

REPUBLIC OF KENYA
MINISTRY OF AGRICULTURE
NATIONAL IRRIGATION BOARD

WOSSAC: 4205
631.4
(676.2)

34

BURA IRRIGATION SETTLEMENT
PROJECT

BURA EAST

Contract No. B E 1

TOPOGRAPHICAL SURVEY

APRIL 1978

SIR M. MACDONALD & PARTNERS LTD.
Demeter House
Cambridge CB1 2RS
United Kingdom

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BILL OF QUANTITIES

Documents	Sub-Bill A	East Bank Survey
	Sub-Bill B	West Bank and Diversion Structure Survey
	Sub-Bill C	Camp and Transport Facilities for Engineer's Topographical Survey Supervisor and his Field Assistant
	Sub-Bill D	Camp Facilities for Gypsum Survey Collection

DRAWINGS

Such documents shall be treated as confidential and shall remain the property of the Employer.

(iii) Other Documents

The Tenderer's Separate Memorandum in accordance with paragraph 4 of these Instructions.

Tender Documents to be Completed

2. The Tenderer shall complete the Form of Tender, its Appendix and the Bill of Quantities in ink, with the whole of the information, signatures, dates and prices called for thereon.

No Alterations

3. No alterations shall be made to the tender documents except in compliance with Clause 5 above or with an instruction from the Engineer. Any corrections or clarifications of errors made by the Tenderer before submission of Tender shall be in words rather than numbers and shall be signed by the Tenderer.

Delivery of Tender

4. The Tender complete in all respects shall be enclosed in a strong sealed cover with the words "TENDER FOR THE EAST BANK SURVEY" clearly marked thereon. The cover shall be addressed to the Employer at the address indicated in the Instructions.

The Chairman of the Tender Board,
National Irrigation Board,
Lahore Road,
F.O. Box 3377,
Karachi, Sindh,

referred to in these Instructions as "the Employer".

One facsimile copy of the Tender shall be sent with the Tender clearly marked "Copy".

Tenders shall be delivered free of cost to the Employer at any time up to and including local time on the date specified for receipt of tenders in clause 1 of the Instructions to Tenderers.

INSTRUCTIONS FOR TENDERING

Tender Documents

A. Each Tender shall comprise the following documents:

(i) Documents Issued to the Tenderer for the Purpose of Tendering

One volume containing:

Instructions for Tendering
Form of Tender
Contract Agreement
Conditions of Contract
Specification
Bill of Quantities
Drawings

Such documents shall be treated as confidential and shall remain the property of the Employer.

(ii) Other Documents

The Tenderer's Separate Memorandum in accordance with paragraph G of these Instructions.

Tender Documents to be Completed

B. The Tenderer shall complete the Form of Tender, its Appendix and the Bill of Quantities in ink, with the whole of the information, signatures, dates and prices called for thereon.

No Alterations

C. No alterations shall be made to the tender documents except in compliance with Clause B above or with an instruction from the Engineer. Any corrections or clarifications of entries made by the Tenderer before submission of Tenders shall be in words rather than numerals and shall be signed by the Tenderer.

Delivery of Tender

D. The Tender complete in all respects shall be enclosed in a strong sealed parcel which shall conspicuously bear the words "TENDER FOR BURA EAST TOPOGRAPHICAL SURVEY" but which shall bear no mark indicating the Tenderer, and which shall be addressed to:-

The Chairman of the Tender Board,
National Irrigation Board,
Lenana Road,
P.O. Box 30372,
Nairobi, Kenya,

referred to in these Instructions as 'the Employer'.

One facsimile copy of the Tender shall be sent with the Tender clearly marked "Copy".

Tenders shall be delivered free of cost to the Employer at any time up to noon (12.00 local time) on the date appointed for receipt of tenders as stated in the invitation to tender.

Obscurities
and Addenda

E. The Engineer may issue to Tenderers Addenda for the purpose of amending or clarifying the documents issued to Tenderers.

Should a Tenderer find discrepancies in, omissions from, or obscurities in the Tender Documents he should notify the Engineer thereof in writing. Any reply by the Engineer will be in the form of an Addendum written to all Tenderers.

Bill of
Quantities

F. The Tenderer shall note that every rate and sum of money entered by him in the Bill of Quantities shall be in Kenyan currency. The Tenderer shall enter a rate or price against each item in the Bill of Quantities. Where the Tenderer wishes to include the cost of one item in that of another he shall write NONE in the rate and amounts columns against the former, indicating in which item or items the cost is included. The Tenderer shall money out each item, cast each page, total the Bill of Quantities and carry the total to the Form of Tender.

Separate
Memorandum

G. The separate memorandum referred to in paragraph (ii) Clause A of these Instructions shall include:

- (i) a statement of unresolved doubts of the Tenderer as to the meaning of anything in the tender documents and of the interpretation relied upon by the Tenderer,
- (ii) details of any alternatives offered by the Tenderer,
- (iii) details of the Tenderer's proposed programme from the date of receipt of the Engineer's order to commence the Works and
- (iv) a brief description of the proposed method of working covering, inter alia:
type of instruments to be used
number of survey parties in the field
proposed location of base camp.

Opening of
Tenders

H. Tenders will be opened publicly at 12.00 noon on the latest day fixed for delivery of Tenders at the offices in Nairobi of the National Irrigation Board.

The representatives of the Tenderers may attend.

At the opening, the names of the Tenderers will be announced together with the Tender Sums but no further details will be made public.

Adjudication
of Tenders

J. After the Tenders have been opened, the Employer assisted by the Engineer, will ascertain whether there are any errors of computation, whether the Tenders are fully responsive to the requirements of the Tender documents, whether the required guarantees and sureties

have been provided, whether the documents have been properly signed and whether the Tenders are otherwise generally in order.

The Engineer may ask each Tenderer for clarification of his Tender and provided that such clarifications and corrections of computations do not change the substance of the Tender or materially affect the order of value of the Tenders then the Tender as adjusted to incorporate these clarifications and corrections may still be considered for acceptance.

ARTICLE 1

1. The Tenderer shall submit the Drawings, Conditions of Contract, Specifications, Bill of Materials, and Bill of Materials for the proposed works, as the Engineer, after to examine and approve the whole of the said works all in conformity with the said Drawings, Conditions of Contract, Specifications, Bill of Materials, and Bill of Materials for the works as may be required in accordance with the said Conditions of Contract.

2. The Engineer if our Tender is accepted to examine the works within 14 days of receipt of the Engineer's order to proceed and to certify the whole of the works as being in accordance with the said Drawings, Conditions of Contract, Specifications, and Bill of Materials for the works.

3. The Tenderer shall be liable for the cost of any extra work or materials which may be required for the works and it shall be the duty of the Tenderer to provide any such extra work or materials at the time and place specified in the Bill of Materials for the works.

4. The Tenderer shall be liable for the cost of any extra work or materials which may be required for the works and it shall be the duty of the Tenderer to provide any such extra work or materials at the time and place specified in the Bill of Materials for the works.

5. We understand that you are not bound to accept the lowest or any tender for the works.

Witness my hand and seal this _____ day of _____ 19____.

in the capacity of _____
and authorized to sign and seal as hereinbefore

Occupation of Witness _____
Address of Witness _____

FORM OF TENDER

BURA EAST TOPOGRAPHICAL SURVEY

(Notes: The Appendix forms part of the Tender. Tenderers are required to fill up all the blank spaces in this Tender Form and Appendix.)

To: The General Manager,
National Irrigation Board,
Nairobi,
Kenya.

GENTLEMEN,

Having examined the Drawings, Conditions of Contract, Specification, Bill of Quantities, and Addenda No. to , for the above-named Works, we, the undersigned, offer to execute and complete the whole of the said Works all in conformity with the said Drawing, Conditions of Contract, Specification, Bill of Quantities, and Addenda No. to for such sum as may be ascertained in accordance with the said Conditions of Contract.

2. We undertake if our Tender is accepted to commence the Works within * days of receipt of the Engineer's order to commence and to complete and deliver the whole of the Works comprised in the Contract within * days calculated from the day of receipt of the aforesaid order to commence.

3. We agree to abide by this Tender for the period of 90 days from the last date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period or after the expiration of the period until withdrawn by us.

4. Unless and until a formal Agreement is prepared and executed this Tender, together with your written acceptance thereof, shall constitute a binding Contract between us.

5. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this.....day of.....19.....

Signature.....

in the capacity of.....

duly authorised to sign tenders on behalf of

.....

.....

Witness.....

Occupation of Witness.....

Address of Witness.....

.....

* These periods shall be completed by the Tenderer.

APPENDIX TO FORM OF TENDER

CONDITIONS OF CONTRACT

CLAUSE NO.

- | | | | | |
|----|--|-------|--------------------------|---|
| 1. | Tender Total | 1 | * | |
| 2. | Minimum Amount of Third Party Insurance | 11 | | KSh 4,000,000.00 or equivalent convertible foreign currency any one claim, number of claims unlimited |
| 3. | Period for commencement from Engineer's order to commence | 15 | | 14 days |
| 4. | Time for Completion and Liquidated Damages | 16 | | |
| | | 18 | Time for Completion days | Damages for Delay KSh/day |
| | Section 1 | | 45 | 2,000 |
| | Section 2 | | 135 | 1,500 |
| | The whole of the Works | | 225 | 8,000 |
| 5. | Foreign currency | 21(4) | * | |
| | i) Proportion of Contract Price required to be paid in foreign currency :- | | percent | |
| | ii) Foreign currency in which such payments required :- | | name | |
| | iii) Rate of exchange (official selling rate of Central Bank of Kenya prevailing 10 days before latest date for receipt of tenders) :- | | rate | |
| | iv) Maximum amount of foreign currency | | |equivalent Kenya Shillings |

Signature of Tenderer:

Date:

* to be completed by Tenderer

CONTRACT AGREEMENT

THIS AGREEMENT made the.....day of
.....19.....BETWEEN the National Irrigation
Board of the Republic of Kenya (hereinafter called 'the Employer')
of the one part and.....of.....
.....(hereinafter called 'the Contractor')
of the other part WHEREAS the Employer is desirous that certain
Works should be executed and completed, viz: BURA EAST TOPOGRAPHICAL
SURVEY and has accepted a Tender by the Contractor for the
execution and completion of such Works NOW THIS AGREEMENT
WITNESSETH as follows:-

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz:-

- (a) The said Tender (inclusive of memoranda accompanying the Tender and subsequent papers as listed in the Appendix hereto).
- (b) The Drawings
- (c) The Conditions of Contract
- (d) The Specification
- (e) The Bill of Quantities
- (f) The Addenda No....to.....
- (g) The Letter of Acceptance.

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned the Contractor hereby covenants with the Employer to execute and complete the said Works in conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the said Works the Contract Price at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties (or representatives of the parties) hereto have hereunto set their respective hands the day and year first above written.

For the Employer

For the Contractor

In the capacity of

In the capacity of

Witness

Witness

APPENDIX TO CONTRACT AGREEMENT

With reference to paragraph 2 (a) of the Contract Agreement, the papers listed below shall be deemed to form part of the Tender:-

Signed: for the Employer

Date

for the Contractor

Date

CONDITIONS OF CONTRACT

Definitions

1. In the Contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires:-

... "Employer" means the Government of Kenya acting through the General Manager of the National Irrigation Board or other duly authorized representative,

... "Contractor" means the person or persons firm or company whose tender has been accepted by the Employer and includes the Contractor's personal representatives, successors and permitted assigns,

... "Engineer" means Sir H. MacDonald & Partners Ltd

... "Engineer's Representative" means any servant of the Engineer appointed from time to time by the Engineer to perform the duties set forth in Clause 2 hereof whose authority shall be notified in writing to the Contractor by the Engineer,

... "Works" means the works to be executed in accordance with the Contract,

... "Contract" means Conditions of Contract Specification Drawings priced Bill of Quantities Tender Acceptance and the Contract Agreement.

CONDITIONS

OF

... "Tender Total" means the total of the priced Bill of Quantities at the date of acceptance of the Contractor's Tender for the Works,

CONTRACT

... "Contract Price" means the Tender Total less or plus any additions thereto or deductions therefrom as may be made under the provisions of the Contract,

... "Equipment" means all appliances or things of whatsoever nature required in or about the execution and completion but does not include materials or other things intended to form or forming part of the permanent work,

... "Drawings" means the drawings referred to in the Specification and any modification of such drawings approved in writing by the Engineer and such other drawings as from time to time be furnished or approved in writing by the Engineer.

CONDITIONS OF CONTRACT

Definition

1. In the Contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires:-

..."Employer" means the Government of Kenya acting through the General Manager of the National Irrigation Board or other duly authorised representative.

..."Contractor" means the person or persons firm or company whose tender has been accepted by the Employer and includes the Contractor's personal representatives, successors and permitted assigns.

..."Engineer" means Sir M. MacDonald & Partners Ltd

..."Engineer's Representative" means any assistant of the Engineer appointed from time to time by the Engineer to perform the duties set forth in Clause 2 hereof whose authority shall be notified in writing to the Contractor by the Engineer.

..."Works" means the works to be executed in accordance with the Contract.

..."Contract" means Conditions of Contract Specification Drawings priced Bill of Quantities Tender Letter of Acceptance and the Contract Agreement.

..."Tender Total" means the total of the priced Bill of Quantities at the date of acceptance of the Contractor's Tender for the Works.

..."Contract Price" means the Tender Total corrected for such additions thereto or deductions therefrom as may be made under the provisions of the Contract.

..."Equipment" means all appliances or things of whatsoever nature required in or about the execution and completion but does not include materials or other things intended to form or forming part of the permanent work.

..."Drawings" means the drawings referred to in the Specification and any modification of such drawings approved in writing by the Engineer and such other drawings as from time to time be furnished or approved in writing by the Engineer.

... "Site" means the lands and other places on under or through which the Works are to be executed or carried out and any other lands or places provided by the Employer for the purposes of the Contract.

... "Approved", or "approval", means approved by, or approval of, the Engineer in writing.

Engineer's
Representative

2. The duties of the Engineer's Representative are to watch and supervise the Works and to check and examine any materials to be used or workmanship employed in connection with the Works. He shall have no authority to relieve the Contractor of any of his duties or obligations under the Contract.

Sub-Letting

3. The Contractor shall not sub-let the Works or any part of the Works without the written consent of the Employer.

Extent of
Contract

4. The Contract comprises the execution and completion of the Works and the provision of all Equipment and materials for the Works labour (including the supervision thereof) transport to and from the Site and in and about the Site and other things of every kind whether of a temporary or permanent nature required in and for such execution and completion so far as the necessity for providing the same is specified in or reasonably to be inferred from the Contract.

Sufficiency
of Tender

5. The Contractor shall be deemed to have visited the Site and to have satisfied himself before tendering as to the correctness and sufficiency of his Tender for the Works and of the rates and prices stated in the priced Bill of Quantities which rates and prices shall (except in so far as it is hereinafter otherwise provided) cover all his obligations under the Contract and all matters and things necessary for the proper execution and completion of the Works.

Works to
Satisfaction
of Engineer

6. Save in so far as it is legally or physically impossible the Contractor shall execute and complete the Works in strict accordance with the Contract to the satisfaction of the Engineer and shall comply with and adhere strictly to the Engineer's instructions and directions on any matter (whether mentioned in the Contract or not). For the purposes of the Contract, the Contractor shall take instructions and directions only from the Engineer or (subject to the limitations referred to in Clause 2 hereof) from the Engineer's Representative.

Contractor's
Superintendence
and Workmen

7. The Contractor shall give or provide all necessary superintendence during the execution and completion of the Works. The Contractor or a competent and authorised agent or representative approved of in writing by the Engineer (which approval may at any time be withdrawn) is to be constantly on the Works and shall give his whole time to the superintendence of the same. Such authorised agent or representative shall receive on behalf of the Contractor directions and instructions from the Engineer or (subject to the limitations of Clause 2 hereof) the Engineer's Representative and shall have a sufficiently competent knowledge of the English language.

The Contractor shall employ in and about the execution of the Works only such persons as are careful skilled and experienced in their several trades and callings.

Care of the
Works

8. (1) From the commencement to the completion of the Works the Contractor shall take full responsibility for the care thereof and in case any damage loss or injury shall happen to the Works or to any part thereof or to any Equipment and materials from any cause whatsoever (save and except the excepted risks as defined in sub-clause (2) of this Clause) shall at his own cost repair and make good the same. In the event of any such damage loss or injury happening from any of the excepted risks the Contractor shall if and to the extent required by the Employer repair and make good the same as aforesaid at the cost of the Employer.

Excepted
Risks

(2) The "excepted risks" are riot (in so far as it is uninsurable) war invasion act of foreign enemies hostilities (whether war be declared or not) civil war rebellion revolution insurrection or military or usurped power (all of which are herein collectively referred to as "the excepted risks").

Insurance of
Works, etc.

9. The Contractor shall insure in the joint names of the Employer and the Contractor against all loss or damage from whatever cause arising (other than the excepted risks) for which he is responsible under the terms of the Contract and in such manner that the Employer and Contractor are covered during the execution of the Works:-

- (a) the Works to the full value of such works executed from time to time,
- (b) the materials Equipment and other things brought on to the Site by the Contractor to the full value thereof.

Such insurances shall be effected with an insurer and in terms approved by the Employer.

Damage to
Persons and
Property

10. (1) The Contractor shall indemnify and keep indemnified the Employer against all losses and claims for injuries or damage to any person or property whatsoever (including surface or other damage to land being suffered by tenants or occupiers) which may arise out of or in consequence of the execution of the Works, and against all claims demands proceedings damages costs charges and expenses whatsoever in respect thereof or in relation thereto. Provided always that nothing herein contained shall be deemed to render the Contractor liable for or in respect of or to indemnify the Employer against any compensation or damages for or with respect to:-

- (a) the permanent use or occupation of land by the Works or any part therefore,
- (b) the right of the Employer to execute the Works or any part thereof on over under in or through any land,
- (c) interference whether temporary or permanent with any right of light air way or water or other easement or quasi-easement which is the unavoidable result of the execution of the Works in accordance with the Contract,
- (d) injuries or damage to persons or property resulting from any act or neglect done or committed during the currency of the Contract by the Employer his agents servants or other contractors (not being employed by the Contractor) or for or in respect of any claims demands proceedings damages costs charges and expenses in respect thereof in relation thereto.

Indemnity
by Employer

(2) The Employer will save harmless and indemnify the Contractor from and against all claims demands and proceedings damages costs charges and expenses in respect of the matters referred to in the proviso to sub-clause (1) of this Clause.

Third Party
Insurance

11. (1) Upon the execution of the Contract the Contractor shall insure in the joint names of the Contractor and Employer against any damage loss or injury which may occur to any property or to any person by or arising out of the execution of the Works or in the carrying out of the Contract otherwise than due to the matters referred to in the proviso to Clause 10.(1) hereof.

Minimum
Amount of
Third Party
Insurance

(2) Such insurance shall be effected with an insurer and in terms approved by the Employer and for at least the amount stated in the Tender.

Accident or
Injury to
Workmen

12. (1) The Employer shall not be liable for or in respect of any damages or compensation payable at Law in respect or in consequence of any accident or injury to any workman or other person in the employment of the Contractor or any sub-contractor save and except an accident or injury resulting from any act or default of the Employer his agents or servants and the Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation (save and except as aforesaid) and against all claims demands proceedings costs charges and expenses whatsoever in respect thereof or in relation thereto.

Insurance
Against
Accident,
etc., to
Workmen

(2) The Contractor shall insure against such liability with an insurer approved by the Employer (which approval shall not be unreasonably withheld) and shall continue such insurance during the whole of the time that any persons are employed by him on the Works.

Government
Laws

13. The Contractor shall conform with the provisions of and give all notices and pay all fees required to be given or paid by any Law Regulation or Bye Law of the Government or of any local or other statutory authority which may be applicable to the Works or to any Temporary Works. The Employer shall repay or allow to the Contractor all such sums as shall have been properly payable and paid by the Contractor in respect of such fees.

Possession of
Site

14. (1) The Employer will give to the Contractor from time to time possession of so much of the Site as may be required for the execution of the Works in accordance with such reasonable programme as shall have been agreed between the Engineer and the Contractor.

Wayleaves, etc.

(2) The Contractor shall bear all expenses and charges for special or temporary wayleaves required by him in connection with access to the Site. The Contractor shall also provide as his own cost any additional accommodation outside the Site required by him for the purposes of the Works.

Commencement

15. The Contractor shall commence the Works within the period for commencement stated in the Appendix to the Form of Tender after the day of receipt by the Contractor of the Engineer's order to commence the Works.

The Works shall be deemed to have been commenced when

(i) the Contractor's Agent pursuant to Clause 7 hereof shall have been appointed to the approval of the Engineer and shall be available for full time attendance on the Site.

(ii) Equipment and labour shall have commenced the permanent work.

Time for
Completion

16. The whole of the Works and any Section required to be completed within a particular time as stated in the Appendix to the Form of Tender shall be completed within the time so stated (or such extended time as may be determined under Clause 17 hereof) calculated from the date of receipt by the Contractor of the Engineer's order to commence the Works.

Extension
of Time

17. Should any variation made pursuant to Clause 22 hereof or other special circumstance fairly entitle the Contractor to an extension of time for completion of the work, the Engineer shall determine the amount of the extension provided that the Contractor shall have provided as soon as practicable detailed particulars of all relevant circumstances.

Liquidated
Damages
for Delay

18. In the Appendix to the Form of Tender under the heading "Time for Completion and Liquidated Damages" there are stated sums which represent the Employer's genuine pre-estimate (expressed as a rate per day) of the damages likely to be suffered by him in the event that a Section or the whole of the Works, as the case may be shall not be completed within the time prescribed by Clause 16.

Such sums payable by the Contractor to the Employer pursuant to this Clause shall be paid as liquidated damages for delay and not as a penalty.

If the Contractor should fail to complete the whole of the Works within the prescribed time or any extension thereof granted under Clause 17 the Contractor shall pay to the Employer for such default the sum stated in the Appendix to the Form of Tender for the whole of the Works for each day which shall elapse between the date on which the prescribed time or extension thereof expired and the date of completion of the whole of the Works. Provided that if any part of the Works not being a Section or part of a Section shall be certified as complete pursuant to Clause 20 before completion of the whole of the Works the sum so stated shall be reduced by the proportion which the value of the part completed bears to the value of the whole of the Works. Provided that if any Section shall be certified as complete pursuant to Clause 20 before completion of the whole of the Works the sum so stated shall be reduced by the sum stated in the Appendix to the Form of Tender for such Section.

If the Contractor should fail to complete any Section within the relevant time for completion or any extension thereof granted under Clause 17 the Contractor shall pay to the Employer for such default the sum stated in the Appendix to the Form of Tender for such Section for each day which shall elapse between the date on which the relevant time or any extension thereof expired and the date of completion of the relevant Section or the date on which the time for completion of the whole of the Works or any extension thereof expired, whichever shall be the earlier.

Clearance of Site on Completion

19. On the completion of the Works the Contractor shall clear away and remove from the Site all Equipment surplus material rubbish and Temporary Works of every kind and leave the whole of the Site and Works clean and in a workmanlike and safe condition.

Certificate of Completion

20 (1) As soon as in the opinion of the Engineer the whole of the Works shall have been completed or a Section in respect of which a separate time for completion is stated in the Appendix to the Form of Tender shall have been substantially completed and in the case of a Section shall have received an undertaking in writing from the Contractor to complete any outstanding work before completion of the whole of the Works, the Engineer shall issue a Certificate of Completion to the Contractor in respect of the Works or Section as the case may be.

(2) Upon the written application of the Contractor a Certificate of Completion shall be issued by the Engineer in respect of a part of a Section before completion of the whole of the Section which has been both completed to the satisfaction of the Engineer and put to the use for which it was intended.

Measurement and Valuation

21. (1) The Contract Price shall be ascertained by measuring the completed Works in accordance with the provisions of the Preamble to the Bill of Quantities and by applying to such measurements the appropriate rates and prices stated in the Bill of Quantities subject to such additions and deductions as are provided for in the Contract.

Interim Payment

(2) An interim payment shall be paid to the Contractor within 45 days of receipt by the Employer of an application by the Contractor certified by the Engineer for such payment provided that:

(i) such applications are made not more frequently than once per month and are fully detailed

(ii) the amount of such payment shall be the sum of

(a) 90% of the measured value of the work done up to the date of the application

(b) 5% of the measured value of any Section or part thereof for which a Certificate of Completion has been issued,

less any previous payments

(iii) such payments shall not be deemed to constitute approval of any matter or to be an admission of the due performance of any part of the Contract.

Balance of the Contract Price

(3) The balance of the Contract Price shall be paid to the Contractor by the Employer within 45 days after receipt by him of an application by the Contractor certified by the Engineer following the completion of the whole of the Works as certified in accordance with Clause 20 hereof.

Payments in
Foreign
Currency

(4) A foreign Contractor for the purposes of this sub-clause shall be defined as one which according to the laws of the Republic of Kenya and the Regulations of the Central Bank of Kenya is permitted to receive and hold currency other than Kenya currency.

If the Contractor is a foreign Contractor the amounts certified by the Engineer to be paid to the Contractor shall be paid partly in Kenyan Shillings and partly in foreign currencies in accordance with the following conditions:-

- (a) That at the time of submission of his application in accordance with Clause 21(2) hereof the Contractor shall have applied to receive part of the amount in foreign currency with a statement of the amounts in each foreign currency together with a statement of the country of origin of the goods or services, as the case may be, relating to each such amount.
- (b) That payment in foreign currency will be in the proportions and at the rates of exchange entered by the Contractor in the Appendix to the Form of Tender and on which the rates in the Bill of Quantities have been based, provided that in the valuation of variations such proportions may be varied as may be agreed or determined by the Engineer.
- (c) That the total amount in foreign currency shall not exceed the amount stated in the Appendix to the Form of Tender as the maximum amount of foreign currency required provided that in the valuation of variations, provisional sum items and P.C. items the maximum may be increased as agreed or determined by the Engineer.
- (d) That any costs incurred by the Employer in making arrangement for payments in foreign currencies at the exchange rates listed by the Contractor in the Appendix to the Form of Tender will be borne by the Employer.
- (e) The foreign currencies named in the Tender shall be those of a country being a member of the International Bank for Reconstruction and Development or Switzerland and in the case of a foreign Contractor shall be that of the country in which his chief place of business lies, or in which substantial expenditures are made.
- (f) The Contractor shall make expenditure for the purposes of the Contract only for goods produced in or for services procured from countries which are members of the International Bank for Reconstruction and Development or Switzerland or shall, in his applications for a certificate referred to in sub-paragraph (a) above, separately identify expenditures not so made.

Variations

22. (1) The Engineer shall make any variation of the form quality or quantity of the Works or any part thereof that may in his opinion be necessary and for that purpose or if for any other reason it shall in his opinion be desirable shall have power to order the Contractor to do and the Contractor shall do any of the following:-

- (a) increase or decrease the quantity of any work included in the Contract
- (b) omit any such work
- (c) change the character or quality or kind of any such work
- (d) change the levels lines position and dimensions of any part of the Works and
- (e) execute additional work of any kind necessary for the completion of the Works.

and no such variation shall in any way vitiate or invalidate the Contract but the value (if any) of all such variations shall be taken into account in ascertaining the amount of the Contract Price.

Variation Orders

(2) No such variation shall be made by the Contractor without an order in writing of the Engineer. Provided that no order in writing shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an order given under this Clause but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

Valuation of Variations

(3) Any extra or additional work done or work omitted by order of the Engineer shall be valued at the rates set out in the Contract. If the Contract shall not contain any rates applicable to the extra or additional work then reasonable prices shall be agreed or failing agreement shall be fixed by the Engineer.

Ruling Language 23. The ruling language shall be English.

Taxes

24. Without prejudice to the provision of Clause 21(4)(d) hereof, the Contractor shall pay and shall be liable for all taxes duties charges levies and the like which may be payable in respect of profits or income of himself or his employees or in respect of materials (whether for incorporation in the Works or for temporary works) or Equipment. The Contractor shall not be entitled to any separate payment from the Employer in respect of such taxes, etc., as aforesaid the costs of which shall be deemed to be included in the rates and prices stated in the Bill of Quantities.

Determination
of Contract
by Employer

25. If the Contractor shall suspend the Works or in the opinion of the Engineer shall neglect or fail to proceed with due diligence in the performance of his part of the Contract, or if he shall become bankrupt or go into liquidation, the Engineer shall give notice in writing to the Contractor specifying the default and if the Contractor shall fail or neglect, 7 days after such notice has been given to proceed with the Works as therein directed, the Employer may take possession of the Works and of all Equipment and materials thereon intended to be used for the Works which shall thereupon become the property of the Employer. If the Employer shall exercise the above power, he may contract with any other party to complete the Works and deny the Contractor his agents and servants access to the Works.

Upon completion of the Works, the Engineer shall certify the amount of the expense properly incurred consequent on and incidental to the default of the Contractor as aforesaid, and in completing the Works by others, should the amount so certified be less than the amount which would have been due to the Contractor upon the completion of the Works by him the difference shall be paid to the Contractor, should the amount of the former exceed the latter, the difference shall be paid by the Contractor.

The Contractor shall not be entitled to any further payment or compensation for the use of the Equipment and materials for the completion of the work under the provision herein before contained other than such payments as are included in the Contract Price. After the Works shall have been completed by others under the provisions herein before contained, the Engineer shall give notice to the Contractor of such completion and may require him from time to time, before or after such completion to remove from the Site his Equipment and all such materials as aforesaid as may not have been used or required in the completion of the Works. If such Equipment and materials are not removed within such reasonable time as shall have been specified by the Engineer in the notice given to the Contractor, all such Equipment and materials shall remain the absolute property of the Employer and may then be disposed of in whatever manner as may be deemed expedient.

Frustration

26. In the event of the Contract being frustrated whether by war or by any other supervening event which may occur independently of the will of the parties then the Contractor shall be entitled to and shall be paid by the Employer a fair and reasonable proportion of the Contract Price for the work already done and commitments entered into by him, and for this purpose any monies previously paid by the Employer shall be retained by the Contractor as against the sum due to him under this Clause and any balance shall be repaid to the Employer.

- Currency of Contract 27. The currency of the Contract shall be the currency of Kenya.
- Law of Contract 28. The Contract shall be and be deemed to be a Kenyan Contract and shall be governed and construed according to the laws for the time being in force in Kenya.
- Notices 29. (1) Any notice to be given to the Contractor under the terms of the Contract shall be served by sending the same by post to or by leaving the same at the Contractor's principal place of business or (if any) at his registered office.
- (2) Any notice to be given to the Employer under the terms of the Contract shall be served by sending the same by post to or by leaving the same at the Employer's last known address or (if any) at his registered office.
- Disputes 30. If any dispute or difference of any kind shall arise between the Employer and the Contractor in connection with or arising out of the Contract or the execution and completion of the Works it shall be referred to an arbitrator to be agreed upon between the parties or failing such agreement within one month to be nominated by the Chairman for the time being of the Institution of Engineers of Kenya and any such reference shall be deemed to be a submission to arbitration within the meaning of the Arbitration Act or any statutory re-enactment or amendment thereof for the time being in force.
- The venue of any such arbitrations shall be Kenya.
- Copyright 31. The copyright of all materials produced under the terms of the contract shall rest solely in the Employer and no use shall be made of them other than as provided under the Contract except with the permission given in writing by the Employer.

SPECIFICATION

- Purpose of the Works
1. Topographical survey and mapping is required as a control for soil survey work and as a basis for outline design of the irrigation and drainage system for the Bura East Project, and the associated supply canal and headworks.
- Brief Description of the Works
2. The Works include
- (i) An initial survey of an area of about 80,000 hectares, including cutting of primary parallel trace lines at 4 km intervals, the establishment of beacons at 4 km intervals to give a right angled grid, the establishment of temporary reference pegs at 500 m intervals along the trace lines, see Drawings Nos. BE1 and BE4.
- (ii) A survey of cross sections of the Tana River channel and floodplain at about 10 locations as indicated on Drawing No. BE5, if ordered by the Engineer.
- (iii) A survey along the proposed supply canal alignment (about 70 km long) with cross sections where ordered by the Engineer.
- (iv) A semi-detailed survey of an area of about 40,000 hectares, which may comprise two or more separate areas of land, selected by the Engineer, from within the area surveyed under (i) above, including:
- (a) cutting parallel secondary beacons trace lines and establishing the necessary beacons on the primary and secondary lines to give a 2 km beacons right angled grid
- (b) cutting intermediate tertiary trace lines at 2 km intervals parallel with and 1 km from the secondary trace lines
- (c) establishing temporary reference pegs at 500 m intervals, on secondary and tertiary trace lines to give a 1 km x 500 m pegged right angled grid based on the primary trace line reference pegs
- (d) taking ground levels at 100 m intervals on the trace lines between and at reference pegs.
- (v) Detailed level survey of about 16 sample areas, each 250 m square, within the area surveyed under (iv) above, giving spot levels on a 25 m grid for the purpose of a land levelling analysis.
- (vi) Preparation of a map of the initial survey area of 80,000 hectares at 1:100,000 scale with contours at 2.5 m intervals.
- (vii) Preparation of a map of the semi-detailed survey area of 40,000 hectares at 1:20,000 scale with contours at 1.0 m intervals.
- (viii) Preparation of schedules of co-ordinates and levels of beacons, and lists of all ground levels by trace lines.

(ix) Delivery to the Employer of three black line on durable film negatives of each map, schedule and list together with six prints on paper of each, and six copies of all other records of survey, water levels and flow measurements called for under the Contract.

(x) The Contractor will be required to provide camp and transport facilities for his own staff, and may be required to provide them for the Engineer's topographical survey supervisor and his field assistant.

(xi) The Contractor may be required to survey a length of proposed canal alignment on the West Bank of the Tana River near Nanigi and assist the Engineer in river discharge measurements, as described in Clauses 26 and 27, if ordered.

(xii) The Contractor may be required to provide additional camp and transport facilities for the Engineer's staff engaged on gypsum survey work.

Works
to be in
Sections

3. The Works shall be divided into Sections for which separate times for completion are prescribed under the Contract, and stated in the Appendix to the Form of Tender.

(i) Section 1 comprises:

- (a) cutting the primary parallel trace lines at 4 km intervals for the initial survey area referred to in Clause 2(i)
- (b) preliminary location and construction of the beacons at 4 km intervals on these trace lines, but excluding the establishment of co-ordinate values and levels of the beacons
- (c) the construction of temporary reference pegs at 500 m intervals on primary trace lines but excluding establishment of levels
- (d) submission of schematic reference plan of the trace lines, beacons and temporary reference pegs
- (e) the river channel and floodplain survey referred to in Clause 2(ii) and the submission of the data obtained in a preliminary format to the approval of the Engineer.

(ii) Section 2 comprises:

- (a) establishing the co-ordinate values and levels of the beacons constructed in Section 1
- (b) establishing the ground levels at the temporary reference pegs and taking ground levels at 100 m intervals along the primary trace lines established in Section 1 and completing any other fieldwork required for the initial survey described in Clause 2(i), including the establishment of plan and level control as described in Clauses 12 and 13.
- (c) preliminary mapping to 1:100,000 scale of the initial survey area suitable for soil survey mapping by others and supply of one negative of the preliminary map on film

- (d) cutting of the 1 km interval secondary and tertiary trace lines referred to in Clauses 2(iv)(a) and 2(iv)(b)
- (e) preliminary location and construction of the beacons at 2 km intervals on the primary and secondary trace lines but excluding the establishment of the co-ordinate values and levels of the beacons other than as required in Clause 3(ii)(a) above
- (g) completion of the supply canal survey referred to in Clause 2(iii) above with preliminary copies of data obtained.

(iii) The whole of the Works include Section 1, Section 2 and the following:-

- (a) establishing the co-ordinate values and levels of the beacons constructed in Section 2
- (b) establishing the ground levels at the temporary reference pegs and taking ground levels at 100 m intervals along the secondary and tertiary trace lines established in Section 2
- (c) completing the detailed survey of sample areas described in Clause 2(v)
- (d) completing any other fieldwork required in connection with the Works
- (e) plotting 2.5 m interval contours on the 1:100,000 scale maps of the initial survey area as described in Clause 2(vi)
- (f) completing the 1:20,000 scale maps of the semi-detailed survey area including 1.0 m interval contours as described in Clause 2(vii)
- (g) completion of schedules of co-ordinate and levels of beacons and lists of ground levels
- (h) delivery to the Employer of prints and negatives of all maps and records as described in Clause 2(ix) and completion of the remainder of the Works called for under the Contract.

Location of the Works 4. The location of the Works is shown on Drawing No. BE1. The Works are situated about 100 km south east of Garissa in Garissa District of North Eastern Province.

Method of Working 5. Personnel and Equipment used in the execution of the Works shall be subject to the approval of the Engineer.

The Engineer may at any time withdraw his approval and the Contractor shall immediately provide other personnel and equipment, and if such change in the opinion of the Engineer is required to achieve

satisfactory progress or workmanship, the Contractor shall have no claim against the Employer for costs incurred by him in changing his personnel, or in the provision and use of other Equipment.

The Contractor shall make available to the Engineer on demand all field books and computations for checking.

Programme of Works 6. The Contractor shall within 14 days of the acceptance of his Tender furnish the Engineer with a programme of works which shall show the estimated date of commencement and completion of each portion of the Works.

Co-ordination of Work 7. The topographical survey is to be co-ordinated with a concurrent soil survey, under the direction of the Engineer, and the trace line cutting and establishment of beacons is to be executed ahead of the soil survey. The first part of the area of semi-detailed survey (Clause 2(iv)) will be selected by the Engineer about five weeks after the start of soil survey work.

The soil survey party will be responsible for setting out their trial holes, but details of all beacons, reference points and temporary marks resulting from the Works will be made available to the soil survey party by the Engineer or by the Contractor on the instructions of the Engineer.

The programmed sequence of establishing trace lines and temporary marks shall be subject to the approval of the Engineer from time to time and any subsequent alterations of the programmed sequence ordered by the Engineer shall be at no extra cost to the Employer.

Notice of Operations 8. The Contractor shall not commence any separate operation without the consent of the Engineer, to whom the Contractor shall give full and complete notice of the operation sufficiently in advance of its proposed commencement, so as to enable the Engineer to make such arrangements as he may deem necessary for inspection or for any other purpose.

Existing Survey Information 9. The Contractor shall be responsible for obtaining current information on the location, accuracy and co-ordinate and level values of existing survey beacons from the Survey of Kenya.

Any difficulties in obtaining information, or discrepancies between items of information shall be referred to the Engineer.

Trace Lines 10. The trace lines shall be cut in the general direction north-east/south-west, for the initial and semi-detailed surveys, and be of an appropriate width for topographical work and such that four wheel drive vehicles can obtain access to sites at 250 m intervals on all trace lines.

Trace lines shall be cut as required for all other survey work.

Beacons 11. Beacons shall be of 50 mm diameter steel pipe about 2 m long, concreted in augered holes as shown on Contract Drawing No. BE2. A mound of earth approximately 1 m high shall be formed off the sight line near each beacon to facilitate location.

A statement of co-ordinates of the 4 km and 2 km beacons referred to the Universal Transverse Mercator (UTM) grid shall be prepared, together with details of all triangulation measurements and calculations. The observation of angles shall be presented to the Engineer daily on a standard pro-forma to the approval of the Engineer.

Location of Beacons 12. All beacons on the 4 km and 2 km grids shall be established to within plus or minus 20 metres of the true intersection of grid lines. The actual positions of the beacons will be tied to the Survey of Kenya or BPST Trigonometrical Stations and the co-ordinates of each station will be referred to the Universal Transverse Mercator (UTM) grid. The accuracy of the co-ordinates shall be within plus or minus 3 metres. The work shall include any preliminary work necessary to check the existing Trigonometrical Stations and establish sufficient additional triangulation stations to control the beaconing and fix the co-ordinates of the beacons.

Bench Marks at Beacons 13. Bench marks shall be established at all beacons. The levels shall be referred to Survey of Kenya datum, working from one Trigonometrical Station agreed by the Engineer, and checked to the Stage I survey bench mark near Nanigi West. (D4;113.11 Co-ordinates 17165.15 80776.02

The accuracy of levelling shall be within $1.0\sqrt{K}$ cm where K is the length in kilometres of the levelling circuit. The levelling circuits shall provide lines of levels of the natural ground on the lines of the 2 km grid in one direction, i.e. parallel lines of levels lying generally north-east/south west.

Semi-detailed Survey 14. Temporary reference points only are required for the tertiary 1 km interval trace lines alternating with the secondary 2 km interval beacons trace lines, comprising bush pegs suitably marked with a reference number, at 500 m intervals.

Temporary bench marks of the form shown on Drawing No. BE3, or such other form as approved by the Engineer, shall be provided as necessary at not more than 4 km intervals on unbeaconsed trace lines.

Lines of levels for the semi-detailed survey shall be tied to the 2 km grid beacons and the discrepancy at any beacon shall not exceed plus or minus 5 centimetres.

Setting
out of
Canal
Alignment

15. The Engineer will provide the information for setting out the base line on 1:20,000 scale aerial mosaics. The intersecting points shall be set out in association with the Engineer's Representative.

The Contractor shall then level the base line taking ground levels at a maximum of 200 metre intervals and offset levels at these intervals at 200 metres either side of the base line where the terrain permits.

Beacons shall be established at approximately 4 km intervals along the base line, and temporary bench marks at 1,000 metres intervals between the beacons.

Cross-sections will be required at right angles to the base line at about 1,000 metre intervals along it, as directed by the Engineer (see Clause 16).

Cross
Sections

16. Cross-sections are required for the Engineer to determine the 'best' location of the canal. The cross-sections shall be taken along lines drawn on the mosaics supplied by the Engineer. Levels along the cross-section lines shall be taken at approximately 200 metres intervals, the lines to be about 1.4 km long on average.

River
Channel
and
Floodplain
Survey

17. This work shall be performed only on the instructions of the Engineer who will define the work required on the 1:20,000 mosaics. The Contractor shall take levels at about 10 m intervals across the cross-section of the normal river channel, and water levels, to define the shape of the river channel and flood banks. (It is anticipated that about 10 bed levels, and about 6 bank levels will be sufficient at each river channel section.)

Floodplain cross-sections will extend the full width of the floodplain on both banks and ground levels shall be taken at 200 m intervals along the lines of cross-section. A temporary bench mark shall be established on each bank adjacent to the river channel at each cross-section line.

Detailed
Levelling
of Sample
Areas

18. The Engineer will provide the Contractor with details of the areas for which detailed levelling is required during the progress of the semi-detailed survey. About 16 sample areas shall be surveyed, each 250 metres square. Levels shall be taken on a 25 metre square grid within each area, giving 121 levels.

General
Accuracy
of
Levelling

19. Except as detailed elsewhere in this specification the accuracy of any levelling circuit shall not be less than $1.0\sqrt{K}$ cm where K is the length of the levelling circuit in kilometres.

Referencing

20. Before commencing any fieldwork the Contractor shall submit for the Engineer's approval a drawing showing his proposed beacon referencing system.

All beacons and temporary bench marks of concrete construction shall have their reference numbers cast into their upper surfaces.

General
Details

21. Where any significant changes in terrain occur, for example waterpans, lagas and bluffs, the location and levels of banks, slopes, bed and water levels and other features shall be recorded.

Present-
ation of
Data and
Results

22.(a)Data to be supplied by the Engineer

The Engineer will provide the Contractor with one set 1:100,000 scale maps defining the location of the area to be surveyed for the initial survey and the canal survey.

A set of photographs and mosaics will be loaned to the Contractor during the plotting stage of the work, and may be available for inspection at the Engineer's base camp at Bura by arrangement during the course of the work.

(b)Results to be supplied by the Contractor

The Contractor shall supply the following data on completion of the work:

- (i) Abstracts of all observations
- (ii) Descriptions of all triangulation and ground control works
- (iii) Diagrams
- (iv) Computations
- (v) Co-ordinate lists arranged by the mapping scales, with bench mark levels
- (vi) Information with full details as to destroyed or damaged control points and bench marks as may come to the notice of his surveyors during the course of the work
- (vii) The Contractor shall also make available to the Employer for inspection or extraction of data any field books on demand
- (viii) Mapping as specified below
 - (xi) Schedules of spot levels for trace lines, canal base lines and sections, river channel, and floodplain sections and detailed sample area surveys.

The Contractor shall present as soon as possible on completion of the initial survey 1 negative and 6 positive prints of the 1:100,000 scale map showing contours at 2.5 m intervals, for the purpose of soil mapping.

Mapping

23.(a)Method and Originals

The mapping will be fair drawn in black on non-distorting transparent material of durable quality suitable for dyeline printing.

(b) Projection and Grid

The sheets will be gridded on the UTM System. The sheets will have grids at 1,000 metres centres. The grid intersections will be indicated by crosses each leg of which will be 4 mm long.

(c) Detail to be Mapped

The maps will show all details normally depicted on maps at the published scale, e.g. communications, rivers and streams when longer than 0.4 cm at published scale, the exterior limits of defined cultivation, villages and towns, isolated buildings of any nature, canals and all distributaries, triangulation stations and intersected points with the heights and standard bench marks, prominent isolated rocks and trees which might be of assistance in future surveys.

The details will be drawn in accordance with a standard reference table to be agreed with the Engineer.

The standard symbols for ornament will be added where this can be clearly interpreted on the photographs.

All triangulation and intersection points, with their heights, shall be shown, irrespective of whether they have been used as control points, or not, in addition to the control points which the Contractor may himself have established and which in his opinion would be useful in future ground surveys.

The following maps and plans shall be supplied by the Contractor:-

- (i) A map sheet at 1:100,000 scale of the initial survey area, showing contours at 2.5 m intervals.
- (ii) A set of sheet maps of the semi-detailed survey area at 1:20,000 scale showing contours at 1 metre intervals. The sizes of sheets shall be agreed with the Engineer prior to the start of drawing office work.
- (iii) A 1:10,000 plan of the canal survey showing the location of all intersection points, sections and local details such as laga crossings, together with a list of referenced ground levels.
- (iv) Key plans showing all detailed sample area levelling points and a list of referenced ground levels.
- (v) A plan showing the location of all river channel and floodplain cross-sections surveyed, and lists of referenced levels.

Three negative prints on approved stable material and six positive prints of each map sheet under (i) and (ii) shall be provided, together with one negative print and four positive prints of each plan under (iii), (iv) and (v).

The maps shall show existing features taken from existing maps and aerial photographs. If, however, in any part of the area the ground is obscured on the photographs by vegetation, dense shadow or other causes, the details will be indicated by broken lines and its accuracy need not be guaranteed by the Contractor.

- Accuracy of Mapping 24. The accuracy of the plotted detail shall be such that the co-ordinates of any point of detail, scaled from the nearest grid-lines, will not differ by more than 0.4 mm from the true co-ordinates obtained by triangulation or traverse on the ground.
- Reports 25. The Contractor shall submit a weekly report to the Engineer detailing staff and equipment at site, progress, and other relevant matters, and a monthly report index form for mapping work.
- West Bank Canal 26. The Contractor may be required to survey a section of canal alignment on the west bank of the Tana River. Such work would be required to be carried out in accordance with Clause 15 and 16 of this Specification, and only on the instructions of the Engineer.
- River Discharge Measurement 27. The Contractor may be required to assist the Engineer in the measurement of river discharge at three gauging sites located within a stretch of river about 30 km long in the vicinity of Nanigi. This work would involve discharge and water level measurements at the gauging sites, and the Contractor should be prepared to provide all necessary equipment and labour to establish cableways or other means of operation and to carry out the measurements, if so required. The work described shall be performed only on the instructions of the Engineer.
- Camp Facilities for the Engineer 28. The Contractor shall, if ordered, supply, set up and maintain camp facilities for the duration of the topographical survey works for occupation and use by the Engineer's topographical survey supervisor and his field assistant.
- The facilities to be provided shall include but shall not necessarily be restricted to those listed below, and shall be of the standard normally expected for a semi-permanent camp of this nature.
- Accommodation 29. The accommodation shall comprise the following:
(i) two single man tents, Safari XXI Special or similar approved, bedding, blankets and other equipment as listed in Specification Appendix S-2.

(ii) Office and stores tent, 6 m square, double roofed.

(iii) Mess tent.

(iv) Washing, toilet and cooking facilities.

(v) Bedding and beds, tables, chairs, first aid kits, mess kits, Tilley lamps and all other miscellaneous items of equipment necessary for the works.

All accommodation shall be provided with concrete floors to a standard approved by the Engineer.

The camp shall be established from the date the Contractor starts work on site.

The Contractor shall make proper arrangements for disposing of all rubbish and maintaining the camp in a clean and tidy condition.

Electricity Supply 30. The Contractor shall provide an electricity supply for lighting, refrigeration and other domestic purposes.

Water Supply 31. A potable water supply and storage for domestic use shall be provided.

Catering 32. Catering for three meals a day shall be provided plus sandwich snacks and drinks for field use, and twenty-four hour service for tea, coffee and milk in camp. Menus shall be planned to suit expatriate personnel. The Contractor shall provide all necessary cooks and attendants.

Operation of the Camp 33. The Contractor shall appoint a Camp Manager to operate the camp both in respect of the accommodation provided as specified for the Engineer and his staff and the accommodation provided for the Contractor's own staff. The Contractor shall provide for all necessary watching, cleaning and security of the camp and its facilities including laundry of the personnel normally resident in camp. The Contractor shall ensure adequate supplies of all stores in the camp at all times.

Transport Additional 34. The camp shall be located at a site to be approved by the Engineer, adjacent to Bura, and shall be operated in common with the Contractor's camp.

Services Catering and Transport 35. On completion of the Works, the Contractor shall remove all items of equipment, materials and Plant, and his labour from the site and leave the site in a clean and tidy condition to the approval of the Engineer.

Transport 34. The Contractor shall, if ordered, provide and insure for the sole use of the Engineer and his staff at all times two approved motor vehicles as described in Appendix S2 for official duties around and in connection with the Contract. The vehicles provided shall be new

and shall be maintained at all times in good running order. Should any vehicle at any time become in the opinion of the Engineer, unserviceable the Contractor shall replace it without delay.

The Contractor shall provide efficient drivers together with all necessary fuel, oil, etc., and shall bear all expenses in connection with the running, maintenance, upkeep, licensing and insurance. On completion of the Contract, ownership of the vehicles shall revert to the Contractor.

If the Contractor, shall, in the opinion of the Engineer, fail to satisfy the requirements of this Clause, the Engineer shall be entitled to withhold the issue of certificates for progress payments from time to time until the Contractor is in compliance with the said requirements.

Camp and Transport Facilities for the Gypsum Survey Fieldwork

35. The Contractor shall, if ordered, supply, set up and maintain camp and transport facilities for the duration of the gypsum survey fieldwork on both banks of the Tana River for occupation and use by the Engineer's two Soils Consultants and one technician.

The gypsum survey fieldwork will be carried out by others and the Contractor is required only to provide camping and transport facilities and attendance as specified below, if ordered. These facilities are to be provided as an extension of the main camp at Bura with the Contractor providing boat and boatmen for cross-river transport for the staff noted above and the Engineer's topographical survey supervisor and his field assistant.

Accommodation - Additional

36. The additional accommodation for the gypsum survey fieldwork shall comprise the following:

- (i) Three single man tents as specified in Appendix S-3, together with all necessary bedding and personal equipment.
- (ii) All other facilities for the three additional staff as specified in Items ii to v of Clause 29.

Transport- Additional

37. The Contractor shall, if ordered, provide and insure for the sole use of the Engineer and his staff, two additional approved motor vehicles all in accordance with Clause 34 for the duration of the gypsum survey fieldwork.

Services, Catering and Operation

38. The additional camp facilities specified in Clause 35 shall comply in all respects with the requirements of Clauses 29 to 34 inclusive of the Specification.

Number	Item Description	Unit	Quantity	Rate	Amount
<u>SPECIFICATION APPENDIX S-2</u>					
List of Equipment for Engineer					
Stores supply and install the following:					
<u>Engine Equipment:</u>					
1.	Safari AXI Special or similar	No.	1		
2.	Green-sheep	No.	2		
3.	Mosquito Net Beda	No.	2		
4.	Canvas Wash Basin/Bath Set	No.	1		
5.	Canvas Camp Chair	No.	2		
6.	Camp Bed - Military Model	No.	2		
7.	Mosquito Net	No.	2		
8.	Kids for stove	No.	2		
9.	Stool/Trunk	No.	2		
10.	Canvas Tarp	No.	2		
11.	Stool	No.	2		
12.	Stool	No.	2		
13.	Stool	No.	2		
14.	Drawing No. BE1 Location of Topographical Survey Area		1		
15.	Drawing No. BE2 Beacon		1		
16.	Drawing No. BE3 Temporary Bench Mark		1		
17.	Drawing No. BE4 Explanatory Diagram of Traces and Grids		1		
18.	Drawing No. BE5 Location of Sections through Flood Plain		1		
19.	Thermos Jugs, Large	No.	4		
20.	Desert Water Bags 4.5 litre	No.	4		
21.	Bedding	Set	2		
22.	Land Rover or similar approved vehicle complete with parallel rear seating as specified in Clause 14.	No.	2		
BIB-TOTAL Carried forward to Item 1 of Sub-Bill C					

APPENDIX S-1

LIST OF DRAWINGS

Number	Item Description	Unit	Quantity	Rate	Amount	
					Kenya	Shillings
	<u>SPECIFICATION APPENDIX S-2</u>					
	List of Equipment for Engineer Provide supply and install the following:-					
	<u>Camping Equipment</u>					
1	Safari XXI Special or similar	No.	2			
2	Groundsheet	No.	2			
3.	Mosquito Net Doors	No.	2			
4.	Canvas Wash Basin/Bath Set	No.	2			
5.	Canvas Camp Chair	No.	2			
6.	Camp Bed - Military Model	No.	2			
7.	Mosquito Net	No.	2			
8.	Rods for above	No.	2			
9.	Steel Trunk	No.	2			
10.	Canvas Bucket	No.	2			
11.	Torch - 2 cell rubber	No.	2			
12.	Bowl/Basin	No.	2			
13.	Tilly Stormlight	No.	2			
14.	Water Jerrican	No.	2			
15.	Surveyor's Table 3'5"x2'0x2'6" high	No.	2			
16.	Office and stores tent 6 m square, double roofed	No.	1			
17.	Mess tent	No.	1			
18.	First Aid Kit	No.	2			
19.	Mess Kit	No.	2			
20.	Ice Boxes Nilo "B" or similar	No.	2			
21.	Thermos Jugs, large	No.	4			
22.	Desert Water Bags 4.5 litre	No.	4			
23.	Bedding	Set	2			
24.	LWB 4 W.D. Land Rover Hardtop or similar approved vehicle complete with parallel rear seating as specified in Clause 34.	No.	2			
	SUB-TOTAL Carried forward to Item 1 of Sub-Bill C					

Number	Item Description	Unit	Quantity	Rate	Amount
					Kenya Shilling
	<u>SPECIFICATION APPENDIX S-3</u>				
	List of Equipment for Gypsum Survey Fieldwork				
	Provide supply and install the following:-				
	<u>Camping Equipment</u>				
1.	Safari XXI Special or similar	No.	3		
2.	Groundsheet	No.	3		
3.	Mosquito Net Doors	No.	3		
4.	Canvas Wash Basin/Bath Set	No.	3		
5.	Canvas Camp Chair	No.	3		
6.	Camp Bed - Military Model	No.	3		
7.	Mosquito Net	No.	3		
8.	Rods for above	No.	3		
9.	Steel Trunk	No.	3		
10.	Canvas Bucket	No.	3		
11.	Torch - 2 cell rubber	No.	3		
12.	Bowl/Basin	No.	3		
13.	Tilly Stormlight	No.	3		
14.	Water Jerrican	No.	3		
15.	Surveyor's Table 3'5"x2'0"x2'6" high	No.	3		
16.	First Aid Kit	No.	3		
17.	Mess Kit	No.	3		
18.	Ice Boxes Nilo "B" or similar	No.	3		
19.	Thermos Jugs, large	No.	3		
20.	Desert Water Bags 4.5 litre	No.	3		
21.	Bedding	Set	3		
22.	LWB 4 W.D. Land Rover Hardtop or similar approved vehicle complete with parallel rear seating as specified in Clause 34.	No.	2		
	SUB-TOTAL Carried forward to Item 1 of Sub- Bill D				

ARTICLE

(11) The Bill of Quantities comprises this Preamble and the Bill of Quantities.

(12) The quantities set out in the Bill of Quantities are the estimated quantities for the work and they are not to be taken as the actual and correct quantities of the Works to be executed by the Contractor in fulfillment of his obligations under the Contract.

(13) The work shall be measured net notwithstanding any general or local custom except where otherwise specifically described or prescribed in the Contract.

(14) The rates and prices stated in the Bill of Quantities shall, except where otherwise provided in the Contract, cover all the Contractor's obligations under the Contract and all matters and things necessary for the proper execution and completion of the Works.

Except where otherwise specifically described or prescribed in the Contract, Equipment, materials both for temporary and for permanent works, Labor (including the supervisor thereof), transport to and from the Site and in and around the Site and other things of every kind required for the execution and completion of the Works, shall not be measured and the cost thereof shall be deemed to be included in the rates and prices stated in the Bill of Quantities.

(15) Where the measurement is not by integral parts or items, the total quantity included in the final measurement of each item shall be rounded up to the nearest tenth of the unit of measurement shown for that item.

BILL OF

QUANTITIES

(16) The following units are used in the Bill of Quantities:

sq	square	km	kilometre
cu	cubic	m	metre
no.	number	kg	kilogramme
hr	hour	tonne	metric ton
prov.	provisional	%	per cent

(17) Where there is an item in the Bill of Quantities having the words "prov sum" entered in the Unit column, the work described shall be performed only on the instructions of the Engineer. Such work shall be executed in accordance with clause 12.01 of the Conditions of Contract and to the extent that the provisional sum is not used the Contract Price shall be reduced accordingly.

(18) Linear measurement of work along trace lines shall not extend beyond bearings located at the extremities of the trace lines but with the survey area.

(19) The Contractor shall present to the Engineer all books, computations and all other evidence required by the Engineer as justification of the Contractor's applications for Interim payments.

PREAMBLE

(i) The Bill of Quantities comprises this Preamble and the Bill of Quantities.

(ii) The quantities set out in the Bill of Quantities are the estimated quantities for the work and they are not to be taken as the actual and correct quantities of the Works to be executed by the Contractor in fulfilment of his obligations under the Contract.

(iii) The Works shall be measured net notwithstanding any general or local custom except where otherwise specifically described or prescribed in the Contract.

(iv) The rates and prices stated in the Bill of Quantities shall, except where otherwise provided in the Contract, cover all the Contractor's obligations under the Contract and all matters and things necessary for the proper execution and completion of the Works.

Except where otherwise specifically described or prescribed in the Contract, Equipment, materials both for temporary and for permanent works, labour (including the supervision thereof) transport to and from the Site and in and around the Works and other things of every kind required for the execution and completion of the Works, shall not be measured and the cost thereof shall be deemed to be included in the rates and prices stated in the Bill of Quantities.

(v) Where the measurement is not by integral sums or items, the total quantity included in the final measurement of each item shall be measured to the nearest tenth of the unit of measurement shown for that item.

(vi) The following abbreviations are used in the Bill of Quantities:

sq	square	km	kilometre
cu	cubic	m	metre
No.	number	kg	kilogramme
hr	hour	tonne	metric ton
prov.provisional		%	per cent

(vii) Where there is an item in the Bill of Quantities having the words "prov sum" entered in the Unit column, the work described shall be performed only on the instructions of the Engineer. Such work shall be evaluated in accordance with Clause 22(3) of the Conditions of Contract and to the extent that the provisional sum is not used the Contract Price shall be reduced accordingly.

(viii) Linear measurement of work along trace lines shall not extend beyond beacons located at the extremities of the trace lines but with the survey area.

(ix) The Contractor shall present to the Engineer all field books, computations and all other evidence required by the Engineer in justification of the Contractor's applications for interim payments.

(x) The Contractor shall include for all his own camp facilities in the appropriate items of Sub-Bills A and B. He shall include for all the camp and transport facilities for the Engineer's topographical survey supervisor and his field assistant in Sub-Bill C.

(xi) The Contractor shall include for all the additional facilities specified in Clauses 35 to 38 inclusive in Sub-Bill D.

Item No.	Description	Unit	Quantity	Rate	Amount
1.	Transport all necessary equipment, materials and labour to site and set up camp				SUN
2.	Maintain and operate camp				SUN
3.	Allow for all drawing office and other costs in completing and delivering maps, plans, lists, abstracts and other records				SUN
Section 2					
4.	Maintain and operate camp				SUN
5.	Allow for all drawing office and other costs in completing and delivering maps, plans, lists, abstracts and other records				SUN
Remainder of the works					
6.	Maintain and operate camp				SUN
7.	Remove all equipment, materials, and labour from site on completion of the work				SUN
8.	Allow for all drawing office and other costs in completing and delivering maps, plans, lists, abstracts and other records				SUN
Fieldwork					
Section 1					
1.	Preliminary survey work, including invar alla work to check existing Trigonometrical Stations and establish control for bascon location, to level to bench-marks and to set the required traverse lines all outside the Survey Area				SUN
Carried forward					

Item No.	Description	Unit	Quantity	Rate	Amount		
					Kenya Shillings		
	<u>SUB-BILL A</u> <u>EAST BANK SURVEY</u>						
	<u>Mobilisation and General</u> <u>(East Bank Location)</u>						
	Section 1						
1.	Transport all necessary equipment, materials and labour to site and set up camp				Sum		
2.	Maintain and operate camp				Sum		
3.	Allow for all drawing office and other costs in completing and delivering maps, plans, lists, abstracts and other records				Sum		
	Section 2						
4.	Maintain and operate camp				Sum		
5.	Allow for all drawing office and other costs in completing and delivering maps, plans, lists, abstracts and other records				Sum		
	Remainder of the Works						
6.	Maintain and operate camp				Sum		
7.	Remove all equipment, materials, and labour from site on completion of the work				Sum		
8.	Allow for all drawing office and other costs in completing and delivering maps, plans, lists, abstracts and other records				Sum		
	<u>Fieldwork</u>						
	Section 1						
9.	Preliminary survey work, including inter alia work to check existing Trigonommetrical Stations and establish control for beacon location, to level to benchmarks and to cut the required trace lines all outside the Survey Area				Sum		
	Carried forward:						

Item No.	Description	Unit	Quantity	Rate	Amount	
					Kenya Shillings	
	Brought forward:					
10.	Cut primary trace lines within initial survey area, including construction of beacons at 4 km intervals, and temporary reference pegs at 500 m intervals	Km	250.0			
	Section 2					
11.	Complete establishment of plan and level control	Sum				
12.	Establish co-ordinate values and levels of beacons at 4 km intervals on primary trace lines	No.	72			
13.	Level along primary trace lines	Km	250.0			
14.	Cut secondary trace lines for semi-detailed survey area including construction of beacons at 2 km intervals and temporary reference pegs	Km	120.0			
15.	Construct semi-detailed beacons 4 km apart on primary trace lines, between initial beacons	No.	60			
16.	Cut tertiary trace lines for semi-detailed survey and construct temporary reference pegs	Km	240.0			
17.	Establish and survey east bank canal base line	Km	70.0			
18.	Establish and level cross sections off canal base line	Km	100.0			
	Remainder of the Works					
19.	Establish co-ordinate values and levels of beacons constructed in section 2 to form 2 km grid	No.	125			
20.	Establish temporary bench marks on tertiary trace lines	No.	90			
21.	Level secondary and tertiary trace lines	Km	360.0			
	Carried forward:					

Item No.	Description	Unit	Quantity	Rate	Amount	
					Kenya Shillings	
	Brought forward:					
22.	Survey sample area with detailed levelling (area 250 m x 250 m, levels on 25 m grid)	No.	16			
	TOTAL					
	Contingencies	prov sum			150 000.	00
	TOTAL OF SUB-BILL A					
	(Carried to Collection)					

Item No.	Description	Unit	Quantity	Rate	Amount Kenya Shillings
	All items in this Bill shall be performed only if ordered by the Engineer.				
	<u>SUB-BILL B.WEST BANK AND RIVER SURVEY</u>				
	<u>Section 1</u>				
1.	Transport all necessary equipment, materials and labour to site and set up temporary camps.	Sum			
2.	Maintain and operate temporary camps	Sum			
3.	Remove all equipment, materials and labour from site on completion of the work	Sum			
4.	Allow for all drawing office and other costs in completing and delivering plans, lists, abstracts and other records	Sum			
5.	Survey Tana River channel cross-section	No.	12		
6.	Survey Tana River floodplain cross-section	Km	25.0		
	Remainder of the Works				
7.	Establish and survey west bank canal base line	Km	6.0		
8.	Establish and level cross-sections off canal base line	Km	10.0		
9.	Mobilise equipment, materials and labour, measure river discharge at cross-sections, and remove on completion	prov sum			150 000.00
	Total				
	Contingencies	prov sum			50 000.00
	Total of Sub-Bill B. (Carried to Collection)				

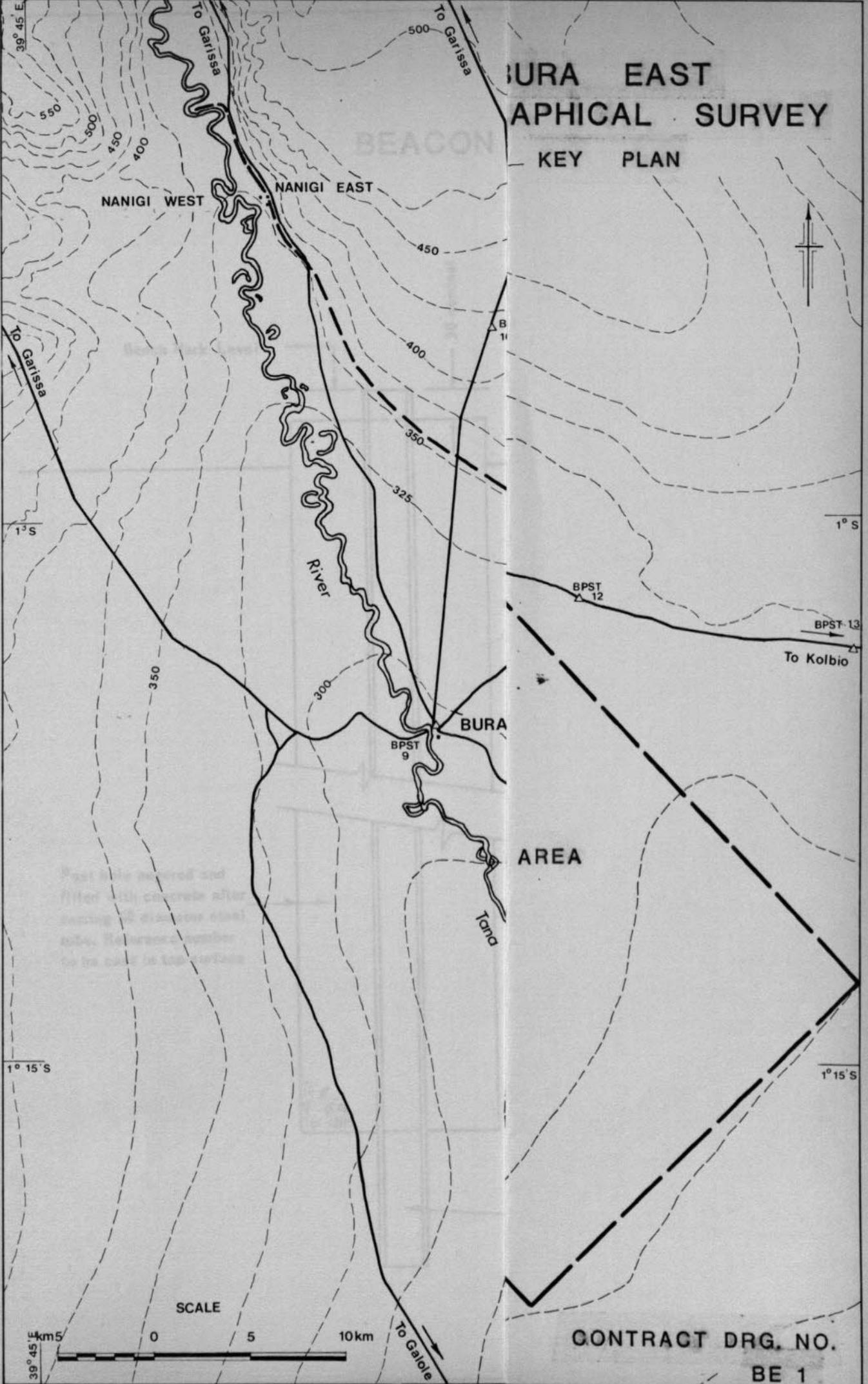
Number	Item Description	Unit	Quantity	Rate	Amount	
					Kenya	Shillings
	All items in this Bill shall be performed only if ordered by the Engineer.					
	<u>SUB-BILL C CAMP AND TRANSPORT FACILITIES FOR ENGINEER'S TOPOGRAPHICAL SURVEY SUPERVISOR AND HIS FIELD ASSISTANT</u>					
1.	Provide new camping equipment and vehicles as specified (Brought forward from Appendix S-2)	Sum				
2.	Transport all necessary equipment, materials and labour to site and set up camp for Engineer's topographical survey supervisor including taking delivery of equipment in Item 1, and providing any additional equipment not included elsewhere	Sum				
3.	Maintain and operate camp complete, including electricity and water supplies and messing	Week	20			
4.	Maintain and operate vehicles for use of Engineer's topographical survey supervisor as specified in Clause 34	Veh- icle Week	40			
5.	Remove all equipment, materials and labour from site on completion of the works	Sum				
	Sub-Total	Prov Sum				
	Contingencies					5000 00
	TOTAL OF SUB-BILL C					
	(Carried to Collection)					

Number	Item Description	Unit	Quantity	Rate	Amount	
					Kenya Shillings	
	All items in this Bill shall be performed only if ordered by the Engineer.					
	<u>SUB-BILL D CAMP FACILITIES FOR GYPSUM SURVEY</u>					
1.	Provide new camping equipment and vehicles as specified (brought forward from Appendix S-3)	Sum				
2.	Maintain and operate additional vehicles as specified in Clause 38 on East Bank	Vehicle Week	30			
3.	E.O. Item 2 above for maintenance and operation of vehicles on West Bank	Vehicle Week	10			
4.	E.O. Item 4 of Sub-Bill C for maintenance and operation of vehicles on West Bank	Vehicle Week	10			
5.	Transport all necessary additional equipment, materials and labour to site and set up and extend camp for Engineer's topographical survey supervisor, including taking delivery of equipment in Item 1, and providing any additional equipment, labour and plant not included elsewhere.	Sum				
6.	Provide, supply and maintain boat for cross river transport including boatmen and other attendance	Sum				
7.	Maintain and operate additional camp facilities complete, including electricity and water supplies and messing	Week	20			
8.	Remove additional camp facilities on completion	Sum				
	Sub-Total					
	Contingencies	Prov Sum				5000 00
	TOTAL OF SUB BILL D					
	(Carried to Collection)					

Item No.	Description	Unit	Quantity	Rate	Amount Kenya Shillings
	<p>BILL OF QUANTITIES <u>COLLECTION</u></p> <p>SUB-BILL A. SUB-BILL B. SUB-BILL C. SUB-BILL D.</p> <p>TOTAL OF TENDER: (Carried to Form of Tender)</p> <p>Signature: Name: Firm: Address:</p> <p>Date:</p>				

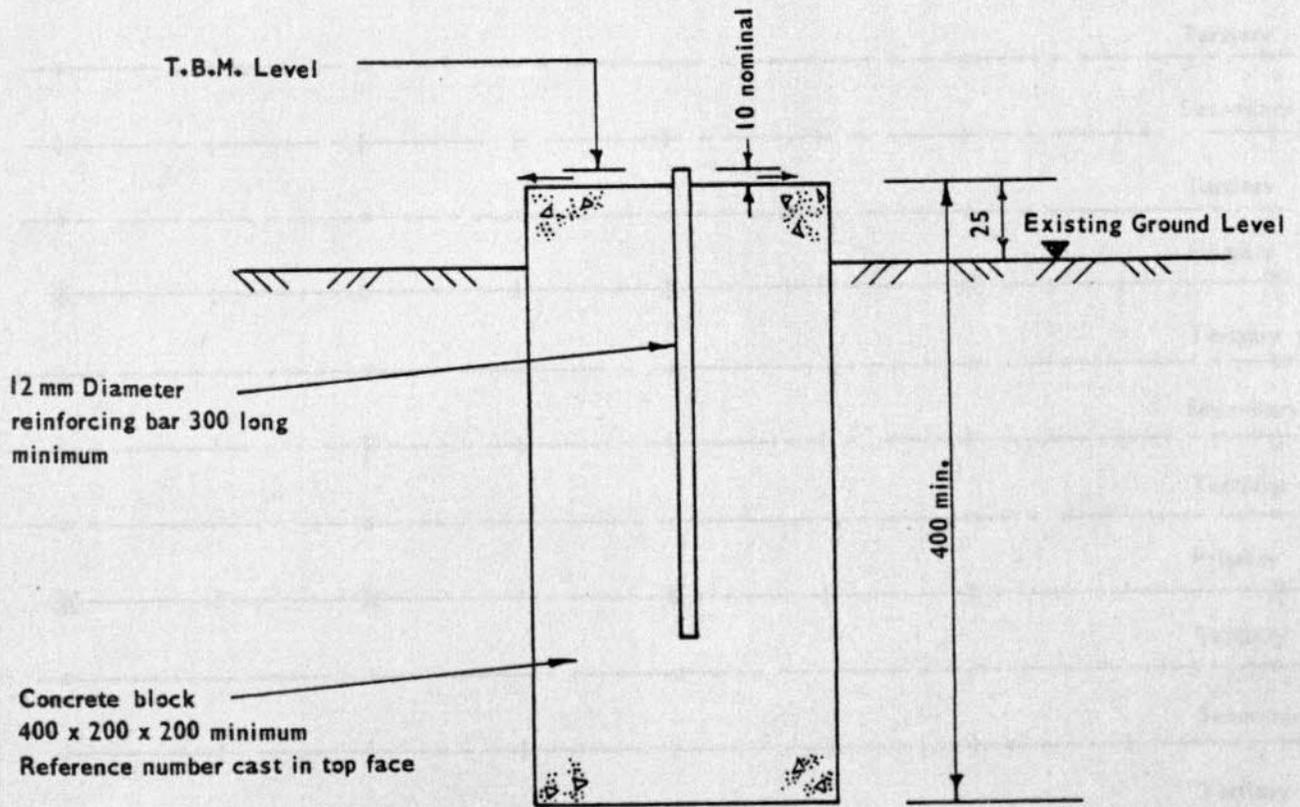
BURA EAST TOPOGRAPHICAL SURVEY

KEY PLAN

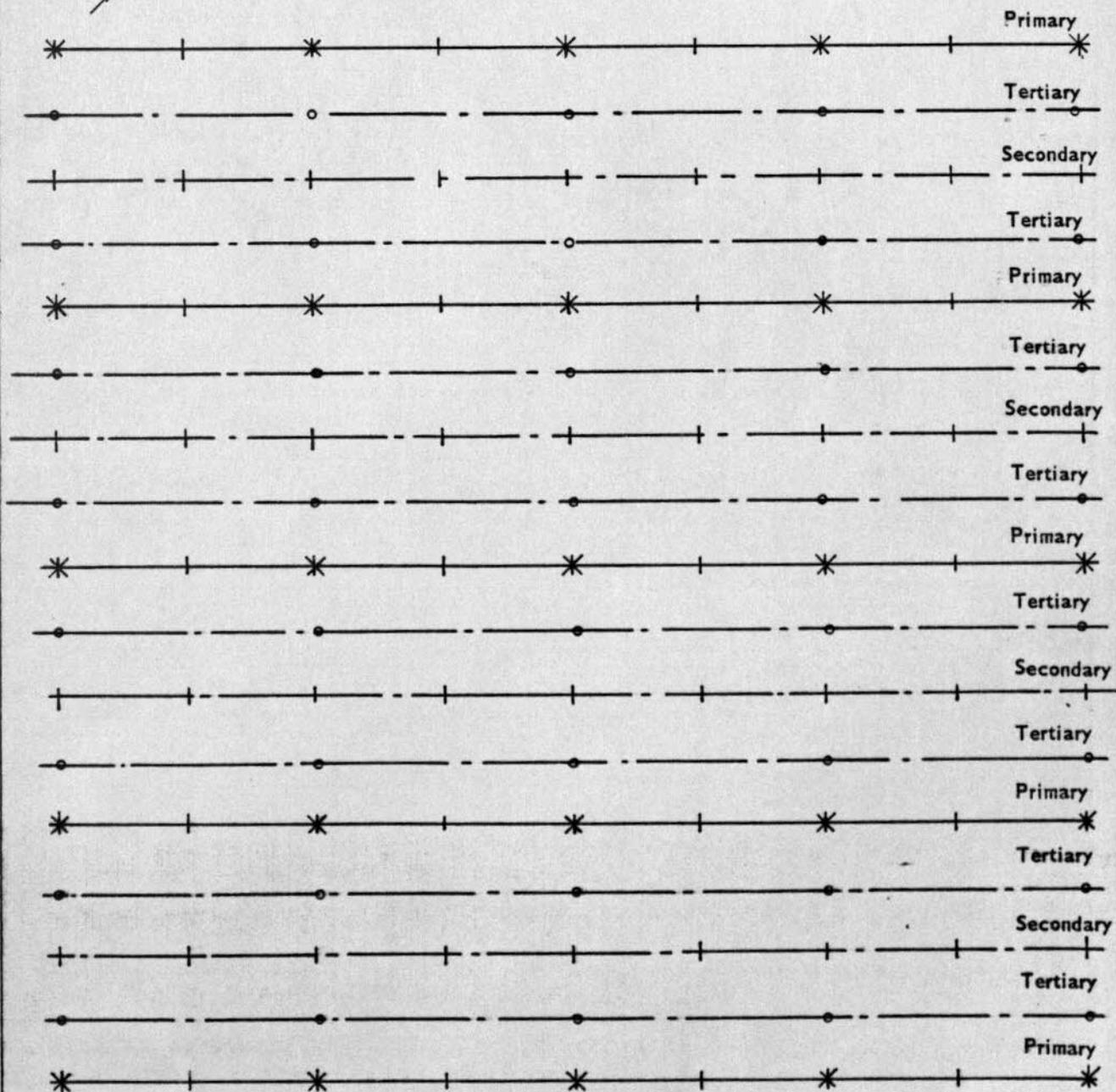


CONTRACT DRG. NO.
BE 1

EXPLANATORY DIAGRAM OF TEMPORARY BENCH MARK



EXPLANATORY DIAGRAM OF TRACES AND GRIDS



————— Initial Survey Trace Lines

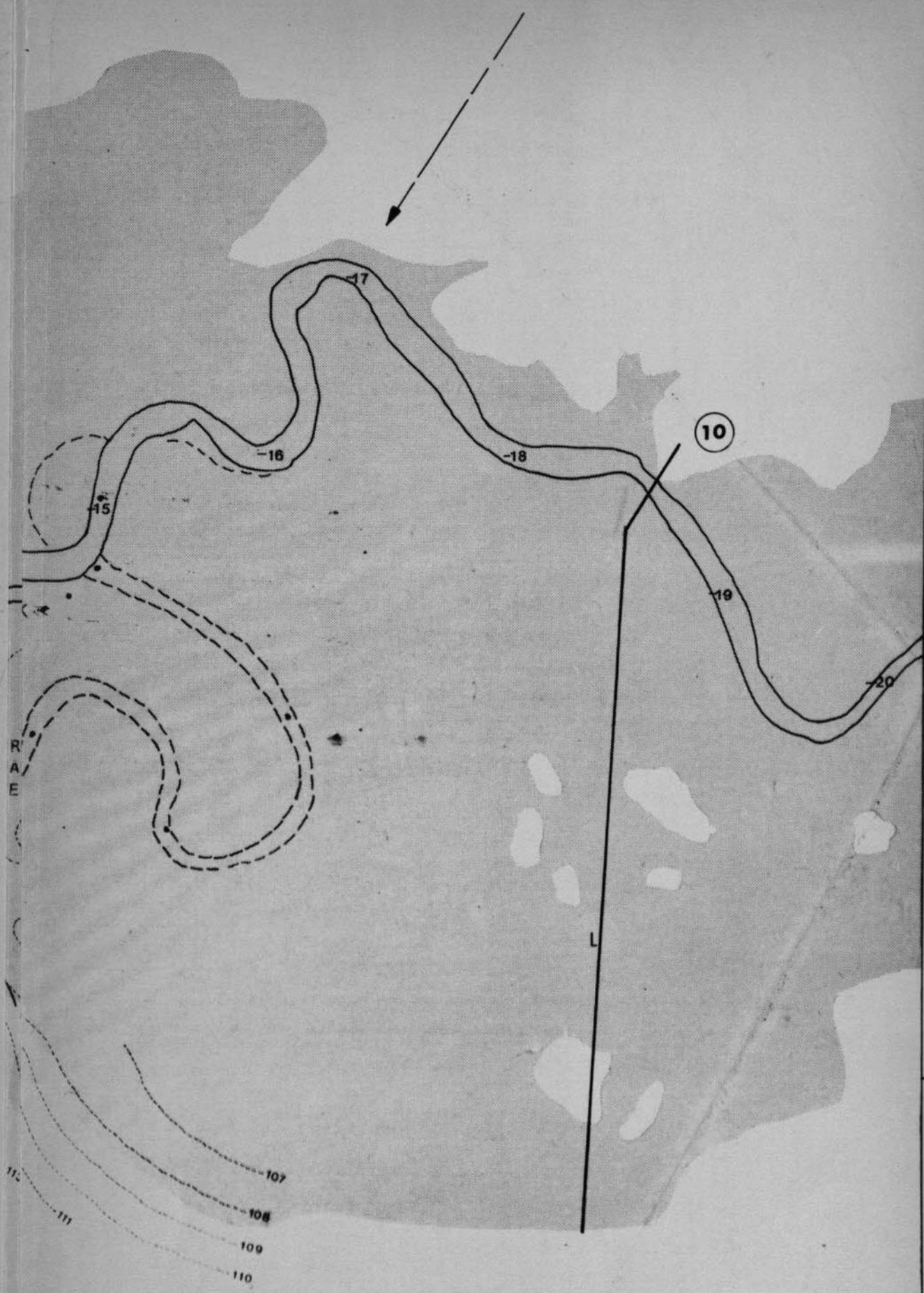
- - - - - Semi - detail Trace Lines

* Initial 4 Km Beacons

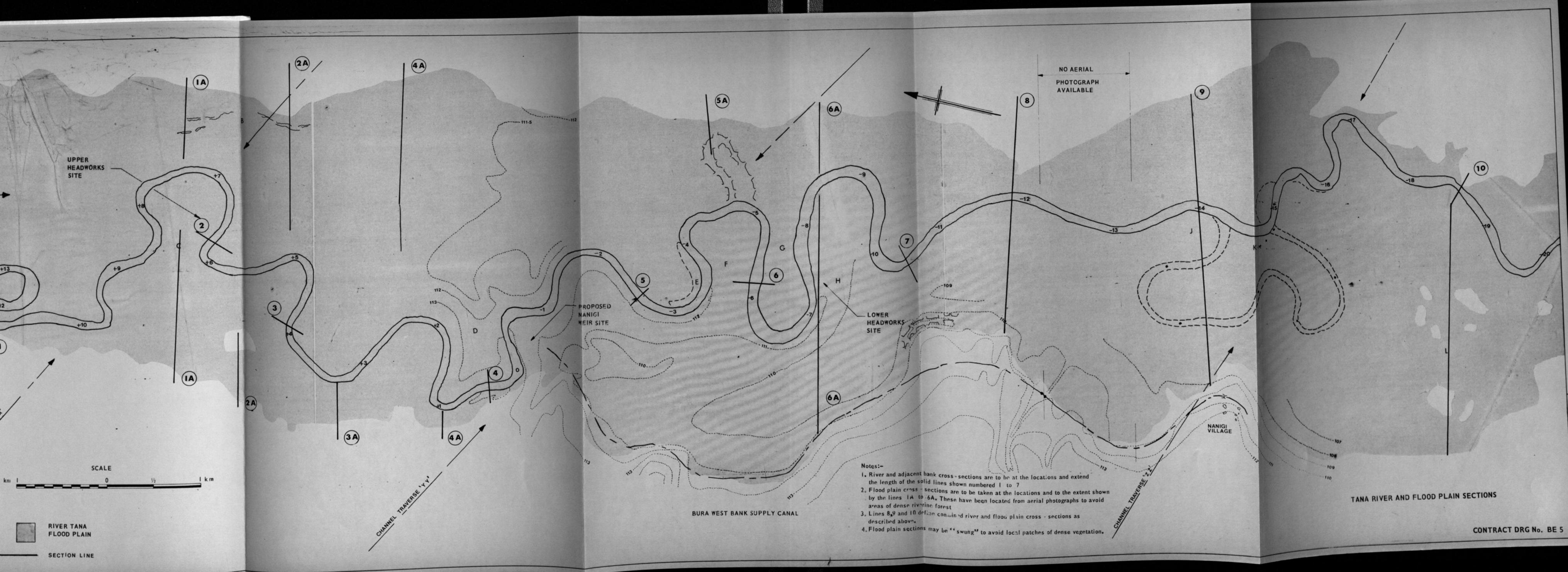
+ Semi - detail 2 km Beacons

o Temporary Bench Marks

CONTRACT DRG No. BE 4



TANA RIVER AND FLOOD PLAIN SECTIONS



UPPER HEADWORKS SITE

PROPOSED NANIGI WEIR SITE

LOWER HEADWORKS SITE

NANIGI VILLAGE

BURA WEST BANK SUPPLY CANAL

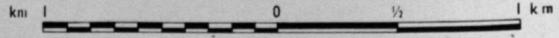
TANA RIVER AND FLOOD PLAIN SECTIONS

Notes:-

1. River and adjacent bank cross-sections are to be at the locations and extend the length of the solid lines shown numbered 1 to 7
2. Flood plain cross-sections are to be taken at the locations and to the extent shown by the lines 1A to 6A. These have been located from aerial photographs to avoid areas of dense riverine forest
3. Lines 8, 9 and 10 define combined river and flood plain cross-sections as described above.
4. Flood plain sections may be "swung" to avoid local patches of dense vegetation.

NO AERIAL PHOTOGRAPH AVAILABLE

SCALE



RIVER TANA FLOOD PLAIN
SECTION LINE

CONTRACT DRG No. BE 5

REPUBLIC OF KENYA
MINISTRY OF AGRICULTURE
NATIONAL IRRIGATION BOARD

33

BURA IRRIGATION SETTLEMENT PROJECT

BURA EAST

Contract No. B E 2

AERIAL PHOTOGRAPHY

MARCH 1978

SIR M. MACDONALD & PARTNERS LTD.
Demeter House
Cambridge CB1 2RS
United Kingdom

REPUBLIC OF KENYA
BURA IRRIGATION SETTLEMENT PROJECT
NATIONAL BURA EAST BOARD
CONTRACT NO. BE2

AERIAL PHOTOGRAPHY

ADDENDUM NO.1

Specification

- Page 23 Clause 15 Delete first line and insert
"All positive prints shall be tonally
balanced for density and shall be
printed on a...."
- Page 24 Clause 19 Insert after "...delivery"
the words "...and acceptance..."

BURA EAST

Contract No. B E 2

AERIAL PHOTOGRAPHY

MARCH 1970

SIR M. MACDONALD & PARTNERS LTD
Banking House,
Cassia Street,
Nairobi

REPUBLIC OF KENYA
 MINISTRY OF AGRICULTURE
 NATIONAL IRRIGATION BOARD

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MARCH 1978

SIR M. MACDONALD & PARTNERS LTD.
 Demeter House
 Cambridge CB1 2RS
 United Kingdom

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11(1)	Third Party Insurance	11
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(2)	Insurance Against Accident, etc., to Workmen	12
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BILL OF QUANTITIES

Preamble

Section 1

Section 2

The Remainder of the Works

DRAWING

INSTRUCTIONS FOR TENDERING

Tender Documents

A. Each Tender shall comprise the following documents:

(i) Documents Issued to the Tenderer for the Purpose of Tendering

One volume containing:

Instructions for Tendering

Form of Tender

Contract Agreement

Conditions of Contract

Specification

Bill of Quantities

Drawing

Such documents shall be treated as confidential and shall remain the property of the Employer.

(ii) Other Documents

The Tenderer's Separate Memorandum in accordance with paragraph G of these Instructions.

Tender Documents to be Completed

B. The Tenderer shall complete the Form of Tender, its Appendix and the Bill of Quantities in ink, with the whole of the information, signatures, dates and prices called for thereon.

No Alterations

C. No alterations shall be made to the tender documents except in compliance with Clause B above or with an instruction from the Engineer. Any corrections or clarifications of entries made by the Tenderer before submission of Tenders shall be in words rather than numerals and shall be signed by the Tenderer.

Delivery of Tender

D. The Tender complete in all respects shall be enclosed in a strong sealed parcel which shall conspicuously bear the words "TENDER FOR BURA EAST AERIAL PHOTOGRAPHY", but which shall bear no mark indicating the Tenderer, and which shall be addressed to:-

The Chairman of the Tender Board,
National Irrigation Board,
Lenana Road,
P.O. Box 30372,
Nairobi, Kenya,

referred to in these Instructions as 'the Employer'.

One facsimile copy of the Tender shall be sent with the Tender clearly marked "Copy".

Tenders shall be delivered free of cost to the Employer at any time up to noon (12.00 local time) three weeks after the issue of the documents.

Obscurities
and Addenda

E. The Engineer may issue to Tenderers Addenda for the purpose of amending or clarifying the documents issued to Tenderers.

Should a Tenderer find discrepancies in, omissions from, or obscurities in the Tender Documents he should notify the Engineer thereof in writing. Any reply by the Engineer will be in the form of an Addendum written to all Tenderers.

Bill of
Quantities

F. The Tenderer shall note that every rate and sum of money entered by him in the Bill of Quantities shall be in Kenyan currency. The Tenderer shall enter a rate or price against each item in the Bill of Quantities. Where the Tenderer wishes to include the cost of one item in that of another he shall write NONE in the rate and amounts columns against the former, indicating in which item or items the cost is included. The Tenderer shall money out each item, cast each page, total the Bill of Quantities and carry the total to the Form of Tender.

Separate
Memorandum

G. The separate memorandum referred to in paragraph (ii) Clause A of these Instructions shall include:

- (i) a statement of unresolved doubts of the Tenderer as to the meaning of anything in the tender documents and of the interpretation relied upon by the Tenderer,
- (ii) details of any alternatives offered by the Tenderer,
- (iii) details of the Tenderer's proposed programme from the date of receipt of the Engineer's order to commence the Works and
- (iv) a brief description of the proposed method of working covering, inter alia:
type of aircraft and camera to be used
number of survey parties in the field
proposed location of base camp.

Opening of
Tenders

H. Tenders will be opened publicly at 12.00 noon on the latest day fixed for delivery of Tenders at the offices in Nairobi of the National Irrigation Board.

The representatives of the Tenderers may attend.

At the opening, the names of the Tenderers will be announced together with the Tender Sums but no further details will be made public.

Adjudication
of Tenders

J. After the Tenders have been opened, the Employer, assisted by the Engineer, will ascertain whether there are any errors of computation, whether the Tenders are fully responsive to the requirements of the Tender documents, whether the required guarantees and sureties

have been provided, whether the documents have been properly signed, and whether the Tenders are otherwise generally in order.

The Engineer may ask each Tenderer for clarification of his Tender and provided that such clarifications and corrections of computations do not change the substance of the Tender or materially affect the order of value of the Tenders then the Tender as adjusted to incorporate these clarifications and corrections may still be considered for acceptance.

FORM OF TENDER

BURA EAST AERIAL PHOTOGRAPHY

(Notes: The Appendix forms part of the Tender. Tenderers are required to fill up all the blank spaces in this Tender Form and Appendix.)

To: The General Manager,
National Irrigation Board,
Nairobi,
Kenya.

GENTLEMEN,

Having examined the Drawings, Conditions of Contract, Specification, Bill of Quantities, and Addenda No. to , for the above-named Works, we, the undersigned, offer to execute and complete the whole of the said Works all in conformity with the said Drawing, Conditions of Contract, Specification, Bill of Quantities, and Addenda No. to for such sum as may be ascertained in accordance with the said Conditions of Contract.

2. We undertake if our Tender is accepted to commence the Works within * days of receipt of the Engineer's order to commence and to complete and deliver the whole of the Works comprised in the Contract within * days calculated from the day of receipt of the aforesaid order to commence.

3. We agree to abide by this Tender for the period of 60 days from the last date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period or after the expiration of the period until withdrawn by us.

4. Unless and until a formal Agreement is prepared and executed this Tender, together with your written acceptance thereof, shall constitute a binding Contract between us.

5. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this.....day of.....19.....

Signature.....
in the capacity of.....
duly authorised to sign tenders on behalf of

.....
.....
Witness.....
Occupation of Witness.....
Address of Witness.....
.....

* These periods shall be completed by the Tenderer.

APPENDIX TO FORM OF TENDER

CONDITIONS OF CONTRACT

CLAUSE NO.

1. Tender Total 1 *
2. Minimum Amount of Third Party Insurance 11 KSh 4,000,000.00 or equivalent convertible foreign currency any one claim, number of claims unlimited
3. Period for commencement from Engineer's order to commence 15 14 days
4. Time for Completion and Liquidated Damages 16 18

	Time for Completion days	Damages for Delay KSh/day
Section 1	50	3300
Section 2	100	5000
The whole of the Works	135	8300
5. Foreign currency 21(4)
 - i) Proportion of Contract Price required to be paid in foreign currency :- percent
 - ii) Foreign currency in which such payments required :- name
 - iii) Rate of exchange (official selling rate of Central Bank of Kenya prevailing 10 days before latest date for receipt of tenders) :- rate
 - iv) Maximum amount of foreign currency

.....equivalent Kenya Shillings

Signature of Tenderer:

Date:

* to be completed by Tenderer

CONTRACT AGREEMENT

THIS AGREEMENT made the.....day of
.....19.....BETWEEN the National Irrigation
Board of the Republic of Kenya (hereinafter called 'the Employer')
of the one part and.....of.....
.....(hereinafter called 'the Contractor')
of the other part WHEREAS the Employer is desirous that certain
Works should be executed and completed, viz: BURA EAST AERIAL
PHOTOGRAPHY and has accepted a Tender by the Contractor for the
execution and completion of such Works NOW THIS AGREEMENT
WITNESSETH as follows:-

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz:-

- (a) The said Tender (inclusive of memoranda accompanying the Tender and subsequent papers as listed in the Appendix hereto).
- (b) The Drawings
- (c) The Conditions of Contract
- (d) The Specification
- (e) The Bill of Quantities
- (f) The Addenda No....to.....
- (g) The Letter of Acceptance.

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned the Contractor hereby covenants with the Employer to execute and complete the said Works in conformity in all respects with the provisions of the Contract.

4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the said Works the Contract Price at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties (or representatives of the parties) hereto have hereunto set their respective hands the day and year first above written.

For the Employer

In the capacity of

Witness

For the Contractor

In the capacity of

Witness

APPENDIX TO CONTRACT AGREEMENT

With reference to paragraph 2 (a) of the Contract Agreement, the papers listed below shall be deemed to form part of the Tender:-

Signed: for the Employer

Date

for the Contractor

Date

DEFINITIONS OF CONTRACT

Definitions

1. In the Contract all capitalized words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires:-

... "Employer" means the Government of Mysore acting through the General Manager of the National Irrigation Board or other duly authorized representative.

... "Contractor" means the person or persons, firm or company whose tender has been accepted by the Employer and includes the Contractor's personal representatives, successors and permitted assigns.

... "Contract" means the Contract Agreement and the Contract Conditions.

... "Contractor's Representative" means any individual appointed from time to time by the Contractor to perform the duties set forth in Clause 1 hereof whose authority shall be notified in writing to the Employer by the Contractor.

... "Works" means the works to be executed in accordance with the Contract.

... "Contract Conditions" means the conditions of Contract specified in the priced Bill of Materials and the Tender and the Contract Agreement.

CONDITIONS

OF

CONTRACT

... "Contract Price" means the total of the priced Bill of Materials as set forth in the Bill of Materials and the Contract Agreement.

... "Contract Price" means the Tender Total specified for each item thereof as set forth in the Bill of Materials and the Contract Agreement.

... "Equipment" means all machinery, vehicles, appliances or things of whatsoever nature required in or about the execution and completion of the Works and includes all things included in the Bill of Materials and the Contract Agreement.

... "Drawings" means the drawings and specifications and any modifications or amendments thereto as shown in the Bill of Materials and the Contract Agreement and any drawings or specifications which may be required or approved or amended by the Employer.

... "Materials" means the materials, labor, and services of whatsoever kind required in or about the execution of the Works.

CONDITIONS OF CONTRACT

Definition

1. In the Contract (as hereinafter defined) the following words and expressions shall have the meanings hereby assigned to them except where the context otherwise requires:-

..."Employer" means the Government of Kenya acting through the General Manager of the National Irrigation Board or other duly authorised representative.

..."Contractor" means the person or persons firm or company whose tender has been accepted by the Employer and includes the Contractor's personal representatives, successors and permitted assigns.

..."Engineer" means Sir M. MacDonald & Partners Ltd.

..."Engineer's Representative" means any assistant of the Engineer appointed from time to time by the Engineer to perform the duties set forth in Clause 2 hereof whose authority shall be notified in writing to the Contractor by the Engineer.

..."Works" means the works to be executed in accordance with the Contract.

..."Contract" means Conditions of Contract Specification Drawings priced Bill of Quantities Tender Letter of Acceptance and the Contract Agreement.

..."Tender Total" means the total of the priced Bill of Quantities at the date of acceptance of the Contractor's Tender for the Works.

..."Contract Price" means the Tender Total corrected for such additions thereto or deductions therefrom as may be made under the provisions of the Contract.

..."Equipment" means all aircraft, vehicles, appliances or things of whatsoever nature required in or about the execution and completion but does not include materials or other things intended to form or forming part of the permanent work.

..."Drawings" means the drawings referred to in the Specification and any modification of such drawings approved in writing by the Engineer and such other drawings as from time to time be furnished or approved in writing by the Engineer.

..."Materials" means and includes all films, chemicals, fuel, petrol, oil and stores of whatever kind required in or about the execution or completion of the Works.

..."Site" means the lands and other places on over or through which the Works are to be executed or carried out and any other lands or places provided by the Employer for the purposes of the Contract.

..."Approved", or "approval", means approved by, or approval of, the Engineer in writing.

Engineer's Representative

2. The duties of the Engineer's Representative are to watch and supervise the Works and to check and examine any materials to be used or workmanship employed in connection with the Works. He shall have no authority to relieve the Contractor of any of his duties or obligations under the Contract.

Sub-Letting

3. The Contractor shall not sub-let the Works or any part of the Works without the written consent of the Employer.

Extent of Contract

4. The Contract comprises the execution and completion of the Works and the provision of all Equipment materials for the Works labour (including the supervision thereof) transport to and from the Site and in and about the Site and other things of every kind whether of a temporary or permanent nature required in and for such execution and completion so far as the necessity for providing the same is specified in or reasonably to be inferred from the Contract.

Sufficiency of Tender

5. The Contractor shall be deemed to have visited the Site and to have satisfied himself before tendering as to the correctness and sufficiency of his Tender for the Works and of the rates and prices stated in the priced Bill of Quantities which rates and prices shall (except in so far as it is hereinafter otherwise provided) cover all his obligations under the Contract and all matters and things necessary for the proper execution and completion of the Works.

Work to Satisfaction of Engineer

6. Save in so far as it is legally or physically impossible the Contractor shall execute and complete the Works in strict accordance with the Contract to the satisfaction of the Engineer and shall comply with and adhere strictly to the Engineer's instructions and directions on any matter (whether mentioned in the Contract or not). For the purposes of the Contract, the Contractor shall take instructions and directions only from the Engineer or (subject to the limitations referred to in Clause 2 hereof) from the Engineer's Representative.

Contractor's
Superintendence
and Workmen

7. The Contractor shall give or provide all necessary superintendence during the execution and completion of the Works. The Contractor or a competent and authorised agent or representative approved of in writing by the Engineer (which approval may at any time be withdrawn) is to be constantly on the Works and shall give his whole time to the superintendence of the same. Such authorised agent or representative shall receive on behalf of the Contractor directions and instructions from the Engineer or (subject to the limitations of Clause 2 hereof) the Engineer's Representative and shall have a sufficiently competent knowledge of the English language.

The Contractor shall employ in and about the execution of the Works only such persons as are careful skilled and experienced in their several trades and callings.

Care of the
Works

8. (1) From the commencement to the completion of the Works the Contractor shall take full responsibility for the care thereof and in case any damage loss or injury shall happen to the Works or to any part thereof or to any Equipment and materials from any cause whatsoever (save and except the excepted risks as defined in sub-clause (2) of this Clause) shall at his own cost repair and make good the same. In the event of any such damage loss or injury happening from any of the excepted risks the Contractor shall if and to the extent required by the Employer repair and make good the same as aforesaid at the cost of the Employer.

Excepted
Risks

(2) The "excepted risks" are riot (in so far as it is uninsurable) war invasion act of foreign enemies hostilities (whether war be declared or not) civil war rebellion revolution insurrection or military or usurped power (all of which are herein collectively referred to as "the excepted risks").

Insurance of
Works, etc.

9. The Contractor shall insure in the joint names of the Employer and the Contractor against all loss or damage from whatever cause arising (other than the excepted risks) for which he is responsible under the terms of the Contract and in such manner that the Employer and Contractor are covered during the execution of the Works:-

- (a) the Works to the full value of such works executed from time to time,
- (b) the materials Equipment and other things brought on to the Site by the Contractor to the full value thereof.

Such insurances shall be effected with an insurer and in terms approved by the Employer.

Damage to
Persons and
Property

10. (1) The Contractor shall indemnify and keep indemnified the Employer against all losses and claims for injuries or damage to any person or property whatsoever (including surface or other damage to land being suffered by tenants or occupiers) which may arise out of or in consequence of the execution of the Works, and against all claims demands proceedings damages costs charges and expenses whatsoever in respect thereof or in relation thereto. Provided always that nothing herein contained shall be deemed to render the Contractor liable for or in respect of or to indemnify the Employer against any compensation or damages for or with respect to:-

- (a) the permanent use or occupation of land by the Works or any part therefore,
- (b) the right of the Employer to execute the Works or any part thereof on over under in or through any land,
- (c) interference whether temporary or permanent with any right of light air way or water or other easement or quasi-easement which is the unavoidable result of the execution of the Works in accordance with the Contract,
- (d) injuries or damage to persons or property resulting from any act or neglect done or committed during the currency of the Contract by the Employer his agents servants or other contractors (not being employed by the Contractor) or for or in respect of any claims demands proceedings damages costs charges and expenses in respect thereof in relation thereto.

Indemnity
by Employer

(2) The Employer will save harmless and indemnify the Contractor from and against all claims demands and proceedings damages costs charges and expenses in respect of the matters referred to in the proviso to sub-clause (1) of this Clause.

Third Party
Insurance

11. (1) Upon the execution of the Contract the Contractor shall insure in the joint names of the Contractor and Employer against any damage loss or injury which may occur to any property or to any person by or arising out of the execution of the Works or in the carrying out of the Contract otherwise than due to the matters referred to in the proviso to Clause 10.(1) hereof.

Minimum
Amount of
Third Party
Insurance

(2) Such insurance shall be effected with an insurer and in terms approved by the Employer and for at least the amount stated in the Tender.

Accident or
Injury to
Workmen

12. (1) The Employer shall not be liable for or in respect of any damages or compensation payable at Law in respect or in consequence of any accident or injury to any workman or other person in the employment of the Contractor or any sub-contractor save and except an accident or injury resulting from any act or default of the Employer his agents or servants and the Contractor shall indemnify and keep indemnified the Employer against all such damages and compensation (save and except as aforesaid) and against all claims demands proceedings costs charges and expenses whatsoever in respect thereof or in relation thereto.

Insurance
Against
Accident,
etc., to
Workmen

(2) The Contractor shall insure against such liability with an insurer approved by the Employer (which approval shall not be unreasonably withheld) and shall continue such insurance during the whole of the time that any persons are employed by him on the Works.

Government
Laws

13. The Contractor shall conform with the provisions of and give all notices and pay all fees required to be given or paid by any Law Regulation or Bye Law of the Government or of any local or other statutory authority which may be applicable to the Works or to any Temporary Works. The Employer shall repay or allow to the Contractor all such sums as shall have been properly payable and paid by the Contractor in respect of such fees.

Possession of
Site

14. (1) The Employer will give to the Contractor from time to time possession of so much of the Site as may be required for the execution of the Works in accordance with such reasonable programme as shall have been agreed between the Engineer and the Contractor.

Wayleaves, etc.

(2) The Contractor shall bear all expenses and charges for special or temporary wayleaves required by him in connection with access to the Site. The Contractor shall also provide as his own cost any accommodation required by him for the purpose of the Works.

Commencement

15. The Contractor shall commence the Works within the period for commencement stated in the Appendix to the Form of Tender after the day of receipt by the Contractor of the Engineer's order to commence the Works

The Works shall be deemed to have been commenced when

(i) the Contractor's Agent pursuant to Clause 7 hereof shall have been appointed to the approval of the Engineer and shall be available for full time attendance in Kenya

(ii) the aircraft to be used in the Works shall have been equipped with cameras and other necessary equipment and shall have been delivered to the airstrip adjacent to the Site from which the sorties for the works will be flown.

Time for
Completion

16. The whole of the Works and any Section required to be completed within a particular time as stated in the Appendix to the Form of Tender shall be completed within the time so stated (or such extended time as may be determined under Clause 17 hereof) calculated from the date of receipt by the Contractor of the Engineer's order to commence the Works.

Extension
of Time

17. Should any variation made pursuant to Clause 22 hereof or other special circumstance fairly entitle the Contractor to an extension of time for completion of the work, the Engineer shall determine the amount of the extension provided that the Contractor shall have provided as soon as practicable detailed particulars of all relevant circumstances.

Liquidated
Damages
for Delay

18. In the Appendix to the Form of Tender under the heading "Time for Completion and Liquidated Damages" there are stated sums which represent the Employer's genuine pre-estimate (expressed as a rate per day) of the damages likely to be suffered by him in the event that a Section or the whole of the Works, as the case may be shall not be completed within the time prescribed by Clause 16.

Such sums payable by the Contractor to the Employer pursuant to this Clause shall be paid as liquidated damages for delay and not as a penalty.

If the Contractor should fail to complete the whole of the Works within the prescribed time or any extension thereof granted under Clause 17 the Contractor shall pay to the Employer for such default the sum stated in the Appendix to the Form of Tender for the whole of the Works for each day which shall elapse between the date on which the prescribed time or extension thereof expired and the date of completion of the whole of the Works. Provided that if any part of the Works not being a Section or part of a Section shall be certified as complete pursuant to Clause 20 before completion of the whole of the Works the sum so stated shall be reduced by the proportion which the value of the part completed bears to the value of the whole of the Works. Provided that if any Section shall be certified as complete pursuant to Clause 20 before completion of the whole of the Works the sum so stated shall be reduced by the sum stated in the Appendix to the Form of Tender for such Section.

If the Contractor should fail to complete any Section within the relevant time for completion or any extension thereof granted under Clause 17 the Contractor shall pay to the Employer for such default the sum stated in the Appendix to the Form of Tender for such Section for each day which shall elapse between the date on which the relevant time or any extension thereof expired and the date of completion of the relevant Section or the date on which the time for completion of the whole of the Works or any extension thereof expired, whichever shall be the earlier.

- Clearance of Site on Completion 19. On the completion of the Works the Contractor shall clear away and remove from the Site all Equipment surplus material rubbish and Temporary Works of every kind and leave the whole of the Site and Works clean and in a workmanlike and safe condition.
- Certificate of Completion 20 (1) As soon as in the opinion of the Engineer the whole of the Works shall have been completed or a Section in respect of which a separate time for completion is stated in the Appendix to the Form of Tender shall have been substantially completed and in the case of a Section shall have received an undertaking in writing from the Contractor to complete any outstanding work before completion of the whole of the Works, the Engineer shall issue a Certificate of Completion to the Contractor in respect of the Works or Section as the case may be.
- (2) Upon the written application of the Contractor a Certificate of Completion shall be issued by the Engineer in respect of a part of a Section before completion of the whole of the Section which has been both completed to the satisfaction of the Engineer and put to the use for which it was intended.
- Measurement and Valuation 21. (1) The Contract Price shall be ascertained by measuring the completed Works in accordance with the provisions of the Preamble to the Bill of Quantities and by applying to such measurements the appropriate rates and prices stated in the Bill of Quantities subject to such additions and deductions as are provided for in the Contract.
- Interim Payment (2) An interim payment shall be paid to the Contractor within 45 days of receipt by the Employer of an application by the Contractor certified by the Engineer for such payment provided that:
- (i) such applications are made not more frequently than once per month and are fully detailed
- (ii) the amount of such payment shall be the sum of
- (a) 90% of the measured value of the work done up to the date of the application
- (b) 5% of the measured value of any Section or part thereof for which a Certificate of Completion has been issued, less any previous payments
- (iii) such payments shall not be deemed to constitute approval of any matter or to be an admission of the due performance of any part of the Contract.
- Balance of the Contract Price (3) The balance of the Contract Price shall be paid to the Contractor by the Employer within 45 days after receipt by him of an application by the Contractor certified by the Engineer following the completion of the whole of the Works as certified in accordance with Clause 20 hereof.

Payments in
Foreign
Currency

(4) A foreign Contractor for the purposes of this sub-clause shall be defined as one which according to the laws of the Republic of Kenya and the Regulations of the Central Bank of Kenya is permitted to receive and hold currency other than Kenya currency.

If the Contractor is a foreign Contractor the amounts certified by the Engineer to be paid to the Contractor shall be paid partly in Kenyan Shillings and partly in foreign currencies in accordance with the following conditions:-

- (a) That at the time of submission of his application in accordance with Clause 21(2) hereof the Contractor shall have applied to receive part of the amount in foreign currency with a statement of the amounts in each foreign currency together with a statement of the country of origin of the goods or services, as the case may be, relating to each such amount.
- (b) That payment in foreign currency will be in the proportions and at the rates of exchange entered by the Contractor in the Appendix to the Form of Tender and on which the rates in the Bill of Quantities have been based, provided that in the valuation of variations such proportions may be varied as may be agreed or determined by the Engineer.
- (c) That the total amount in foreign currency shall not exceed the amount stated in the Appendix to the Form of Tender as the maximum amount of foreign currency required provided that in the valuation of variations, provisional sum items and P.C. items the maximum may be increased as agreed or determined by the Engineer.
- (d) That any costs incurred by the Employer in making arrangement for payments in foreign currencies at the exchange rates listed by the Contractor in the Appendix to the Form of Tender will be borne by the Employer.
- (e) The foreign currencies named in the Tender shall be those of a country being a member of the International Bank for Reconstruction and Development or Switzerland and in the case of a foreign Contractor shall be that of the country in which his chief place of business lies, or in which substantial expenditures are made.
- (f) The Contractor shall make expenditure for the purposes of the Contract only for goods produced in or for services procured from countries which are members of the International Bank for Reconstruction and Development or Switzerland or shall, in his applications for a certificate referred to in sub-paragraph (a) above, separately identify expenditures not so made.

Variations

22. (1) The Engineer shall make any variation of the form quality or quantity of the Works or any part thereof that may in his opinion be necessary and for that purpose or if for any other reason it shall in his opinion be desirable shall have power to order the Contractor to do and the Contractor shall do any of the following:-

- (a) increase or decrease the quantity of any work included in the Contract
- (b) omit any such work
- (c) change the character or quality or kind of any such work
- (d) execute additional work of any kind necessary for the completion of the Works

and no such variation shall in any way vitiate or invalidate the Contract but the value (if any) of all such variations shall be taken into account in ascertaining the amount of the Contract Price.

Variation Orders

(2) No such variation shall be made by the Contractor without an order in writing of the Engineer. Provided that no order in writing shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an order given under this Clause but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

Valuation of Variations

(3) Any extra or additional work done or work omitted by order of the Engineer shall be valued at the rates set out in the Contract. If the Contract shall not contain any rates applicable to the extra or additional work then reasonable prices shall be agreed or failing agreement shall be fixed by the Engineer.

Ruling Language

23. The ruling language shall be English.

Taxes

24. Without prejudice to the provision of Clause 21 (4)(d) hereof, the Contractor shall pay and shall be liable for all taxes duties charges levies and the like which may be payable in respect of profits or income of himself or his employees or in respect of materials (whether for incorporation in the Works or for temporary works) or Equipment. The Contractor shall not be entitled to any separate payment from the Employer in respect of such taxes, etc., as aforesaid the costs of which shall be deemed to be included in the rates and prices stated in the Bill of Quantities.

Determination
of Contract
by Employer

25. If the Contractor shall suspend the Works or in the opinion of the Engineer shall neglect or fail to proceed with due diligence in the performance of his part of the Contract, or if he shall become bankrupt or go into liquidation, the Engineer shall give notice in writing to the Contractor specifying the default and if the Contractor shall fail or neglect, 7 days after such notice has been given to proceed with the Works as therein directed, the Employer may take possession of the uncompleted parts of the Works and of all Equipment and Materials intended to be used for the Works which shall thereupon become the property of the Employer. If the Employer shall exercise the above power, he may contract with any other person to complete the Works and deny the Contractor his agents and servants access to the Works or Site.

Upon completion of the Works, the Engineer shall certify the amount of the expense properly incurred consequent on and incidental to the default of the Contractor as aforesaid, and in completing the Works by other persons, should the amount so certified be less than the amount which would have been due to the Contractor upon the completion of the Works by him the difference shall be paid to the Contractor, should the amount of the former exceed the latter, the difference shall be paid by the Contractor.

The Contractor shall not be entitled to any further payment or compensation for the use of the Equipment and materials for the completion of the work under the provision herein before contained other than such payments as are included in the Contract Price. After the Works shall have been completed by persons other than the Contractor under the provisions herein before contained, the Engineer shall give notice to the Contractor of such completion and may require him from time to time, before or after such completion to remove from the Site his Equipment and all such materials as aforesaid as may not have been used or required in the completion of Works. If such Equipment and materials are not removed within such reasonable time as shall have been specified by the Engineer in the notice given to the Contractor, all such Equipment and materials shall remain the absolute property of the Employer and may then be disposed of in whatever manner as may be deemed expedient.

Frustration

26. In the event of the Contract being frustrated whether by war or by any other supervening event which may occur independently of the will of the parties then the Contractor shall be entitled to and shall be paid by the Employer a fair and reasonable proportion of the Contract Price for the work already done and commitments entered into by him, and for this purpose any monies previously paid by the Employer shall be retained by the Contractor as against the sum due to him under this Clause and any balance shall be repaid to the Employer.

- Currency of Contract 27. The currency of the Contract shall be the currency of Kenya.
- Law of Contract 28. The Contract shall be and be deemed to be a Kenyan Contract and shall be governed and construed according to the laws for the time being in force in Kenya.
- Notices 29. (1) Any notice to be given to the Contractor under the terms of the Contract shall be served by sending the same by post to or by leaving the same at the Contractor's principle place of business or (if any) at his registered office.
- (2) Any notice to be given to the Employer under the terms of the Contract shall be served by sending the same by post to or by leaving the same at the Employer's last known address or (if any) at his registered office.
- Disputes 30. If any dispute or difference of any kind shall arise between the Employer and the Contractor in connection with or arising out of the Contract or the execution and completion of the Works it shall be referred to an arbitrator to be agreed upon between the parties or failing such agreement within one month to be nominated by the Chairman for the time being of the Institution of Engineers of Kenya and any such reference shall be deemed to be a submission to arbitration within the meaning of the Arbitration Act or any statutory re-enactment or amendment thereof for the time being in force.
- The venue of any such arbitrations shall be Kenya.
- Copyright 31. The copyright of all materials produced under the terms of the contract shall rest solely in the Employer and no use shall be made of them other than as provided under the Contract except with the permission given in writing by the Employer.

SPECIFICATION

SPECIFICATION

Purpose of
the Works

1. Aerial photography is required for soil survey work and as a basis for outline design of the irrigation and drainage system for the Bura East Project, and the associated supply canal and headworks.

Brief
Description
of the
Works

2. The Works include:-

(i) The establishment of ground control markers based on a 4 km grid of beacons on parallel trace lines. The beacons and trace lines will be established by others, and the Contractor will be responsible only for marking the beacons for aerial photography purposes.

(ii) Aerial photography at 1:10,000 scale of about 80,000 hectares of possible irrigable land, and about 25,000 hectares of possible canal alignment (about 50 km long).

(iii) Delivery to the Employer of three sets of contact prints and three copies of index plots of aerial photography at 1:10,000 scale.

(iv) Preparation and delivery to the Employer of two sets of controlled photomosaics at 1:10,000 scale of about 40,000 hectares of the above 80,000 hectares of possible irrigable land, and about 25,000 hectares of possible canal alignment.

(v) The Contractor may be required to prepare and deliver two sets of controlled photomosaics of the balance of 40,000 hectares of the 80,000 hectares of possible irrigable land.

Works
to be in
Sections

3. The Works shall be divided into Sections for which separate times for completion are prescribed under the Contract, and stated in the Appendix to the Form of Tender.

(i) Section 1 comprises:

- (a) the establishment of ground control markers based on a 4 km grid of beacons established by others;
- (b) aerial photography as described in Clause 2 (ii);
- (c) delivery to the Employer of three sets of contact prints of the completed aerial photography at 1:10,000 scale for about 105,000 hectares.

(ii) Section 2 comprises:

- (a) the preparation and delivery to the Employer of two sets of controlled photo-mosaics at 1:10,000 scale, using control beacons constructed, levelled and co-ordinated by others.

These photo-mosaics to cover 40,000 hectares of the 80,000 hectares of possible irrigable land, referred to as the "survey area" below, and the 25,000 hectares of possible canal alignment referred to as "canal survey area".

- (iii) The remainder of the Works comprises:
- (a) the delivery to the Employer of all films, negatives, schedules of control levels and co-ordinates, and all other materials and originals specified under the Contract;
 - (b) if ordered by the Engineer, the preparation and delivery to the Employer of two sets of controlled photo-mosaics at 1:10,000 scale of the remaining parts of the 80,000 hectares of possible irrigable land not included in 3(ii)(a) above.

Location
of the
Works

4. The location of the Works is shown on Drawing No. BE6. The Works are situated about 100 km south east of Garissa in Garissa District of North Eastern Province.

Method
of
Working

5. Personnel and Equipment used in the execution of the Works shall be subject to the approval of the Engineer.

The Engineer may at any time withdraw his approval and the Contractor shall immediately provide other personnel and equipment, and if such change in the opinion of the Engineer is required to achieve satisfactory progress or workmanship, the Contractor shall have no claim against the Employer for costs incurred by him in changing his personnel, or in the provision and use of other Equipment.

The Contractor shall make available to the Engineer on demand all field books and computations for checking.

Programme
of
Works

6. The Contractor shall within 14 days of the acceptance of his Tender furnish the Engineer with a programme of works and which shall show the estimated date of commencement and completion of each portion of the Works.

Co-ordination
of Work

7. The aerial photography is to be co-ordinated with concurrent soil and topographical surveys under the direction of the Engineer.

The aerial photography ground control party will be responsible for setting out their markers, but details of all beacons, reference points and temporary marks resulting from the topographical survey will be made available to the Contractor by the Engineer.

The programmed sequence of flights and establishing ground control markers shall be subject to the approval of the Engineer from time to time and any subsequent alterations of the programmed sequence ordered by the Engineer shall be at no extra cost.

Notice
of
Operations

8. The Contractor shall not commence any separate operation without the consent of the Engineer, to whom the Contractor shall give full and complete notice of the operation sufficiently in advance of its proposed commencement, so as to enable the Engineer to make such arrangements as he may deem necessary for inspection or for any other purpose.

Camera
and Lens

9. The camera to be used will be an approved type having a 23 cm x 23 cm format and a 15 cm focal length lens. The camera and lens to be used shall not produce a distortion in the plane of the negative exceeding ten microns (such as Wild cameras with the Aviagon lens or Zeiss cameras with the Pleogon lens).

Flying
Height

10. Vertical air photography will be undertaken from an appropriate flying height above sea level to give an approximate scale of 1:10,000.

Photographic
Flying
Requirements

11. (a) The Areas shall be covered by straight strips of photographs having fore and aft overlap of $60\% + 5\%$ and lateral overlap of $25\% + 10\%$. In areas of extreme relief or of exceptional navigational difficulty some additional tolerance in the overlap will be permitted in order to maintain a uniform scale provided that the forward overlap in no case falls below 55% and that the area is satisfactorily covered for photogrammetric mapping. A corresponding increase in lateral overlap, which must in no case fall below 15%, may be accepted in similar circumstances.

(b) Straight strips are defined as those in which the angle at the principal point of each photograph subtended between the homologues of the principal points of preceding and subsequent photographs shall be between 175° and 180° .

(c) If the end of a strip of photography joins the end of another strip for any reason, the overlap of the two strips is to be at least three photographs. If the two strips are at different scales the overlap is to be three photographs at the smaller scale.

(d) Where two blocks of photography overlap, the extent of the overlap shall be as stated below. This applies whether or not both blocks are flown in the same contract.

- (i) Where the sides of one block of strips overlap the sides of another block of strips, the overlap shall be the normal 25% of photograph, as specified at sub-paragraph (a) of this clause. If the blocks are at different scales the overlap shall be 25% of the smaller scale of photography.
- (ii) Where the ends of the strips of one block overlap the ends of the strips of another block, the overlap shall be at least three photographs as required at sub-paragraph (c) for the junction of single strips.
- (iii) Where the ends of the strips of one block overlap the sides of the strips of another block, the strips of the one block shall be continued so as to give stereoscopic cover over the base lines of the second strip of the other block.

(e) Crab shall not exceed 5° , or be such that there are stereoscopic gaps in the photography.

(f) Tilt shall not exceed 2° .

(g) Cloud, or cloud shadow, shall not obscure any detail in the working part of a photograph.

Camera
Calibration

12. The camera to be used shall have been recently calibrated. Information as to the calibration shall be provided, if required, as follows:-

- (a) A certificate as to when and by whom the camera was calibrated.
- (b) The position of the principal point.
- (c) The length of the principal distance.
- (d) The distortion of the image along both diagonals at each 5° zone from the axis when the principal point and principal distance as stated are used.
- (e) The distance between collimating marks.

Photographic
Quality

13. All photographic work shall comply with the following requirements:

(a) The negative shall be on freshly coated film of a recognised type. Film to be used shall conform to the designed characteristics of the type with net values of fog not exceeding a density of 0.2.

(b) The film base shall be of a type known to have low distortion characteristics.

(c) Processing of the film shall be carried out by a means which will take fullest advantage of the

covered by each strip of photography. The film and negative numbers shall be shown at the beginning and end of each strip, and the centre points of some or all of the photographs shall be included if practicable.

Existing
Survey
Information

17. The Contractor shall be provided with current information on the location, accuracy and co-ordinate and level values of the 4 km grid beacons by the topographical survey contractor through the Engineer.

The Contractor shall be responsible for marking these beacons adequately for the purpose of ground control of his photography. Should the Contractor require additional ground control markers he shall provide them at his own expense, including the cutting of any necessary trace lines and the construction of beacons and markers. It should be noted that trace lines cut by others are aligned in the general direction north-east/south-west, and they are cut to a size sufficient to enable vehicles to gain access to trial pit sites at about 250 m intervals on the trace lines. Trace lines at 1 km intervals and beacons on a 2 km right angled grid will be constructed by others following on the cutting and beaconing of the 4 km interval trace lines, but the Employer does not warrant that this work by others will be available to the aerial photography Contractor.

Data
to be
Provided

18. The Engineer will provide the Contractor with one set 1:100,000 scale maps defining the area to be photographed, and arrange for the 4 km grid beacons and parallel trace lines to be demonstrated to the Contractor's ground control party.

The area of 40,000 hectares within the Survey Area for which photomosaics are required will be defined by the Engineer one week after delivery to him of the three sets of contact prints and index plots of the aerial photography at 1:10,000 scale noted in Clause 2(iii). The area of 40,000 hectares will not necessarily be in one block but may be formed of a number of separate blocks within the overall 80,000 hectares Survey Area. The size and format of the photomosaic sheets shall conform with standard practice and shall be approved by the Engineer before preparation of the photomosaics commences.

Delivery
of
Photomosaics
if Ordered

19. If the Engineer shall order the Contractor to provide photomosaics of the balance of 40,000 hectares of the Survey Area, the Contractor shall deliver the two sets of photomosaics of the balance of 40,000 hectares to the Engineer within two months of the Engineer's order, or two months of the date of delivery of the three sets of contact prints to the Engineer, whichever shall be the later.

Material
to be
Supplied
by the
Contractor

20. The Contractor shall supply to the Employer through the Engineer, the following material on completion of the work:

- (i) Abstracts of all observations
- (ii) Descriptions of all triangulation and ground control works

- (iii) Diagrams
- (iv) Computations
- (v) 3 copies of the Index Plots
- (vi) 3 sets of contact prints
- (vii) Information with full details as to destroyed or damaged control points and bench marks as may come to the notice of his surveyors during the course of the work
- (viii) 2 sets of photomosaics at 1:10,000 scale
- (ix) All necessary calibration data of cameras and lenses, to the Employer, with the first sets of prints
- (x) All negative films of the photography, together with spools.

The Contractor shall deliver the material in accordance with the times for completion for Sections of the Work given in the Appendix to the Form of Tender, and in accordance with any other requirements of the Specification.

BILL OF

QUANTITIES

PREAMBLE

(I) The Bill of Quantities comprises this Preamble and the Bill of Quantities.

(II) The quantities set out in the Bill of Quantities are the estimated quantities for the work and they are not to be taken as the actual and correct quantities of the Works to be executed by the Contractor in fulfillment of his obligations under the Contract.

(III) The work shall be measured not notwithstanding any general or local custom except where otherwise specifically described or prescribed in the Contract.

(IV) The rates and prices stated in the Bill of Quantities shall, except where otherwise provided in the Contract, cover all the Contractor's obligations under the Contract and all matters and things necessary for the proper execution and completion of the Works.

Except where otherwise specifically described or measured in the Contract, Equipment, Materials both for temporary and for permanent work, Labour (including the supervision thereof) transport to and from the site and in and around the Works and other things of every kind required for the execution and completion of the Works, shall not be measured and the cost thereof shall be deemed to be included in the rates and prices stated in the Bill of Quantities.

When the measurement is not by integral units or items, the total quantity included in the final measurement of each item shall be rounded to the nearest units of the unit of measurement known for that item.

BILL OF

(V) The following abbreviations are used in the Bill of Quantities:

sq	square	QUANTITIES	litres
cu	cubic	m	metre
No.	number	kg	kilograms
m	metre	tonne	metric ton
pro	provisional	%	per cent

(VI) Where there is an item in the Bill of Quantities which the words "pro" are entered in the Unit column, the work described shall be performed only on the instructions of the Engineer. Such work shall be evaluated in accordance with clause 11.1 of the Conditions of Contract and to the extent that the provisional sum is not used the Contract Price shall be reduced accordingly.

(VII) The Contractor shall present to the Engineer all field books, computations and all other evidence required by the Engineer in justification of the Contractor's applications for payment.

PREAMBLE

(i) The Bill of Quantities comprises this Preamble and the Bill of Quantities.

(ii) The quantities where set out in the Bill of Quantities are the estimated quantities for the work and they are not to be taken as the actual and correct quantities of the Works to be executed by the Contractor in fulfilment of his obligations under the Contract.

(iii) The Works shall be measured net notwithstanding any general or local custom except where otherwise specifically described or prescribed in the Contract.

(iv) The rates and prices stated in the Bill of Quantities shall, except where otherwise provided in the Contract, cover all the Contractor's obligations under the Contract and all matters and things necessary for the proper execution and completion of the Works.

Except where otherwise specifically described or prescribed in the Contract, Equipment, materials both for temporary and for permanent works, labour (including the supervision thereof) transport to and from the Site and in and around the Works and other things of every kind required for the execution and completion of the Works, shall not be measured and the cost thereof shall be deemed to be included in the rates and prices stated in the Bill of Quantities.

(v) Where the measurement is not by integral sums or items, the total quantity included in the final measurement of each item shall be measured to the nearest tenth of the unit of measurement shown for that item.

(vi) The following abbreviations are used in the Bill of Quantities:

sq	square	km	kilometre
cu	cubic	m	metre
No.	number	kg	kilogramme
hr	hour	tonne	metric ton
prov.provisional		%	per cent

(vii) Where there is an item in the Bill of Quantities having the words "prov sum" entered in the Unit column, the work described shall be performed only on the instructions of the Engineer. Such work shall be evaluated in accordance with Clause 22(3) of the Conditions of Contract and to the extent that the provisional sum is not used the Contract Price shall be reduced accordingly.

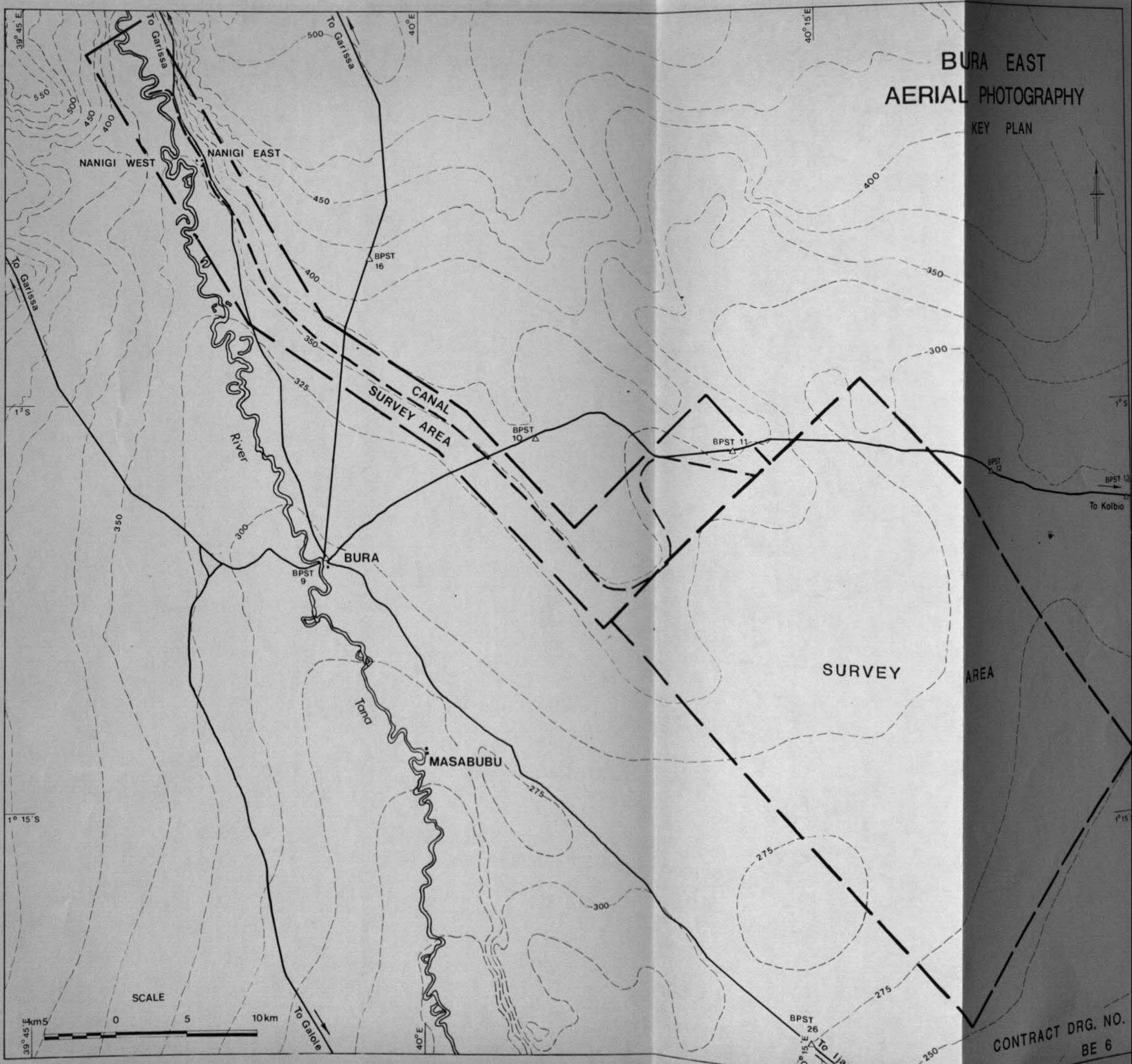
(viii) The Contractor shall present to the Engineer all field books, computations and all other evidence required by the Engineer in justification of the Contractor's applications for interim payments.

Item No.	Description	Unit	Quantity	Rate	Amount	
					Kenya Shillings	
	SECTION 1					
1.	Mobilise aircraft and all other equipment materials and labour and establish in Kenya	Sum				
2.	Operate, maintain and remove on completion aircraft and all equipment materials and labour for flying in Kenya	Sum				
3.	Transport all necessary equipment materials and labour to site, establish ground control, maintain and operate temporary camps and remove on completion	Sum				
4.	Allow for all head office and other costs incidental to operations in Kenya	Sum				
5.	Allow for all drawing office, processing and all other costs in completing and delivering three sets of contact prints and three Index Plots to the Engineer	Sum				
	SECTION 2					
6.	Allow for all drawing office processing and all other costs in completing and delivering two sets of photomosaics and index sheets to the Engineer for 40,000 hectares of the Survey Area	Sum				
7.	Allow for all drawing office processing and all other costs in completing and delivering two sets of photomosaics and index sheets to the Engineer for 25,000 hectares of the Canal Alignment Area	Sum				
	Carried forward:					

Item No.	Description	Unit	Quantity	Rate	Amount	
					Kenya Shillings	
	THE REMAINDER OF THE WORKS					
8.	Allow for all drawing office processing and other costs in completing and delivering all films, abstracts, lists, calibration data and other information to the Engineer	Sum				
	The following item 9 shall be performed only if ordered by the Engineer:-					
9.	Allow for all drawing office, processing and all other costs in completing and delivering two sets of photomosaics and index sheets to the Engineer for the balance of 40,000 hectares of the Survey Area	Sum				
	SUB-TOTAL					
	Contingencies	Prov Sum				
	TOTAL					
	(Carried to Form of Tender)					

BURA EAST
AERIAL PHOTOGRAPHY

KEY PLAN



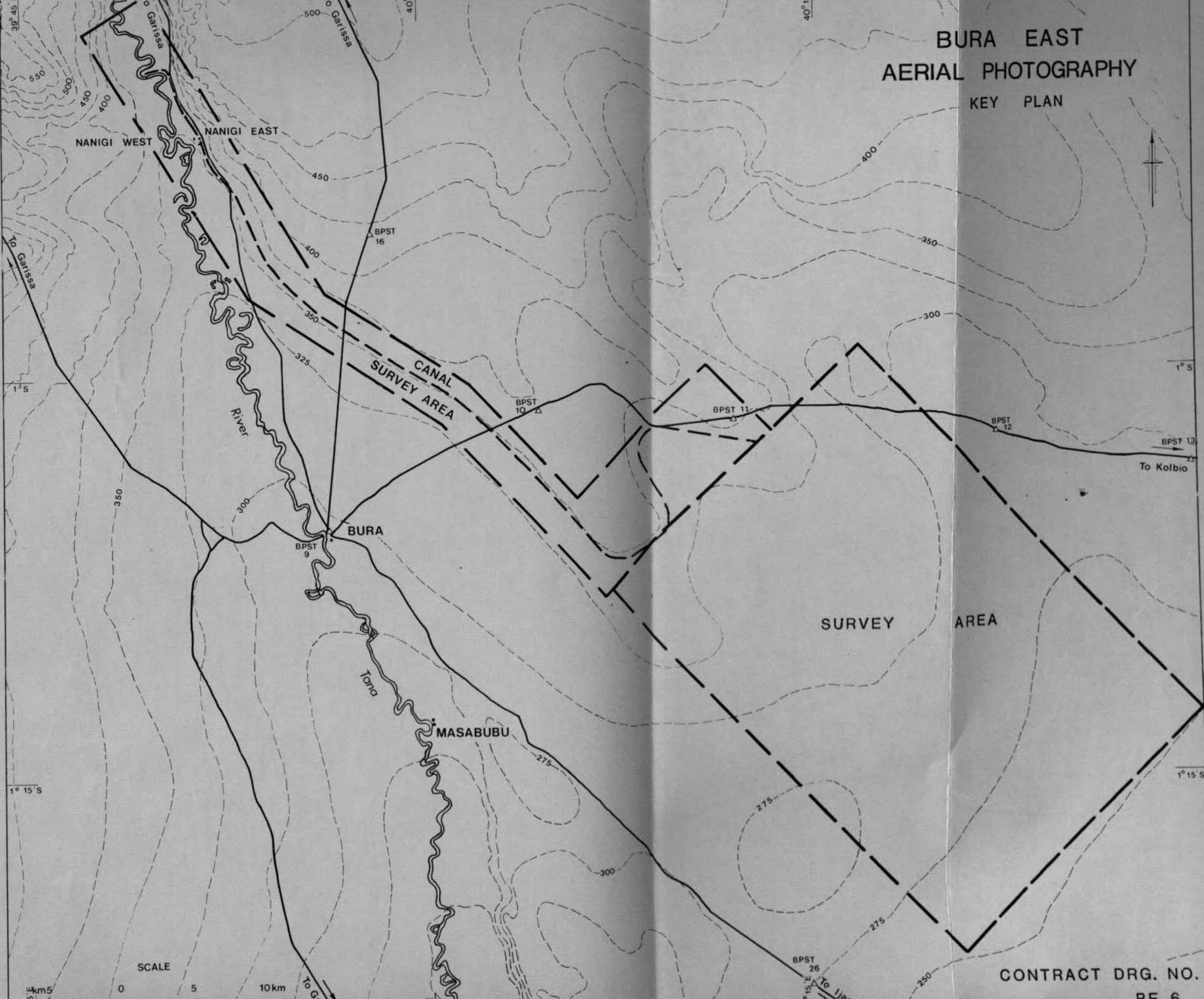
SCALE

0 5 10km

CONTRACT DRG. NO.
BE 6

BURA EAST AERIAL PHOTOGRAPHY

KEY PLAN



SCALE

0 5 10 km

SURVEY AREA

CONTRACT DRG. NO.

PE 6