11	84.22
N	Power Generator 40 KVA	5	23.68	118.40
O	Mobile Crane up to 10T	2	73.68	147.36
P	Welding Set (500 amp)	2	6.32	12.64
Q	Water Pump (100mm)	5	5.26	26.30
R	Crane Mounted Truck (1½T)	56	63.16	3536.96
S	Manually Operated Compactor	2	7.89	15.78
T	Concrete Vibrator (Pocker)	10	2.11	21.10
U	Pick-up	15	15.95	239.25
V	Motor Scraper 300 HP	5	78.95	394.75
W	Heavy Grid or Sheepsfoot Roller	5	51.58	257.90
X	Vibrating Roller	5	56.84	284.20
Y	Tractor	10	40.53	405.30
Sub-Total				8,204.11
Allow _____% of Sub-total for Contractor's Overheads, Profit, etc, in accordance with sub paragraph 3.5 above				2,051.03
TOTAL FOR DAYWORK CONSTRUCTION PLANT (Carried to Daywork Summary)				10,255.14



**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD
COMPLETION PROJECT**

**LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier -
16km)**

DAYWORKS - SUMMARY

AMOUNT(US\$)

1.	DAYWORK LABOUR - TOTAL	772.38
2.	DAYWORK MATERIALS - TOTAL	4,945.25
3.	DAYWORK CONSTRUCTION PLANT - TOTAL	10,255.14

TOTAL FOR DAYWORKS
Carried to Grand Summary

15,972.77



ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
 LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
 SUMMARY OF SPECIFIED PROVISIONAL SUMS

No.	Description	Unit	Quantity	AMOUNT(US\$)
SUMMARY OF SPECIFIED PROVISIONAL SUMS				
Bill No 1 - General Items				
A221.1	Allow for 1no. 4-wheel drive Vehicle Type I (Mid Range Vehicle) for use of DUR Head Office for monitoring as per special specs - Schedule 6	prov sum	item	90,000.00
A221.2	Allow for 2no. 4-wheel drive Vehicle Type II (Double cabin Pick-up) for use of DUR Head Office for monitoring as per special specs - Schedule 6	prov sum	item	96,000.00
A221.3	Maintain 4-wheel drive Vehicle Types I and II	prov sum	item	120,600.00
A231.1	Logistics for monthly site meetings	prov sum	item	26,250.00
A420.1	For the payment of compensation to property owners	prov sum	item	2,750,000.00
A420.4	For the construction of new boundary walls and relocation of existing gates to roadside properties.	prov sum	item	250,000.00
A420.8	For the provision of Health promotion and education (HIV/Malaria) as directed	prov sum	item	30,000.00
A420.10	For the relocation of utility services	prov sum	item	2,050,000.00
A420.11	For the payment of Dispute Board establishment under Clause 20 of the	prov sum	item	86,100.00
A420.13	For project management and maintenance support	prov sum	item	25,000.00
Bill No. 2-1 - Demolition and Site Clearance				
D465	Allow a provisional sum for the demolition of existing buildings and dispose debris within	prov sum	item	250,000.00
D521	Allow a provisional sum for the demolition of existing pipe culvert and other structures including mass or reinforced concrete drains and dispose debris, within 5km	prov sum	item	25,000.00
Bill No. 2-3 - Roads and Pavings				
R830.1	Tema Rd / Ringroad East Intersection	prov sum	Item	40,000.00
R830.2	Tema Rd / La Rd Intersection	prov sum	Item	40,000.00
R830.3	Tema Rd / Teshie Link Intersection	prov sum	Item	40,000.00
R830.4	Tema Rd / Fertilizer Rd Intersection	prov sum	Item	40,000.00
To collection				5,958,950.00

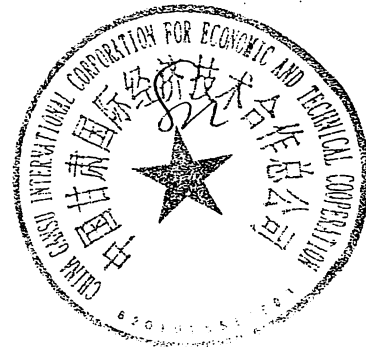
~~AGGRA-METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT~~
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
SUMMARY OF SPECIFIED PROVISIONAL SUMS

No.	Description	Unit	Quantity	AMOUNT(US\$)
	Bill No. 2-6 - Electrical Works			
A900.4	Allow for design Supervision of the Works	prov sum	item	2,500.00
A900.6	Allow for ECG Engineering works and connection	prov sum	item	5,000.00
A900.8	Allow for Testing and Commissioning	prov sum	item	2,500.00
To collection				10,000.00



**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
SUMMARY OF SPECIFIED PROVISIONAL SUMS**

No.	Description	Unit	Quantity	AMOUNT(US\$)
	SUMMARY OF SPECIFIED PROVISIONAL SUMS			
	<u>Collection</u>			
	Page No. Prov Sum / 1			5,958,950.00
	Page No. Prov Sum / 2			10,000.00
TOTAL PROVISIONAL SUMS CARRIED TO GRAND SUMMARY				5,968,950.00



**ACCRA METROPOLITAN AREA INTELLIGENT TRAFFIC MANAGEMENT SYSTEM & ROAD COMPLETION PROJECT
LA BEACH ROAD COMPLETION PROJECT PH. 1 (Tema Road: Independence Arch to Nungua Barrier - 16km)
GRAND SUMMARY**

BILL	AMOUNT(US\$)
BILL NO.1 : GENERAL ITEMS	9,672,964.53
BILL NO.2 : THE ROAD WORKS	30,582,309.48
BILL NO.3 : BRIDGE WORKS	3,000,000.00
SUB-TOTAL (A)	43,255,274.01
SPECIFIED PROVISIONAL SUMS INCLUDED IN BILL ITEMS (B)	5,968,950.00
SUB-TOTAL LESS SPECIFIED PROVISIONAL SUMS (A) - (B) = (C)	37,286,324.01
ADD: FOR CONTINGENCY = (D)	3,728,632.40
PHYSICAL 5% OF (C) =	1,864,316.20
PRICE 5% OF (C) =	1,864,316.20
ADD DAYWORKS - (E)	15,972.77
ADJUSTMENT ITEM-ADD TO/DEDUCT FROM THE SUBTOTAL* (F) (To be inserted by the Bidder as required)	-199879.18
NET TENDER PRICE (A) + (D) + (E) ± (F) CARRIED TO FORM OF BID	46,800,000.00

Signature of Contractor's Representative.....

COMPANY NAME AND ADDRESS.....

China Gansu International Cooperation for Economic and Technical Cooperation
Address: No. 975 Xijiu East Road, Qilihe District Lanzhou City, Gansu Province.
DATE: 16th October 2012
China

