



Water Authority of the Cayman Islands

**Red Gate Water Works
Supply and Erection of
Bolted Steel Tank for Water Storage
2017**

Tender No.: CTC/16-17/WAC/069

PLEASE READ THIS IMPORTANT NOTE

The Tender Documents for the above project can be obtained from the Deputy Director, Water Authority, 13G Red Gate Road, George Town.

The Tender Documents can also be downloaded directly from the Water Authority's website at www.waterauthority.ky or from the Cayman Islands Central Tender Committee's website at www.centraltenders.gov.ky.

All companies who obtain a set of the Tender Documents from the above websites must immediately acknowledge receipt of these documents by sending an e-mail to ContractReview@waterauthority.ky, and include the company name, company physical address and contact e-mail address.

This acknowledgement is essential in order to be able to provide potential tenderers with Tender Addenda when issued.

For additional information contact ContractReview@waterauthority.ky



Water Authority of the Cayman Islands

**Red Gate Water Works
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2017**

CTC/16-17/WAC/069

Tender Documents

30 October 2017

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INTRODUCTION

This document is the standard document for the construction of civil engineering works, used by the Water Authority of the Cayman Islands, in connection with the Contract for the Supply and Erection of one (1) Bolted Steel Tank for Water Storage at the Red Gate Water Works, George Town.

It is based on, and should be read in conjunction with the "Short Form of Contract, First Edition (1999)", as prepared by the Federation Internationale Des Ingenieurs Conseils (FIDIC), modified and added to as indicated. (A copy of these conditions is attached to this document),

BRIEF DESCRIPTION OF THE WORKS

The Works comprise the supply and erection of one (1) glass-fused-to-steel bolted-steel storage tank, with a reinforced concrete base and an aluminium geodesic dome roof without internal column supports. **(Note: Epoxy coated tanks will NOT be considered)**. The tank is to be constructed at the Red Gate Water Works Site in George Town, Grand Cayman, Cayman Islands.

The tank must be suitable for the storage of potable water, and shall have a storage capacity of approximately 2 million US gallons (7,570 cubic metres).

The total work consists of two parts:

- Part I comprises the supply of the tank, with accessories and appurtenances as indicated on the Drawings and specified in the Contract Documents.
- Part II comprises the construction of the tank foundations and the erection and testing of the tank, all in strict accordance with the Tank Manufacturer's and the Water Authority's specification and approved Drawings under the supervision of an experienced erection supervisor.

The erection of the tank must be carried out by an experienced erection crew to ensure compliance with the manufacturer's installation specifications, and to satisfy tank warranty requirements.

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INSTRUCTIONS FOR TENDERING

Introduction

1. These instructions for Tendering are to be used as a guide to Tendering for this project. Failure to comply with any of these Instructions may result in the rejection of the Tender.

Eligibility Criteria

2. Tenderers shall meet the following eligibility criteria in order to be considered and evaluated:
 - a. Companies must:
 - i) either comply with all applicable local laws and regulations, including business regulations, including but not limited to, having a Trade and Business license, and comply with the Local Companies (Control) Law (latest revision) and the Companies Law (latest revision), or, alternatively,
 - ii) sub-contract all of Part II of this Contract, except for the tank erection supervision, to a contractor, that complies with section 2 a.i) above.
 - b. Comply with all applicable Cayman Islands laws relating to employment including the Labour Law (latest revision) and the Immigration Law (latest revision).
 - c. Companies must satisfy all insurance, financial, and bonding requirements as specified in the Contract Documents.
 - d. Companies must provide references that will confirm the company's (or its sub-contractor's) performance and quality on five (5) separate completed projects covering the provision and installation of glass-fused-to-steel storage tanks of a size or sizes similar to that required for this project.
 - e. Field erection of the glass-fused-to-steel storage tanks must be performed by a factory authorized (sub)contractor, regularly engaged in the erection of these tanks, using factory trained erectors.
 - f. The job installation superintendent/foreman shall have at least 5 years of documented experience erecting bolted steel storage tanks of a size or sizes similar to that required for this project. Companies must provide a resume of the job installation superintendent/foreman that will confirm the individual's performance on previously completed projects.

Relevant Documents

3. Tenderers shall study all the "Tender Documents" comprising the Conditions of Contract, Specifications, Tender Drawings, Agreement (comprising Offer, Acceptance and Appendix) and Bill of Quantities. The whole of the Tender Documents shall be read and their true intent and meaning ascertained before the Bill of Quantities is priced.
4. No unauthorised alteration or addition is to be made to the Specifications, Tender Drawings, Agreement and Bill of Quantities. Any qualification made to a Tender may result in the Tender being rejected.
5. Except in so far as may be directed by the Water Authority in writing neither the Water Authority, nor any agent or servant in their employment has any authority to make any representation or explanation to Tenderers as to the meaning of these Tender Documents, or as to anything to be done or not to be done, or as to these instructions, or as to any other thing or matter, so as to bind the Water Authority as to the execution of these proposals.
6. Should any alteration or addition to the Tender Documents be deemed necessary prior to the date for submission of Tenders, these shall be issued to Tenderers by e-mail by the Deputy Director of the Water Authority in the form of a Tender Addendum.

If a Tenderer is in doubt about the meaning of any item in the Tender Documents he shall notify the Water Authority by e-mail not later than 10 days before the due date for tender submission

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(ContractReview@waterauthority.ky). The Deputy Director of the Water Authority shall then issue to all Tenderers an explanation in the form of a Tender Addendum.

Each Tender Addendum shall have a serial number and Tenderers shall acknowledge receipt of each Tender Addendum by e-mail to ContractReview@waterauthority.ky. Failure to acknowledge may result in a Tender being rejected. All Tender Addenda so issued shall become a part of the Tender Documents.

7. The Contract shall be carried out on a Firm Price basis and no adjustment shall be made to any amounts payable by the Water Authority to the Contractor as a consequence of any variations in the cost of labour, plant, materials or transport.
8. Tenders shall only be accepted for the whole of the Works.
9. Tenderers shall treat the Tender Documents and all details contained therein as private and confidential.

Rates to be Inclusive

10. The prices to be inserted in the Bill of Quantities are to be the full inclusive value of the work described in the Specification and under the several items, including all costs and expenses which may be required in and for the construction of the work described, together with all general risks, liabilities and obligations set forth or implied in the documents on which the tender is based.

Measurement

11. All measurements shall be as indicated in the contract.
12. Persons tendering are cautioned that no variations or extras whatsoever shall be acknowledged or paid for by the Water Authority unless an order in writing signed by the Engineer and specifying the nature, extent and character of each particular item or items to be paid for as an extra has been obtained by the Contractor before such work has been carried out.

Rates to be Entered

13. All items in the Bill of Quantities shall either be priced or alternatively the word "included" should be entered in the rate column, whether quantities are stated or not. If neither of these two alternatives are adopted the Tenderer shall be held to have included for any such item left blank in his other prices or rates in the Bill of Quantities.
14. All rates and prices submitted shall be in **United States dollars (US \$)**.

Time for Completion

15. Attention is directed to the fact that if the Contractor shall fail or neglect to complete the works within the time specified in the Appendix he shall pay to the Water Authority as liquidated and ascertained damages and not by way of penalty a sum detailed in the Appendix for each day during which any part of the work shall, by the Contractor's default, remain unfinished after the expiration of the period for completion. If in the opinion of the Water Authority the work has been delayed owing to abnormally bad weather, the Water Authority may extend the time for completion of the work as it may consider fair and reasonable.

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Preparing Tender

16. Companies who submit a Tender shall be held to have by their own independent observations and enquiries fully informed and satisfied themselves as to the nature, extent and practicability of the works, the means of access to the works, the places where materials can be obtained and disposed of, the levels of the ground water and seasonal/tidal variation thereof, the character of soil and strata in or on which the works are to be constructed, and all other points which can in any way affect the rates inserted in the Bill of Quantities.
17. The Water Authority shall not be responsible for any costs or expenses incurred in the preparation and submission of the Tender.
18. The Water Authority shall not be responsible for the omission of any items that are detrimental to the successful completion of the works.
19. The Tenderer's attention is drawn to Clause 11.2 (Modifications and additions to Clauses) of the Conditions of Contract, which shall be taken to mean that
 - a. The payments due under the contract for Part I (The supply of the storage tank) shall only be made on the presentation of the specified documents (see Conditions of Contract, amended Sub-Clause 11.2), and no other documentation shall be accepted. Furthermore, all Letters of Credit opened under the contract shall be deemed to be payments as above, and the conditions for payment under these Letters of Credit shall also require presentation of the specified documents and no other conditions shall be accepted.
 - b. The "Irrevocable Letter of Guarantee" to be provided under this sub-clause shall be acceptable to the Employer. (Note: An acceptable Form of Bond is attached to these Tender Documents). The Bond shall enable the advance payment to be released.
 - c. The payments due under the contract for Part II (The construction of the foundation and the erection of the storage tank) shall be made on the issue of Engineer's Certificates.

Return of Tenders

20. Tenderers shall be supplied with an electronic copy of the following documents: the Tender Documents, which includes the Specification; the FIDIC Short Form of Contract; and the Tender Drawings.

Two printed copies of the Tender Documents, which for the purpose of identification shall have each page signed by the Contractor, shall be duly completed, and sealed in an envelope. On the outside of the envelope or courier box the tender # and title ("**CTC/16-17/WAC/069 Red Gate Water Works - Bolted Steel Tank for Water Storage (2017)**") shall be clearly written as the first lines of the address.

The sealed envelope or package shall be delivered, no later than 12:00 p.m. on Wednesday 13 December 2017, to:

Central Tenders Committee
c/o Treasury Department
Government Office Administration Building
133 Elgin Ave, George Town
Grand Cayman, Cayman Islands

21. Only tenders received on time will be accepted. No Tenderer shall withdraw his tender after the opening time unless a period of 60 days has elapsed without any tender being accepted. Faxed summaries of tenders shall not be accepted as a substitute. Tenders may be delivered by courier

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service but the Water Authority shall not be responsible for the failure of any courier service to deliver on time and any such late tender shall not be accepted.

22. The opening of the sealed offers by the Central Tenders Committee will take place on Wednesday 13 December 2017.
23. All entries and signatures shall be in indelible ink. No tender may be altered or amended after having been opened other than those alterations necessary to correct any arithmetic errors. Rates shall prevail where there is an arithmetic error in extension. Discrepancies in the quantity multiplied by unit price and the extended total amount will be resolved in favour of the quantity multiplied by unit price. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favour of the correct sum.

Information to be submitted by the Tenderer.

24. The Tenderer shall provide a list of the Sub-Contractors he proposes to use on the Works and the activities that each of the Sub-Contractors is to carry out. Tenderer shall submit with the Tender an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Sub-Contractor.
- a. Any Sub-Contractor listed and to whom the Employer makes written objection prior to the giving of the Letter of Acceptance will be deemed unacceptable to the Employer and shall be substituted with a Sub-Contractor acceptable to the Employer. If the Successful Tenderer declines to make a substitution of Sub-Contractor acceptable to the Employer, the Employer may award the contract to the next highest assessed responsible Tenderer that proposes to use acceptable Sub-Contractors.
25. The Tenderer shall submit with his tender the following information:
- a. A schedule of delivery indicating the date for delivery ex-works of the shipment
- b. Full details of the method for packing and shipping the tank to the Cayman Islands
- c. Preliminary foundation design details
- d. An estimated erection time chart, based on previous experience of similar projects. This chart shall include, but shall not be limited to, the following headings:
- (1) approval of design details
 - (2) shipment of tank after receipt of approval
 - (3) transport of tank
 - (4) construction of concrete slab foundation, including base-setting ring
 - (5) installation of tank wall
 - (6) Installation of roof
 - (7) cleaning and 'touching up' interior,
 - (8) removal of scaffolding and 'touching up' exterior
 - (9) sterilisation and testing of tank for water tightness
- e. Approximate size of erection crew
- f. Two (2) copies of the Contractor's erection manual
- g. Standard colour chip for exterior colour: Sky Blue or similar
- h. Information on protective coating to concrete (as per clause 424 of the specification)
26. The Water Authority shall not be seen to have approved all or any part of the information submitted by the Tenderer unless the Tenderer is so notified in writing.

Award of Contract

27. All Tenders will be evaluated and all tenderers will be notified by e-mail of the outcome of the evaluation.

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28. The Water Authority shall not be bound to accept the lowest or any of the Tenders. The Water Authority reserves its right to reject any or all Tenders, including without limitation the right to reject any or all non-conforming, non-responsive, unbalanced or conditional Tenders, and to reject the Tender of any Tenderer if the Employer believes that it would not be in the best interest of the Employer to make an award to that Tenderer, whether because the Tender is not responsive or fails to meet any other pertinent standard or criteria established by Employer.
29. The award will be made on the basis of that Tender from the responsible Tenderer with the highest score for the Tender using the Tender Evaluation Criteria (see Item 31) and which will best serve the interest of the Employer.
30. The Employer will give the Successful Tenderer a Letter of Acceptance within sixty (60) days after the Tender Opening.
31. Tender Evaluation Criteria: Certain elements of the Tender are mandatory, the submission of these will determine whether a Tender is "compliant or not", failure to submit any mandatory items will result in a "failed" Tender and will not be assessed further.
- a. Mandatory items (Pass or Fail):
1. Completed Agreement and Offer (see page 11)
 2. Cost proposal (completed Bill of Quantities (see page 20))
 3. Acknowledgement of receipt of Tender Addenda (if any)
 4. Company and Sub-Contractor Information (i.e., experience, references etc.)
 5. Staff Experience, particularly those of field erection crew
 6. Other required information (see Item 25 of these Instructions)
 7. A copy of the e-mail sent to ContractReview@waterauthority.ky acknowledging receipt of the Tender Documents in order to be a registered potential Tenderer (*).

Note*: This only applies to those Tenderers who downloaded the Tender Documents directly from the Water Authority's website or the Cayman Islands Central Tender Committee's website.

b. Costing Analysis

c. Technical Assessment

1. Standard of Tender Submission (i.e., Quality/Completeness)
2. (Sub-)Contractor Information, including References
3. Experience of field erection crew superintendent/foreman

Note: The Company and Sub-Contractor Information referred to in this item 31 should be relevant to this contract, i.e., covering the provision and installation of glass-fused-to-steel storage tanks and all ancillary works, such as concrete works.

32. In the event of failure of the Successful Tenderer to provide any required documents (e.g., Trade and Business license, insurance certificate(s), information of Sub-Contractors), the Employer may award the Contract to the next highest assessed responsive Tenderer.
33. The following names and addresses are given for information only, and there is no obligation for any Tenderer to use any of the following:

CONTRACTORS

Information regarding general contractors on the island can be obtained from:

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Cayman Contractors Association

P.O. Box 11483

Grand Cayman KY1-1009

Tel.: (345)-526-2645

Email: rjpurdom@daccord-ltd.comSHIPPING COMPANIES**Tropical Shipping/Thompson Shipping**9505 NW 108th Avenue,
Medley, FL 33178

Tel: 305 805 6639

Fax: 305 805 6630

Attn: Yoandra Nodarse

Email: YNodarse@tropical.com**Hyde Shipping Corporation**10025 NW 116th Way Ste 2
Medley, Florida 33178

Tel: 305 913 4933

Fax: 305 913 4959

Attn: Cynthia Ceden

Email: cceden@hydeshipping.com*****
Seaboard Marine8050 NW 79th Avenue
Miami, FL 33166-2154

Tel: 305 863 4741 or 4444

Attn: Elizabeth Sale-Chin

Email: elizabeth_salechin@seaboardmarine.com*****
CONTRACTOR'S EQUIPMENT RENTALS (Cranes etc.)**A-I Rentals**

P.O. Box 10747

Grand Cayman KY1-1007

Tel.: (345)-949-4935

www.ai-rentals.com**Moxam Industries**

P.O. Box 349

Grand Cayman KY1-1106

Tel.: (345)-947-4611 or

(345)-916-2896

Massive Equipment Rental & Sales Ltd.

P.O. Box 10313

Grand Cayman KY1-1003

Tel.: (345)-949-7990

Fax: (345)-949-7074

www.massivegroup.comContact information on other local companies can be obtained from the yellow pages for the Cayman Islands at www.findyello.com/Cayman-IslandsContractor's Initials or Stamp :

CONDITIONS OF CONTRACT

Conditions of Contract

The Conditions of Contract shall be Clauses 1 through 15 of "Short Form of Contract, First Edition (1999)", as prepared by the Federation Internationale Des Ingenieurs Conseils (FIDIC), modified and added to as shown below. A copy of the Conditions of Contract is attached to this Document.

Modifications and additions to Clauses

PARTICULAR CONDITIONS

Clause 1 General Provisions

Add Sub-Clause 1.6.a: Labour

- i. The Contractor shall comply with all applicable Cayman Islands laws relating to employment including the Labour Law (latest revision) and the Immigration Law (latest revision).
- ii. The Contractor shall pay rates of wages and observe conditions of labour not less favourable than those established by the Labour Law (latest revision).
- iii. The Contractor shall obtain and pay all fees for the work permits for expatriate personnel.
- iv. The Contractor shall be responsible for the cost of return of all expatriate personnel employed, contracted or otherwise retained for completion of or in connection with the Contract and their respective family members (if applicable), to the place from where they were recruited, or to their country of domicile.
- v. The Contractor shall provide suitable housing in the Cayman Islands for all expatriate personnel and their respective family members residing in the Cayman Islands, until their repatriation in accordance with the above.
- vi. For the purposes of this Sub-Clause, the term "expatriate personnel" shall not include any person with Caymanian nationality or holding legal residence status in the Cayman Islands.

Clause 5 Design by Contractor

Add the following to Sub-Clause 5.1:

"Within 21 days after the Commencement Date, the Contractor shall submit the design, complete with all supporting documentation, as referred to in the Appendix."

Clause 7 Time for Completion

Add the following to Sub-Clause 7.1:

"The whole of the Works shall not be considered complete until the tank has been successfully tested for water tightness in accordance with the Specification."

Add Sub-Clause 7.5 Restriction on Working Hours

Subject to any provision to the contrary contained in the Contract, none of the Works shall, save as hereinafter provided, be carried out during the night or on locally recognized days of rest without the consent of the Engineer, except when work is unavoidable or absolutely necessary for the saving of

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life or property of for the safety of the Works, in which case the Contractor shall immediately advise the Engineer.

Clause 11 Contract Price and Payment

Add the following to Sub-Clause 11.2

Statements in respect of Part I of the Contract:

Irrevocable International Letter of Credit

The Employer shall establish an irrevocable international Letter of Credit in the favour of the Contractor at the value of the Tender Total (Part I). This Letter of Credit shall be opened at the counter of a bank to be named by the Contractor and shall be payable at sight upon presentation of the relevant documents. The Contractor shall copy all documents to the Employer at the time they are presented at the bank.

Payments shall be made as follows:

- (a) 10% of the Tender Total (Part I) as an advance payment within 14 days after the Contractor has furnished to the Employer an irrevocable letter of guarantee from a guarantor or surety acceptable to the Employer with a value and currency equivalent to the advance payment.
- (b) 85% of the Tender Total (Part I) after presentation of invoices, On-Board Bill of Lading, all risk Insurance including proof of payment, and freight charges including proof of payment.
- (c) The remaining 5% of the Tender Total (Part I) shall be paid on the presentation of a letter from the Contractor to the Employer certifying that the Plant has been erected and constructed in strict accordance with the Drawings and the Tank Manufacturer's and the Water Authority's specifications, and has successfully met the testing requirements of the Contract.

Delete sub-clause 11.8 and substitute with:

"In the event of the failure of the Employer to make payment within the times stated, the Employer shall pay to the Contractor interest upon all sums unpaid at a rate per annum equivalent to the interest rate at which the Cayman National Bank and Trust Company Limited would pay for such a deposit on the date upon which such payment first becomes overdue. In the event of any variation in the said Bank Rate being announced whilst such payment remains overdue the interest payable to the Contractor for the period that such payment remains overdue shall be correspondingly varied from the date of each such variation."

Clause 15 Resolution of Disputes

Delete the entire clause and replace with the following:

"Unless settled amicably, any dispute or difference which arises between the Contractor and the Employer out of or in connection with the Contract shall be settled by arbitration in accordance with the Cayman Islands Arbitration Law, 2012.

Note: The "Engineer" as referred to in the various sections of the Specifications shall be deemed to mean the "Employer's Representative", as defined in the Contract.

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AGREEMENT

The Employer is The Water Authority of the Cayman Islands, P.O. Box 1104, 13G Red Gate Road, George Town, Grand Cayman KY1-1102, Cayman Islands.

The Contractor is _____ of

The Employer desires the execution of certain Works known as **Red Gate Water Works - Supply and Erection of Bolted Steel Tank for Water Storage (2017)**

OFFER

The Contractor has examined the documents listed in the Appendix, which forms part of this Agreement, and offers to execute the Works in conformity with the Contract for the sum of _____ (in words)

_____ (in figures)

or such other sum as may be ascertained under the Contract.

This offer, of which the Contractor has submitted one signed original, may be accepted by the Employer by signing and returning it to the Contractor before 12 February 2018.

The Contractor understands that the Employer is not bound to accept the lowest or any offer received for the Works.

Signature: _____ Date: _____

Name: _____ Authorized to sign on behalf of:
(organization name)

Capacity: _____

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ACCEPTANCE

The Employer has, by signing below, accepted the Contractor's offer and agrees that in consideration for the execution of the Works by the Contractor, the Employer shall pay the Contractor in accordance with the Contract. This Agreement comes into effect on the date when the Contractor receives a copy of this document signed by the Employer.

Signature: _____ Date: _____

Name: _____ Authorized to sign on behalf of the
Water Authority of the Cayman Islands

Capacity: _____

In the presence of:

Name: _____

Capacity: _____

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APPENDIX

This Appendix forms part of the Agreement.

<u>Item</u>	<u>Sub-Clause</u>	<u>Data</u>
Documents forming the Contract listed in the order of priority	1.1.1	
The Agreement		
Conditions of Contract		
The Specification		
The Drawings		See Attached List
The Contractor's design		
The Bill of Quantities		
Time for Completion	1.1.9	161 days
Law of the Contract	1.4	Cayman Islands Law
Language	1.5	English
Provision of Site	2.1	28 days after the Commencement Date
Authorized person	3.1	Director of the Water Authority
Name and address of Employer's representative	3.2	Deputy Director Water Authority - Cayman PO Box 1104 Grand Cayman KY1-1102
Performance security	4.4	None
Requirements for Contractor's design	5.1	Tank and Tank Foundation design, see Specification Sub- Clauses 601.3 and 601.4
Programme:		
Time for submission	7.2	Within 14 days of the Commencement Date
Form of programme	7.2	Gantt Chart with (as a minimum) detailed information on the activities identified in the Bill of Quantities
Amount payable due to failure to complete	7.4	US\$ 500.00 per day up to a maximum of 5% of the sum stated in the Agreement
Period for notifying defects	9.1 & 11.5	365 days calculated from the date stated in the notice under Sub-Clause 8.2

Continued on next page

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<u>Item</u>	<u>Sub-Clause</u>	<u>Data</u>
Valuation of the Works		
Lump sum price	11.1	As per completed Bill of Quantities
Percentage of value of materials and Plant	11.2	Not Applicable
Percentage of retention	11.3	10% of Total Work Done (Part II)
Limit of Retention	11.3	10% of Tender Amount (Part II)
Currency of payment	11.7	United States Dollars (US\$)
Insurances	14.1	
<u>Type of Cover</u>		<u>Amount of Cover</u>
The Works, Materials, Plant and fees		The sum stated in the Agreement plus 15%
Third Party injury to persons and damage to property		US\$ 500,000 for any one incident, and unlimited number of incidents

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FORM OF BOND

BY THIS BOND We _____
(hereinafter called "the Contractor") and _____
whose registered office is at _____
(hereinafter called "the Surety"), are held and firmly bound unto the Water Authority of the Cayman Islands (hereinafter called "the Employer") in the sum of _____ ()

(enter sum in words and figures) payable on demand for the payment of which sum the Contractor and the Surety bind themselves, their successors and assigns jointly and severally by these present.

Sealed with our respective seals and dated this _____ day of _____ 2018.

WHEREAS

The Contractor and the Employer have entered into a Contract dated _____ 2018 for the former to supply and erect one (1) potable water storage tank (hereinafter called "the Tank") and the latter has agreed to pay for the tank.

The Employer has paid the Contractor the sum of _____ as an advance payment against the supply of the Tank being supplied under the Contract.

NOW THE CONDITIONS of the above-written Bond are such that

if the Contractor fails to supply the Tank in good condition to the Cayman Islands then the Employer shall be entitled to claim the total amount of this Bond and the Surety shall make payment on the Employer's demand; or

if the Contractor supplies the Tank in good condition to the Cayman Islands then this obligation shall be null and void;

otherwise this Bond shall be and remain in full force and effect but no alteration in the terms of the said Contract nor any forbearance of forgiveness in or in respect of any matter or thing concerning the said Contract on the part of the Employer shall in any way release the Surety from any liability under the above-written Bond.

Signed and Sealed by _____ (Contractor)

in the presence of _____

Signed and Sealed by _____ (Surety)

in the presence of _____

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BILL OF QUANTITIES

Brief Description of the Works

The Contractor shall furnish one (1) glass-fused-to-steel, bolted-steel water storage tank, with accessories and appurtenances as indicated on the Drawings and the Contract Documents, suitable for the storage of potable water, and each with a storage capacity of approximately 2 million US gallons (7,570 cubic metres).

The Employer shall provide access to the storage and working areas as indicated on the contract drawings.

The Contractor shall provide the Employer with design calculations for the structural integrity of the storage tank, working drawings of the reinforced concrete foundation details, and complete assembly instructions for the storage tank. (Note: The tank foundations shall be based on 1,800 psf soil bearing capacity).

The Contractor shall provide a suitably qualified and experienced person, to be approved by the Employer, who shall inspect the tank components as they are offloaded at the George Town dock and at the Employer's premises, and who shall supervise, check and certify construction in accordance with the Contractor's specifications throughout the erection period.

The Contractor shall construct the Works as detailed on the Drawings, and in strict compliance with the Contractor's and the Water Authority's specifications. All materials necessary for the Works shall be supplied and installed by the Contractor. The cost of all materials shall be included in the Contractor's rates. The Contractor shall satisfy himself about the materials he is to supply.

Programme of Works

The Contract shall be completed in 161 days, or 23 weeks.

This estimate is based on the following break-down, it is provided for information purposes only and is based on previously completed similar projects:

Approval of design details	4 weeks
Manufacture of tank after receipt of above approval	8 weeks
Transportation of tank	3 weeks
Erection of storage tank	7 weeks
Testing of tank for water tightness	1 week

Total time allowed:	23 weeks

Preamble to Bill of Quantities

Introduction

This Preamble has been provided to clarify the intent that the Water Authority of the Cayman Islands had in the preparation of the Bill of Quantities and to clarify the method of measurement and the work that each billed item covers. This intent is to provide clearly such information as shall enable Tenderers to submit bids that are readily comparable.

To avoid unnecessary length, item descriptions in the Bill of Quantities generally identify the component of the Works and not the tasks to be carried out by the Contractor. The exact nature and extent of the work is to be ascertained from the Drawings, Specification and Conditions of Contract.

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The Contractor shall provide all necessary materials, labour, equipment and services required to properly and satisfactorily complete the Works, unless explicitly stated otherwise.

All items required to complete the works specified or shown on the Drawings but not included in the Bill of Quantities shall be considered incidental to those set forth in the Bill of Quantities.

The Bill of Quantities shall be used for the preparation of Interim Certificates of Payment. The Contractor shall submit with each interim payment request, a revised Bill of Quantities that shows the percentage of each pay item completed as of the submission date.

Supply of storage tank

Item I.1 of the Bill of Quantities (supply of bolted steel tank) shall be deemed to include packing (such as is required to prevent any damage to, or deterioration of, the materials during transit), All Risk insurance, freight, harbour and port dues, wharfage, landing, pilotage, and double handling. Delivery, demurrage charges, unloading of the materials at the Employer's premises and all other costs incurred in Grand Cayman shall also be deemed to be included in this item. **(NOTE: All shipments must be consigned to the Water Authority – Cayman, and all Customs Importation Forms must be stamped and signed by the Water Authority to avoid import duties being levied).**

Payment for Part I of the Contract shall be made as detailed on page 10 (Conditions of Contract - Particular Conditions Sub-Clause 11.2).

All Insurances

This item is to cover all the costs of providing and maintaining all the insurances required by the Contract (see Clause 14 of the Conditions of Contract). The Contractor shall not be allowed to proceed without proof of the insurances being submitted and approved by the Engineer.

The Contractor shall include for this item on his first Monthly Statement (for Part II of the Contract).

Mobilization/ Demobilization

This item is to cover all the costs associated with the Contractor providing his erection crew and other staff, equipment, plant and other resource that he may require to satisfactorily carry out the Works from his normal place of work to Grand Cayman. The Contractor shall include in his price the cost of freight, brokerage fees, Port Authority fees, inland transportation and any other cost that he may rightfully incur in this matter. There are no special duties or licenses for equipment that is temporarily imported. Nor is it likely that a Customs Bond will be required for equipment that is to be re-exported upon completion of work.

This item is also to cover the cost of removing all the staff, equipment, plant and any other resource, which the Contractor may require to satisfactorily carry out the Works, from Grand Cayman back to its place of Origin.

Seventy percent (70%) of this item shall be included on the first Monthly Statement (for Part II of the Contract) after the Contractor has fully mobilized his equipment and work force on site. The remaining thirty percent (30%) shall be paid once all field activities have been successfully completed and approved by the Engineer.

Work Permits

This item is to cover all the costs of obtaining the necessary temporary work permits for the Contractor's expatriate staff. Information on the above can be found at the Cayman Islands Immigration website (www.immigration.gov.ky), more specifically in the "work permits" section.

*It should be noted that only the (Sub-)Contractor who has a Trade and Business license, and complies with the Local Companies (Control) Law (latest revision) and the Companies Law (latest revision) can apply for the work permits for expatriate personnel. **For the avoidance of any doubt, the Water Authority will NOT apply for and/or obtain any work permits for the Contractor's expatriate personnel.***

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The Contractor shall include for this item on his first Monthly Statement (for Part II of the Contract).

Accommodation and transportation

This item is to cover all costs of providing adequate accommodation and transportation for the Contractor's expatriate staff. Any costs of providing expatriate staff with subsistence, and any other cost considered necessary as a result of expatriate staff being away from their home country, will be deemed to have been included by the Contractor in his rates.

Payment of this item shall be pro-rated over the estimated time for completion for this phase of the works (i.e., 8 weeks), but no payment shall be due until the Contractor has fully mobilized his equipment and work force and has actually started the construction of the reinforced concrete foundation.

Building Works

The sums entered in the Bill of Quantities against the items II.5 (construction of reinforced concrete foundation), and II.6 (assembly of storage tank) shall include for the provision of materials, the installation of the materials, and for all the work involved in the satisfactory completion of the item in compliance with the Drawings, Specification, and where appropriate the manufacturer's assembly instructions.

The Contractor shall include in all of his rates for uplifting the materials from the Storage Area (as indicated on the Drawings) and transporting them to the position where they are to be incorporated in the Works. Facilities for loading and unloading vehicles shall be provided by the Contractor and included for in the rates.

The rates for building works incorporating concrete works shall be held to cover the cost of mix design, trial mixes, preliminary testing and statistical control procedure during concreting operations; also the cost of increased use of cement where statistical data indicates that the required degree of control is not being maintained.

Testing and Quality Control

The sums entered in the Bill of Quantities for the testing of the Works shall be held to include the expense of all work involved in carrying out remedial measures and of all temporary work including the use of plugs and other materials and equipment. No payment shall be made in respect of losses or delays occasioned by the application of the test or the carrying out of remedial works.

Water required for testing (and sterilisation) of the tank shall be furnished by the Employer without charge up to a quantity of 2 million US gallons. Any additional quantities shall be furnished by the Employer at cost (US\$ 14.00 per 1,000 US gallons).

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List Of Tender Drawings

<u>Drawing #</u>	<u>Drawing Title</u>
C-01	Grand Cayman, Location of Red Gate Water Works Site
C-02	Site Plan, Working Area, Storage Area and Site Access
C-03	Location of Tank Appurtenances
C-04	Sump Details

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BILL OF QUANTITIES**Currency: United States Dollars (US \$)**

<u>Item</u>	<u>Item Description</u>	<u>Unit</u>	<u>Amount</u> <u>(US \$)</u>
Part I : Supply of storage tank			
I.1	Supply of one (1) bolted steel tank for potable water storage, with an approximate storage capacity of 2.0 million US gallons. This item includes Packing, Insurance, Freight, Port Dues, Delivery, Unloading and all other costs associated with the satisfactory completion of this item in accordance with the Contract	SUM	_____
SUB-TOTAL (Part I) :			<div style="border: 1px solid black; width: 150px; height: 25px;"></div>
Part II : Erection of storage tank			
II.1	All Insurances as required by Contract	SUM	_____
II.2	Mobilisation and Demobilisation cost.	SUM	_____
II.3	Work Permits for expatriate staff	SUM	_____
II.4	Accommodation and transportation	SUM	_____
II.5	Preparation of ground surface and construction of reinforced concrete foundation for tank	SUM	_____
II.6	Assembly of storage tank in accordance with the manufacturer's erection instructions, including the assembly of all appurtenances.	SUM	_____
II.7	Testing and Quality Control - testing and sterilizing of tank	SUM	_____
SUB-TOTAL (Part II) :			<div style="border: 1px solid black; width: 150px; height: 25px;"></div>
TOTAL TENDER AMOUNT (PART I + PART II) (TO PAGE 11) :			<div style="border: 1px solid black; width: 150px; height: 25px;"></div>

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SPECIFICATION

100 GENERAL

101 Working Area

1. The Contractor shall for the purposes of the Contract have free and temporary use of working areas and accesses thereto as shown on the Drawings. Should the Contractor require any further working areas or accesses during the progress of the Works he may arrange for the use of these, subject to the approval of the Engineer.

102 Noise Control

1. All work shall be carried out without unreasonable noise. Compressors used on the Site shall be silenced either by using only fully silenced models fitted with effective exhaust silencers and properly lined and sealed acoustic covers all to the design of the manufacturers of the compressor or by the use of effective acoustic screens to enclose the noise source. Ancillary pneumatic percussive tools used on the Site shall be fitted with silencers of a type recommended by the manufacturers of the tools. Compressors, silencers or other equipment shall be maintained in good and efficient working order and shall not have been altered in such a way that noise caused in operation is made greater by the alterations.
2. All pumps, generators and other similar ancillary equipment shall be positioned so as to be as far away from occupied premises as possible. Machines in intermittent use shall be shut down in the intervening periods between work or throttled down to a minimum.

103 Levels and Reference Points

1. The Employer shall provide details of the value and exact location of a benchmark on or in close proximity of the Site, which is to be used by the Contractor for setting out the Works. The centre of each storage tank shall be clearly marked by the Employer.

104 Provision of Equipment for Engineer's Staff

1. The Contractor shall provide all survey instruments and equipment necessary for checking the setting out and construction of the Works.
2. The Contractor shall be responsible for the cost of sampling and testing all concrete materials as provided for in the Contract Documents (see Preamble to the Bill of Quantities).

105 Safety

1. At all times during construction of the Works the Contractor shall use recognized and approved working methods taking all reasonable safety precautions so as to avoid or minimize risk of injury to the workmen, visitors, and property on the Site.

106 Protection of the Works

1. The Contractor shall take every precaution to protect the work and materials from the weather. Any work or materials damaged in any way by the weather as a result of the Contractor's negligence shall be removed and made good at the Contractor's expense.

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107 Tidiness of the Site

1. The Contractor shall be responsible for the proper upkeep and maintenance of the Site and the Works and shall remove from the Site rubbish and other waste before it accumulates, and it shall be disposed of off the Site in a satisfactory manner. Materials and equipment shall be positioned, stored and stacked in an orderly manner.

108 Site Preparation

1. The Contractor shall clear and strip only those areas actually needed for the Works. Vegetation not designated for removal shall not be injured or defaced.
2. Objectionable material shall be disposed offsite. Burning of any material onsite will not be allowed.

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200 EXCAVATION AND BACKFILLING

201 Definition, Classification and General Use of Earthworks Materials

1. The following definitions of earthworks materials shall apply to this and other Clauses of the Specification in which reference is made to the defined materials:
 - a. "Topsoil" shall mean the top layer of soil that can support vegetation.
 - b. "Suitable material" shall mean all material that, in the opinion of the Engineer, is acceptable for use in the Permanent Works.
 - c. "Unsuitable material" shall mean all material other than suitable material, which shall include, but not be limited to, material from swamps, peat, logs, stumps, perishable material and materials having a moisture content greater than 16%.
 - d. "Imported Material" shall mean all material obtained by the Contractor from sources offsite.
 - e. "Lift" shall mean the loose (un-compacted) layer of material.
 - f. "Relative Compaction" shall mean the ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by ASTM D1557.
 - g. "Relative Density" shall be as defined by ASTM D4253 and ASTM D4254.
 - h. "Selected Backfill Material" shall mean all material available onsite that the Engineer determines to be suitable for a specific use.
 - i. "Well-Graded" shall mean a mixture of particle sizes that has no specific concentration of one or more sizes producing a material type that, when compacted, produces a strong and relatively incompressible soil mass free from detrimental voids. Well graded does not define any numerical value that must be placed on the coefficient of uniformity, coefficient of curvature, or other specific grain size distribution parameters.
 - j. "Granular Fill" shall be clean, bank- or pit-run gravel or crushed rock, well graded from coarse to fine. The maximum size shall be 3-inch, with no more than 10 percent of its weight passing a No. 100 sieve.
2. All excavation shall be completed regardless of the type, nature, or condition of the materials encountered. The Contractor shall make his own estimate of the kind and extent of the various materials that will be encountered in the excavation. If unsuitable material is encountered excavate to a surface acceptable to the Engineer.
3. No excavated material shall be removed from the Site except when directed or permitted. Should the Contractor be permitted to remove suitable material from the Site to suit his operational procedure, then he shall make good at his own expense any consequent deficit of filling arising there from.
4. Suitable material and topsoil surplus to the total requirements of the Permanent Works and all unsuitable material from general excavations shall be disposed of in separate spoil heaps on the Site as directed.

202 Unsuitable Material

1. Unsuitable material shall be removed from foundations of Permanent Works and shall be disposed of in spoil heaps on the Site as directed.

203 Support

1. Excavations shall be supported to the extent necessary to secure the surrounding ground and to ensure the safety of the Works, adjacent structures and workers. The Contractor shall be solely responsible for making all excavations in a safe manner.
2. No supports shall be left in excavations without consent by the Engineer.

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204 Excavations to be kept Free of Water

1. The Contractor shall provide and maintain and operate the pumping plant, and shall construct such drains and sumps as may be necessary to remove water from the excavations or to prevent its entrance thereto. Water in the excavations shall be dealt with in such manner as shall prevent the surfaces on or against which foundations or other work shall be constructed from any deterioration of their natural condition.
2. Deterioration of the foundation formation shall be remedied by the Contractor by removing the deteriorated material and replacing it with suitable material as instructed by the Engineer and at the expense of the Contractor.

205 Foundation Levels and Preparation of Foundations

1. Foundation levels shall be at the levels shown on the Drawings or at such levels as may be directed. In the latter case it may be directed that any extra depth of foundation shall be brought up to the levels with suitable material or granular fill compacted as required by the Contract.
2. The Contractor shall make good with suitable material or concrete as may be directed any additional excavation at or below the bottom of foundations to remove material which has become unsuitable.
3. When approaching foundation levels in excavations in material other than rock, the final trimming to these levels shall not take place until placing of the concrete in the foundation is about to commence.
4. In the event of the Contractor requiring to trim the foundations in advance of readiness to place concrete, the trimmed foundations shall be protected against the ingress of moisture or the evaporation of soil moisture.
5. Where foundations are in rock the Contractor shall execute the final trimming of the foundations with approved hand tools.
6. Immediately before placing concrete against rock surfaces, all loose and soft material shall be removed from the rock surface by the use of stiff brooms, hammers, picks and air/water jets. Before the placing of concrete all water shall be removed from depressions and the Contractor shall take all measures necessary to keep dry and properly drained, all rock faces against which concrete is to be deposited.

206 Forming and Compaction of Areas of Fill

1. The areas on which areas of fill are to be constructed shall be stripped of topsoil unless otherwise directed.
2. Areas of fill shall be formed of suitable material. Excavated material may be used if it meets the criteria of Granular Fill, or approved by the Engineer. It must be free from roots or organic matter, or other deleterious materials
3. All earthworks material placed below foundation levels or elsewhere in the Permanent Works shall be deposited in horizontal layers each not exceeding 8 inches thickness before compaction, and extending over the full width of the area of fill. All materials shall be compacted as soon as practicable after being delivered. The areas of fill shall be maintained at all times with a sufficient camber and a surface sufficiently even to enable surface water to drain readily from them.
4. Each layer of material placed in areas of fill shall be compacted mechanically, at optimum moisture content, to 95% Relative Compaction as determined by the most recent version of ASTM D 1557 by a compaction method as approved by the Engineer.

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5. The Contractor shall make all arrangements for a source of water and bear all costs for the delivery of the water to the excavation.
6. Compaction equipment shall be of suitable type and adequate to obtain the amount of compaction as specified. Compaction equipment shall be operated in strict accordance with the manufacturer's instructions and recommendations and shall be maintained in such condition that it will deliver the manufacturer's rated compactive effort.
7. The Contractor shall demonstrate by on site testing that a state of compaction is achieved equivalent to that specified.
8. If the material deposited as fill subsequently reaches a condition such that it cannot be compacted in accordance with the requirements of the Contract the Contractor shall either:
 - a. make good by removing the material off the area of fill and replacing it with suitable material; or
 - b. cease work on the material until its physical condition is again such that it can be compacted as described in the Contract.

207 Areas of Fill to be kept Free of Water

1. The Contractor shall arrange for the rapid dispersal of any water, which enters the Works from any source.

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300 MATERIALS**301 Submission of Samples**

1. As soon as possible after the Contract has been awarded, the Contractor shall submit to the Engineer a list of suppliers from which he proposes to purchase the materials necessary for the execution of the Permanent Works. Each supplier must be willing to admit the Engineer, or his representative, to his premises during ordinary working hours for the purpose of obtaining samples of the materials in question.
2. The information regarding the names of the suppliers may be submitted at different times, as may be convenient, but no sources of supply shall be changed without prior approval.

302 Ready Mixed Concrete

1. Ready-mix concrete shall be used with the prior approval of the Engineer. The Contractor shall satisfy the Engineer that the supplier has the facilities for, and operates procedures for, adequate quality control. The Contractor shall be fully responsible for ensuring that the concrete supplied complies with the Specification, as shown on the Drawings.
2. Water used for the ready-mix concrete shall be clean and free from oil, acid, alkali, organic matter, or other deleterious substances, and of a standard suitable for drinking water, and obtained from a recognized potable water supply. Prior approval of the source of any water to be used with cement shall be obtained from the Engineer. Water used for the ready-mix concrete shall comply with the requirements of ACI 318. Water from the sea or any other surface water shall not be used for concrete.
3. The concrete shall be carried to the site in approved truck mixers, and shall be compacted and in its final position within 1.5 hours of the introduction of cement to the aggregates. The time of such introduction shall be recorded on the delivery note, which shall also record the type of cement, the type and nominal size of the aggregate, and the type or name and proportion of any admixture.

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400 FORMWORK AND CONCRETE*Formwork and Surface Finishes***401 Definition**

1. Formwork shall include all temporary or permanent forms required for forming the concrete, together with all temporary construction required for their support.

402 Adequacy of Formwork

1. The Contractor shall structurally design all forms, falsework, shoring, and other structural formwork required and the design shall comply with all applicable safety regulations and other codes. The designs shall be made available to any governing agency upon request. Comply with applicable portions of ACI 347, ACI 318, and these Specifications. All design, supervision, and construction for safety of property and personnel shall be the Contractor's full responsibility.
2. Forms shall be so constructed that the concrete can be properly placed and thoroughly compacted and that the hardened concrete while still supported by the forms shall conform accurately to the required shape, position and level, and to the finishes specified. Care shall be taken to maintain the stability of the formwork and the tightness of the joints during vibrating operations.

403 Ties and Formwork Supports in Concrete

1. The material, type and position of any ties through concrete shall be approved. The whole or part of the ties shall be capable of being removed so that no part remaining embedded in the concrete shall be nearer to the surface of the concrete than the specified thickness of cover to the reinforcement in the same member.
2. In general structural concrete, holes left after the removal of ties shall be carefully cleaned out and filled with concrete or mortar of approved composition.

404 Beveled Edges (Chamfer)

1. Form 1-inch bevels at all exposed/visible concrete edges.

405 Removal of Debris

1. Rubbish, debris and water shall be removed from the interior of forms before concrete is placed.

406 Formwork

1. Form surfaces shall be in "new and undamaged" condition and may be plywood, hard plastic finished plywood, overlaid waterproof particleboard, and steel of sufficient strength and surface smoothness to produce the specified finish.
2. All joints in forms shall be designed so that the joint will remain watertight and withstand placing pressures without bulging outward or creating surface patterns.

407 Preparation of Formwork before Concreting

1. All wood surfaces in contact with the concrete shall be coated with an effective release agent prior to form installation. The release agent shall be non-staining and non-toxic after 30 days. Such materials shall be applied strictly in accordance with the manufacturer's instructions and shall not come into contact with the reinforcement. Only one manufacturer's type of such material shall be used in formwork to concrete that shall be visible in the finished Permanent Works.

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408 Notice of Intention to Place Concrete

1. Notify Engineer at least 1 full working day in advance before starting to place concrete to permit inspection of forms, reinforcing, or other work approved for installation in concrete. Concrete shall not be placed in any part of the structure without the consent of the Engineer.

409 Type of Finish

1. Slabs shall be finished by screeding with straightedges to bring the surface to the required finish plane. Slab shall be wood floated to compact and seal the surface, and to produce a uniform finish free from screed or float marks. Floating shall be done only after any excess surface water has had time to dissipate and the concrete has hardened sufficiently.

410 Tolerances

1. Localised depressions in a slab shall not be more than 1/8 inch when a 10-foot straightedge is placed upon the high points in any direction or at any location of a single plane of a given slab.

*Steel Reinforcement***411 Materials**

1. Deformed billet-steel bars shall conform to ASTM A 615, Grade 60, including Supplemental Requirements S1.
2. Tie wire shall be 16-gauge, black, soft-annealed wire.
3. Bar supports shall be small rectangular concrete blocks of the same colour and same strength as the concrete being placed around them.

412 Storing and Cleaning

1. Steel reinforcement shall be stored in clean conditions. It shall be clean and free from mortar, loose rust and loose mill scale at the time of fixing in position and subsequent concreting.

413 Cutting and Bending Reinforcement

1. Reinforcement shall be cut and/or bent in a manner that shall not injure the material.
2. Cold worked and hot rolled bars having been bent shall not be straightened or bent again.

414 Fixing Reinforcement

1. Reinforcement shall be fixed in the positions shown on the Drawings. Protection, spacing, and positioning of reinforcement shall conform to the current edition of the ACI Standard Building Code Requirements for Reinforced Concrete (ACI 318), reviewed placing drawings and design drawings.
2. Unless otherwise approved, all intersecting bars shall be tied together with approved wire and the ends of the wire shall be turned into the main body of the concrete.
3. Location Tolerances shall conform to the current edition of "Placing Reinforcing Bars" published by Concrete Reinforcing Steel Institute and to the Details and Notes on the Drawings.
4. Splices in adjacent bars shall be staggered and shall conform to Drawings and current edition of ACI Code 318.
5. Reinforcement shall not be welded.

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415 Concrete Mixes

1. The Contractor shall be responsible for selecting the mix proportions to produce the performance required by the Contract.
2. Design of Concrete Mix
 - a. The concrete shall be proportioned in accordance with ACI 211 subject to the following specifications.
 - b. Design the mix and perform tests to meet the following requirements:
 - (i) Design strength shall be 4,000 psi at 28 days, unless otherwise shown on the Drawings or specified herein.
 - (ii) The water-cement ratio shall not exceed 0.46, unless otherwise approved in writing by the Engineer.
 - (iii) The minimum cement content shall be 517 pounds per cubic yard of concrete. The maximum cement content shall be 675 lbs per cubic yard of concrete.
 - (iv) Superplasticizers shall not be used in concrete.
3. The Contractor shall confirm that the designed mixes produce the required performance by supplying satisfactory evidence that a proposed mix is in continuous production and has provided concrete complying with the requirements of the Contract.
4. The workability of concrete used in each pour of structural concrete or as directed by the Engineer shall be determined using the Slump Cone Test. The slump so measured shall not be more than 6 inches, nor less than 3 inches.
5. The Contractor shall inform the Engineer of any variations that are made to the proportions of an approved mix. Variations in the constituent materials shall be made only with the approval of the Engineer who may require further tests to be made.
6. Conform to ACI Standard Building Code Requirements for Reinforced Concrete (ACI 318), "Evaluation and Acceptance of Concrete", and to the following:
 - i. The Contractor will make or have tests made to determine compliance with the Specifications as specified or directed, and shall keep appropriate records clearly identifying date of pour, final location and other such data as the Engineer may require.
 - ii. The Contractor shall furnish the necessary labour to assist testing agencies in obtaining, handling, and protecting and/or curing samples at the jobsite. The Contractor shall provide adequate facilities for safe storage and proper curing of concrete test cylinders on the site for the first 24 hours, and for additional time as may be required before transporting to the test lab. Specimens will be made, cured, and tested in accordance with ASTM C 31 and STMC C 39.

416 Admixtures

1. Admixtures or cements containing additives shall not be used unless otherwise directed or approved.
2. If the Contractor seeks approval for the use of an additive he shall provide the Engineer with the following information :
 - the typical dosage and the detrimental effects, if any, of under or over dosage,
 - the chemical name(s) of the main active ingredient(s) of the admixture,
 - whether or not the admixture leads to the entrainment of air when used at the manufacturer's recommended dosage.

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3. Calcium chloride shall not be used in concrete containing reinforcement or other embedded metal items.

417 Transport and Placing of Concrete

1. The method of transport and placing concrete shall be approved by the Engineer. Concrete shall be so transported and placed that contamination, segregation or loss of the constituent materials does not occur.
2. If concreting is not started within 24 hours of consent being given, consent shall again be obtained. Concreting shall then proceed continuously over the area between construction joints. Fresh concrete shall not be placed against in situ concrete that has been in position for more than 30 minutes unless a construction joint is formed in accordance with Clause 423. When in situ concrete has been in place for 4 hours, or less if directed, no further concrete shall be placed against it for a further 20 hours. In the case of vertical joints the minimum period shall be 3 days, and for infill panels, 7 days.
3. Before depositing concrete, remove debris from the space to be occupied by the concrete. Prior to placement of concrete, dampen gravel fill under slabs on ground. Reinforcement shall be secured in position and acceptable to the Engineer before concrete is placed. Conform to ACI 304 and ACI 318 and to other requirements needed to obtain the finishes specified.
4. Concrete shall be compacted in its final position within 30 minutes of discharge from the mixer.
5. When trunking or chutes are used they shall be kept clean and used in such a way as to avoid segregation of the mix.
6. Water shall not be allowed to flow over or exert any pressure against concrete until at least 48 hours after deposition.
7. Where concrete is to be pumped, details of the methods and plant to be used shall be approved.
8. The re-tempering of concrete in which the cement has partially hydrated will not be permitted.
9. No water shall be added to the approved concrete mix after leaving the batching plant without prior approval of the Engineer

418 Compaction of Concrete

1. All concrete shall be compacted to produce a dense homogeneous mass.
2. Concrete shall be consolidated with internal vibrators having a frequency of at least 8000 vpm, with amplitude required to consolidate the concrete in the section being placed.
3. At least one standby vibrator in operable condition shall be at the placement site prior to placing the concrete. Consolidation equipment and methods shall conform to ACI 309.
4. Vibration shall be carried out in accordance with accepted practice. Vibration shall not be applied by way of the reinforcement and/or the formwork or its supports. Vibrators shall not be used to move concrete around within the formwork.
5. Concrete shall not be subjected to vibration between 4 and 24 hours after compaction.

419 Removal of Formwork

Contractor's Initials or Stamp :

1. The Contractor shall give the Engineer reasonable notice of his intention to strike any formwork. The time at which the formwork is struck shall be the Contractor's responsibility.
2. Forms shall be removed without shock, vibration or other damage to the concrete. The Contractor shall be responsible for all damage resulting from improper and premature removal of forms.

420 Curing of Concrete

1. The Contractor shall keep all concrete moist for a period of at least 7 days commencing immediately after the concrete has been placed. The concrete shall be covered with burlap or cotton mats or sacking, and kept thoroughly wet with water at ambient temperature. In certain circumstances, and with the approval of the Engineer, a sprayed membrane forming curing compound, which complies with ASTM C-309, may be used.

421 Early Loading

1. Concrete shall at no time be subjected to loading which shall induce a compressive stress in it exceeding 0.33 of its compressive strength at the time of loading or of the specified 28 day strength.
2. For the purpose of this Clause, the assessment of the strength of the concrete and the stresses produced by the loads shall be subject to the agreement of the Engineer.

422 Quality of Finish

1. The quality of the finish shall be as indicated in the Contract, and shall not be inferior to that described herein.
2. If any portion of the facework should prove unsatisfactory on removal of the formwork it shall, without delay, be cut out and made good as directed. No plastering of concrete surfaces shall be allowed. At the discretion of the Engineer, board marks or minor discontinuities on exposed faces may be removed by rubbing down with carborundum, and pinholes, small voids or minor porosity of the surface, may be filled, by rubbing down with cement and sand mortar of the richness as in the concrete. Treatment shall be made immediately after removing the formwork.
3. Any concrete, the surface of which has been treated without consent, shall be liable to rejection.

Joints

423 Construction Joints

1. A construction joint is a joint in the concrete introduced for convenience in construction, at which measures are taken to achieve subsequent continuity with no provision for further relative movement.
2. Where construction joints are not shown in the Contract, the Contractor shall submit for approval proposals for the layout and details of construction joints before concreting is started.
3. Where horizontal construction joints are required, the concrete shall be screeded off.
4. The surface film of the first placed concrete shall be removed whilst the concrete is still green, to expose the aggregate and leave a sound, irregular surface.
5. Just before concreting is resumed, the roughened joint surface shall be thoroughly cleaned, freed from loose mortar and slightly wetted. The Contractor shall take special care to avoid segregation of the concrete along the joint plane and to obtain full compaction.

Contractor's Initials or Stamp :

424 Concrete Protection

1. A protective coating shall be applied to any concrete that will be in direct contact with the stored water. The concrete coating shall provide an impermeable barrier and shall be non-toxic and be NSF and/or EPA approved for use with potable water.
2. The protective coating shall be selected by the contractor and approved by the Engineer. The contractor shall submit manufacturer's data sheet on the protective coating for the Engineer's approval. If applicable, the contractor shall provide documentary evidence that the selected protective coating is compatible with the approved sprayed membrane forming curing compound which complies with ASTM C-309 (Section 420).
3. The selected and approved protective coating shall be placed in strict accordance with the manufacturer's instructions and recommendations.
 - Xypex® Admix C-1000 is an acceptable product for use as a protective coating as per Sub-Clause 424 (Concrete Protection).

Contractor's Initials or Stamp :

500 TESTING, STERILIZATION, QUALITY CONTROL

501 Testing - General

- i. In order to potentially conserve as much (costly) potable water as possible, the Contractor shall sterilize the water storage tank prior to testing it for water tightness.

502 Sterilisation

1. Prior to testing the water storage tank for water tightness, it shall be sterilized (disinfected) in the following manner :
 - i. The Contractor shall thoroughly clean the bottom of the tank and remove any foreign matter from the tank (nuts, bolts, sand, paper, rags, oil etc.) prior to sterilizing the tank.
 - ii. The tank shall then be disinfected as per AWWA C652-02 (Disinfection of water storage facilities), and in particular the following (modified) sections:
 - (a) Section 4.3.1.3 Calcium hypochlorite use. Calcium hypochlorite granules may be carried into the storage facility through the inspection manhole in the storage facility. The granules shall be placed in the storage facility before flowing water into it. The granules shall be located so that the inflowing water will ensure a current of water circulating through the calcium hypochlorite, dissolving it during the filling operation. The calcium hypochlorite shall be placed only on dry surfaces unless adequate precautions are taken to provide ventilation or protective breathing equipment.
 - (b) Section 4.3.3 Chlorination Method 3: Water and chlorine shall be added to the storage facility in amounts such that the solution will initially contain 50 mg/L available chlorine and will fill approximately 5 percent of the total storage volume (liquid depth approximately 12 inches). This solution shall be held in the storage facility for a period of not less than 6 hr. The storage facility shall then be filled to the overflow level by flowing potable water into the highly chlorinated water. It shall be held full for a period of not less than 24 hr.
 - (c) Upon completion of the test for water tightness (see Section 503) the Employer shall dispose of the waste chlorine solution

503 Testing - Water tightness

1. i. After the water storage tank has been sterilized (see Clause 502), it shall be tested for water tightness by filling with water from a source provided by the Employer, and at a rate to be approved by the Engineer. The water level shall then be recorded by approved means, and the water shall be allowed to stand for a period of 24 hours, after which time the total permissible drop, after making due allowance for evaporation, does not exceed 1/4 inch.

Note 1: Water required for testing (and sterilization) of the tank shall be furnished by the Employer without charge up to a quantity of 2.0 million US gallons (per tank). Any additional quantities shall be furnished by the Employer at cost (US\$ 14.00 per 1,000 US gallons).

Note 2: A 2-inch nominal diameter connection to the piped water supply shall be made available to the Contractor for filling purposes. This connection shall be capable of providing water at a rate of approximately 150 US gpm. The Contractor shall include in his rates for the installation of a (flexible or rigid) fill line, between the location of this connection and the tank, in a manner to be approved by the Engineer. This connection to the piped water supply shall be provided at a distance not exceeding 200 feet from the tank location.
- ii. If leakage occurs, the Contractor shall be required to make good any defects in accordance with the Contractor's specifications, and repeat the test for water tightness, all at his own expense.

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- iii. The Contractor shall take all necessary precautions to prevent or reduce contamination of the water storage tank by his personnel or his activities after the tank has been sterilized in accordance with Clause 502.
2. The successful hydraulic testing of the tank shall not relieve the Contractor of his obligation to immediately repair any visible leaks at his own expense.

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600 WATER STORAGE TANK

601 General

1. The factory-coated, glass-fused-to-steel bolted-steel water storage tank shall be manufactured complete with accessories as described herein, and shall have a capacity as indicated in Sub-Clause 603.1 of this specification. The storage tank shall be suitable for the storage, without leakage, of potable water, and shall be approved for such use by AWWA and NSF.
2. All connections (e.g., Inlet, Outlet, Overflow, and By-Pass) shall have the same internal and external coating system as the main tank (see Clause 603) or, alternatively, shall be made of stainless steel. Bottom man-way door and roof manhole shall be made of stainless steel. No galvanized steel will be allowed for these appurtenances.
3. All the materials necessary for the assembly of the storage tank shall be supplied by the Contractor in one complete package. The Contractor shall supply design calculations for the structural integrity of the storage tank under the conditions described in Sub-Clause 603.7, together with complete assembly instructions for the storage tank.
4. The tank foundation shall be designed and certified by a licensed (or chartered) civil or structural engineer to safely sustain the structure and its live loads under the conditions described in Sub-Clause 603.7. The tank foundation shall be based on 1,800 psf soil bearing capacity. The Contractor shall supply working drawings of the foundation details.
5. The Contractor will also be required to make available an experienced erection crew to construct the foundation and assemble the storage tank, including all appurtenances. An experienced erection supervisor, to be approved by the Employer, shall supervise the erection crew. Any person nominated for the post of erection supervisor shall have supervised the successful erection of multiple storage tanks of similar size and identical components, and the Contractor shall submit evidence of such experience.

602 Submittal Drawings and Specifications

1. Construction shall be governed by the Employer's specifications showing general dimensions and construction details. After approval by the Engineer of detailed erection drawings prepared by the Contractor, there shall be no deviation from these drawings and specifications except upon written order or approval from the Engineer.
2. The Contractor shall furnish for the approval of the Engineer three (3) complete sets of specifications and construction drawings. When approved, one set of such prints shall be returned to the Contractor marked "Approved" and these drawings will then govern the work detailed thereon. The approval by the Engineer of the Contractor's drawings shall be an approval relating only to their general conformity with the tender specifications and shall not guarantee detail dimensions and quantities. All such submissions shall be stamped by either a Registered Professional Engineer in full time employ of the Contractor and licensed in the state where the tank Contractor is located, or alternatively a Chartered Engineer.
3. The following shall be included with the submittal information:
 - a. Two (2) copies of the Contractor's erection manual;
 - b. Standard colour chip for exterior colour: Sky Blue or similar approved

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603 Design Criteria, Codes, And Standards

1. The tank shall have an approximate capacity of 2.0 million US gallons. Tank diameter shall not exceed 125 feet. Tank wall height shall not exceed 23 feet.
2. The tank shall be circular, constructed of carbon steel and shall be designed, fabricated, erected, inspected, and tested in strict accordance with the American Water Works Association Standard ANSI/AWWA D103-97 (Factory-Coated Bolted Steel Tanks for Water Storage). Designs in accordance with European Standard EN 15282 will not be considered equal.
3. The tank internal and external coating system shall conform to Section 10.4 of the AWWA D103-97 specification.
 - a. The dry film thickness of the glass on the inside surface of every panel shall be maintained in the range of 10.0 – 18.0 mils (0.010 to 0.018 inches), unless approved otherwise by the Engineer.
 - b. The dry film thickness of the glass on the outside surface of every panel shall be maintained in the range of 6.0 – 11.0 mils (0.006 to 0.011 inches), unless approved otherwise by the Engineer.
 - c. All sheet edges, bolt holes and pre-formed openings shall have at least a limited glass cover.
4. The tank shall have a flat concrete base that shall be placed in accordance with Sections 11.4 type 6, 11.5, and 11.6 of the AWWA D103-97 specification. A tank with an integral steel bottom shall not be allowed.
 - a. Tank shall utilize an embedded starter ring foundation with ring wall footer.
 - b. Starter ring shall be embedded into foundation by a minimum of 8".
 - c. Slot mount or curb mount designs shall not be acceptable.
5. The tank shall be supplied with an aluminium free-span geodesic dome roof as specified in AWWA D103-97, Section 13. A tank with a steel deck, supported by columns, shall not be allowed.
6. Interior coatings shall be NSF approved, and for ease of inspection the interior colour of the tank panels shall not be dark.
7. The design loads shall be as follows:
 - a. Specific gravity of stored liquid: 1.00
 - b. Maximum wind velocity: 150 mph
 - c. Roof Live Load: 25 psf
 - d. Earthquake: Seismic zone 2B as per AWWA D103-97
Use the following in Figure 11A of AWWA D103-97:

Zone Coefficient Z:	0.20 (Seismic Zone 2B)
Force Reduction Coefficient R_w	3.5
Site Amplification Factor S:	1.0 (Soil Profile Type A)
Use Factor I:	1.25
Vertical Acceleration:	No
Freeboard (feet):	0
Seismic design of roof:	No
 - e. Tank to store: Potable Water

604. Appurtenances

1. The Contractor shall furnish and install the following appurtenances:
 - a. The tank roof shall have a curbed, upward opening 24 inches square or circular manhole located near the external tank ladder. The curb shall extend at least three (3) inches above

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the tank. The hatch cover lip shall be hinged and provisions made for locking. The hatch and cover shall be 316 stainless steel or aluminium.

- b. Inlet, outlet, overflow and by-pass connections shall conform to the sizes specified below and at the locations specified on the attached Drawings (C.03.00 and C.05.00). All connection openings should preferably be cut into the steel panels in the factory before coating preparation and application. Field cutting of openings should be avoided, if possible. Field cuts must be coated as per manufacturer's recommendations and instructions. The following bolt-on nozzles shall be provided with flat-face plate flanges drilled in accordance with ISO 2531/BS 4504, PN16 specifications. All bolt-on nozzles shall be stainless steel. **Galvanized nozzles shall not be allowed.**

- i. Overflow: 1 each, eight (8) inch diameter with internal weir box (box coated same as tank interior), and projecting at least twelve (12) inches beyond the tank shell. The overflow shall be so designed and constructed as to prevent the entrance of birds, insects or other animals.
 - ii. Inlet: 1 each, eight (8) inch diameter
 - iii. Outlet: 2 each, eight (8) inch diameter
 - iv. By-pass: 2 each, three (3) inch diameter
- c. A mushroom-screened vent shall be furnished above maximum water level of sufficient size to accommodate normal inlet and outlet water flow (maximum flow 1,000 US gallons per minute). The overflow pipe shall not be considered to be a tank vent. The vent shall be so designed and constructed in such a manner to prevent the entrance of birds, insects or other animals.
- d. An external tank ladder, OSHA approved, shall be furnished at the location designated on the Drawings. Ladder and safety cages shall be fabricated from corrosion resistant materials.
- e. A level gauge shall be mounted 48-60 inches above the tank base, at a location specified determined on site, which shall accurately indicate the water level in feet. Connection to the tank shall be such to enable removal of the gauge for service, repair or replacement without loss of tank contents.
 - i. Alternatively a liquid level indicator with gauge board (with graduation in feet) may be mounted on the outside of the tank. The target indicator, connected by a cable to a float inside the tank, shall accurately indicate the water level.
- f. A 30-inch diameter bottom man-way door, made of 316 stainless steel.
- g. A sump (minimum dimensions: 18-inch square, and 6-inch deep) shall be provided in the flat concrete base, situated no more than 15 feet from the bottom man-way door. Proper allowances shall be made in the structural design of the flat concrete base for this sump.

2. Miscellaneous Items

- a. All bolts in contact with the stored liquid shall be provided with nitrile or neoprene backed steel washers for placement between the nuts and the steel sheets. Other joints shall have steel flat washers under the nuts to protect the external coating. Hardware exposed on the interior and exterior of the tank shall be plastic covered to protect against corrosion.
- b. Exterior colour shall be Sky Blue or similar colour approved by the Engineer. Exterior plastic nut protection shall be the same colour as the exterior tank colour.
- c. All internal appurtenances (e.g., float, indicator cable) shall be manufactured from corrosion resistant materials, such as stainless steel. **Galvanized appurtenances shall not be allowed.**
- d. Sacrificial anodes shall be provided with each tank. Sacrificial anodes shall be selected by the contractor and approved by the Engineer. The anodes shall be sized to provide a minimum service life of three (3) years, and preferably shall be able to be replaced without the need to empty the tank. Sacrificial anodes shall be installed in strict accordance with the manufacturer's instructions and recommendations.

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605 Shipping

1. All plates, supports, members, and miscellaneous parts shall be packaged for shipment in such a manner to prevent abrasion or scratching of the finished coating. Packaging shall be such that all plates shall be separated from each other. Stacking of plates shall not be allowed.

606 Erection

1. The field erection of the factory-coated bolted steel tank shall be in strict accordance with the Contractor's specifications. The Contractor shall insure that the erection crew comprise personnel knowledgeable in the erection of gasketed, bolted steel tanks.
2. All other civil engineering works shall be in strict accordance with the Water Authority's specification.
3. The foundation shall be level with differential not exceeding 1/8 inch in any 30-foot circumference. The levelness on the circumference shall not vary by more than $\pm 1/4$ inch from an established plane.
4. Particular care shall be exercised in handling and bolting of the tank plates, supports, and members to avoid abrasion or scratching of the coating. Any damaged areas shall be repaired with Contractor-supplied touch-up paint in strict accordance with Contractor's specifications where and as directed. If, at any time during the erection of the storage tank, the Engineer is of the opinion that any part of the plant is damaged to such an extent that repair with touch-up paint will not be adequate, he shall inform the erection supervisor and the Contractor shall replace this part with all possible speed at his own expense.

607 Warranty

1. The Tank Manufacturer shall warrant the tank against any defects in workmanship and materials for a period of five (5) years from the date the erection supervisor certifies that the erection of the tank has been carried out in strict accordance with the Tank Manufacturer's specifications and instructions. In the event any such defects should appear, it shall be reported in writing to the Tank Manufacturer during the warranty period and the Tank Manufacturer shall make good any such defects.

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CHEMICAL ANALYSIS OF POTABLE WATER TO BE STORED IN TANK

[illegible]

NOTE: samples collected @ Andean Reservoir Site, n# = not done, n# = not applicable, n# = not moraine, BCL = flow detection limit
Marcela Alvarez (Earth Laboratory Manager)

Ocean Conversion (GCM Red Gate) RO Product Water Biannual Analysis



Water Authority-Cayman

Contractor's Initials or Stamp :

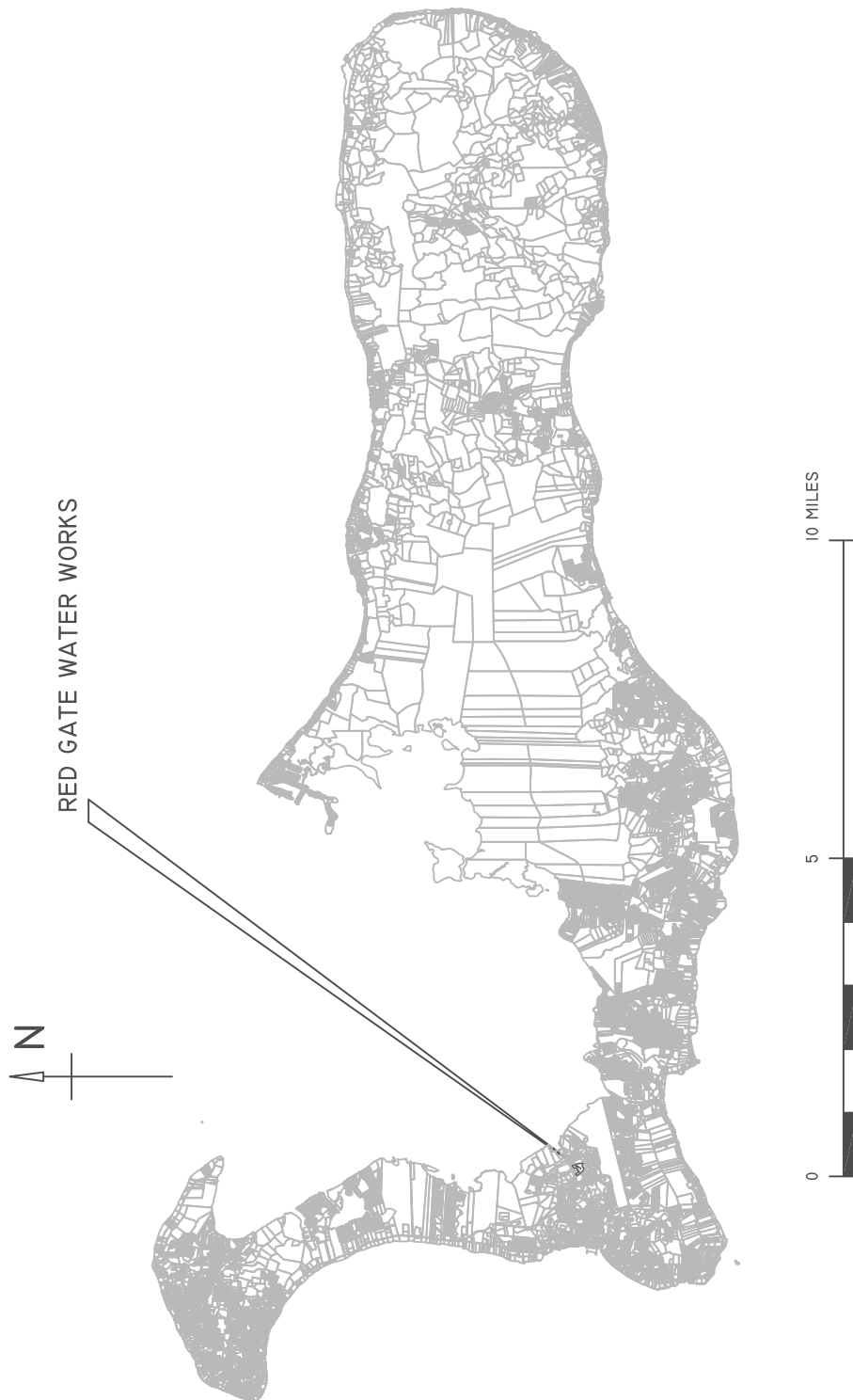


Ocean Conversion (GCM North Sound) RO Product Water Annual Analysis

PARAMETER - BIENNIAL ANALYSIS (all results in mg/L, unless otherwise stated)	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	Sample Date	WHO Health Based Guidelines	Aesthetic Guidelines
Alkalinity	30-Jun-03	31-Mar-04	12-Dec-05	09-Jul-07	08-Dec-08	30-Nov-09	05-Dec-11	05-Aug-13	20-Jun-16			none	none
Aluminum	n/a	0.4	0.0	14.5	n/r	0.2	1.5	0.6	2.0			none	0.2
Ammonia	0.000	0.000	0.000	0.000	0.000	0.000	<0.005	<0.005	<0.005			none	1.5
Bicarbonate	0.010	0.012	0.008	0.008	0.042	0.132	<0.017	0.114	<0.017			none	1.5
Boron	n/a	0.5	0.0	17.7	n/r	0.2	1.8	0.7	2.4			none	none
Calcium	0.4	0.4	0.6	0.1	0.6	0.8	1.2	1.4	0.4			none	none
Chloride	70	83	100	84	106	-	111	116	80			none	> 250
Copper	0.000	0.018	0.034	0.000	0.004	0.005	<0.021	0.035	<0.021			2	>1
Hardness	4.0	14.0	16.5	5.5	4.5	5.0	4.5	8.5	4.0			none	200-500
Iron	0.006	0.000	0.021	0.000	0.001	0.020	0.008	<0.008	<0.008			none	0.3
Magnesium	0.7	3.2	3.9	1.3	0.7	0.7	0.3	0.6	0.7			none	none
Nitrate as N	0.0	0.0	0.1	0.1	0.0	1.1	<0.1	<0.1	-			50 as NO ₃ ⁻	none
Orthophosphate	0.000	0.024	0.051	0.014	0.000	0.020	<0.045	<0.045	<0.045			none	200
Sodium	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d			none	250
Sulphate	0.2	0.5	1.3	0	11.8	1.8	9.5	12.5	3.7			none	0.05
Sulphide	0.001	0.000	0.000	0.061	0.001	0.001	0.020	<0.002	0.010			none	3
Zinc	0.014	0.012	0.035	0.000	0.008	0.019	0.009	0.031	0.010			none	3
PARAMETER - DAILY ANALYSIS (all results in mg/L, unless otherwise stated)													
Total dissolved solids	109	148	150	150	188	163	188	213	195			none	1000-1200
Electrical conductivity $\mu S/cm$	229	286	326	289	387	356	392	405	291			none	none
Total chlorine residual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a			none	5
Free chlorine residual	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a			none	5
pH units	5.63	6.89	4.89	7.00	6.06	6.80	6.82	6.95	5.94			none	6.5-9.5
Total coliform bacteria cfu/100ml	0	0	0	0	BDL	BDL	<1	<1.0	<1.0			0	n/a
E. coli cfu/100 ml	0	0	0	0	BDL	BDL	<1	<1.0	<1.0			0	n/a
Thermotolerant coliform bacteria cfu/100ml	0	0	0	0	n/d	n/d	n/d	n/d	n/d			0	n/a
Heterotrophic Plate Count cfu/ml	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a			none	none

NOTE: Samples collected @ Red Gate Reservoir Site; n/d = not done; n/a = not applicable; n/r = not reportable; BDL=Below Detection Limit
 Marcela Martinez Ebanks, Laboratory Manager

Contractor's Initials or Stamp :



WAC PROJECT NO. PI27		DATE: 23/10/17	
DRAWING NO. C-01		DRAWN BY: MBT	
SCALE AS SHOWN	VIEW	CHECKED: TVZ	
SHEET 1 OF 4	REV 0		

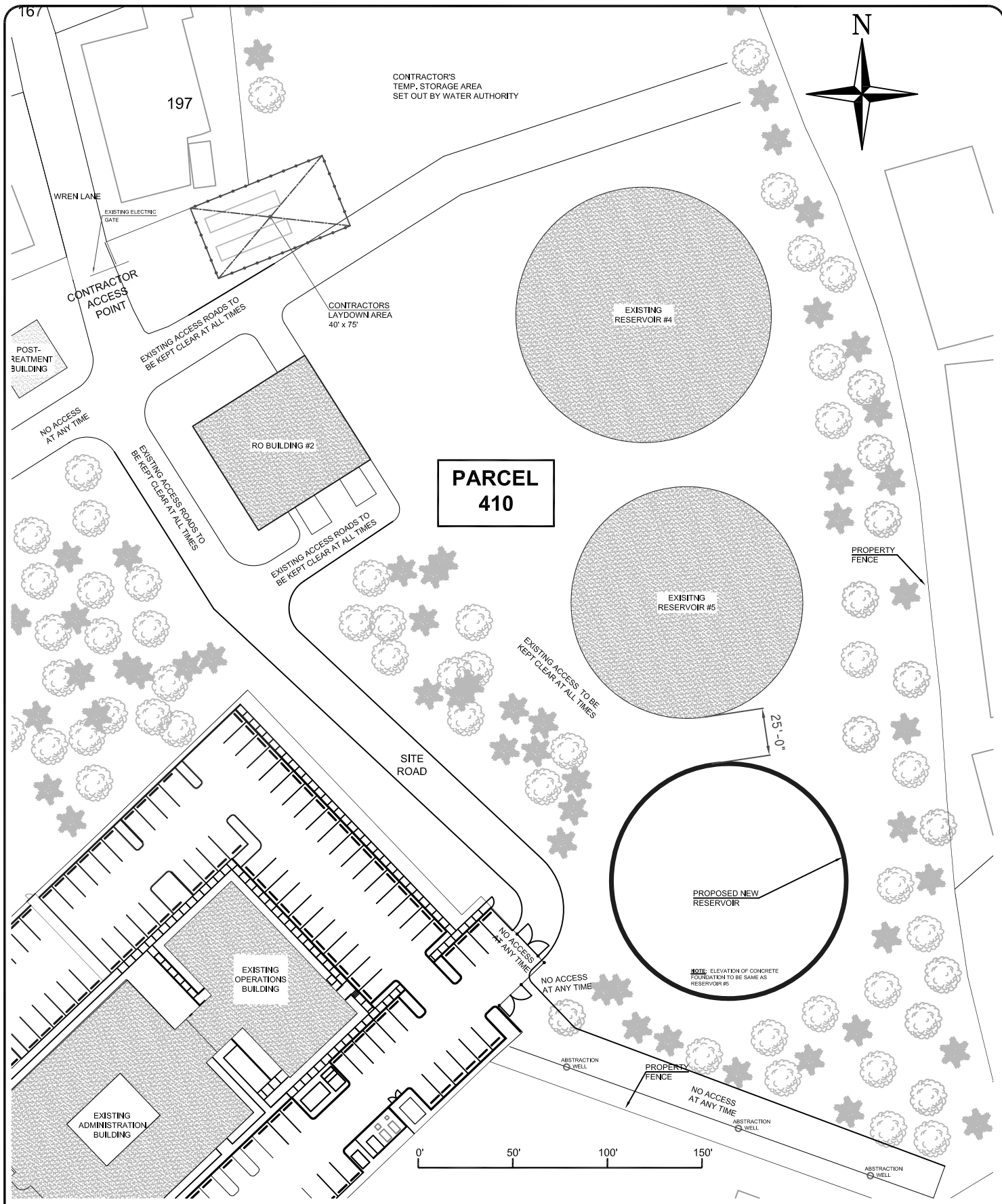
RED GATE WATER WORKS - STORAGE TANK - 2017

GRAND CAYMAN - LOCATION OF
RED GATE WATER WORKS



WATER AUTHORITY - CAYMAN
P.O. BOX 1104, GT
CAYMAN ISLANDS
345-949-6352

0	23/10/17	MBT	PRELIMINARY ISSUE FOR TENDERING
REV	DATE	BY	DESCRIPTION



WAC PROJECT NO. PI27		DATE: 23/10/17
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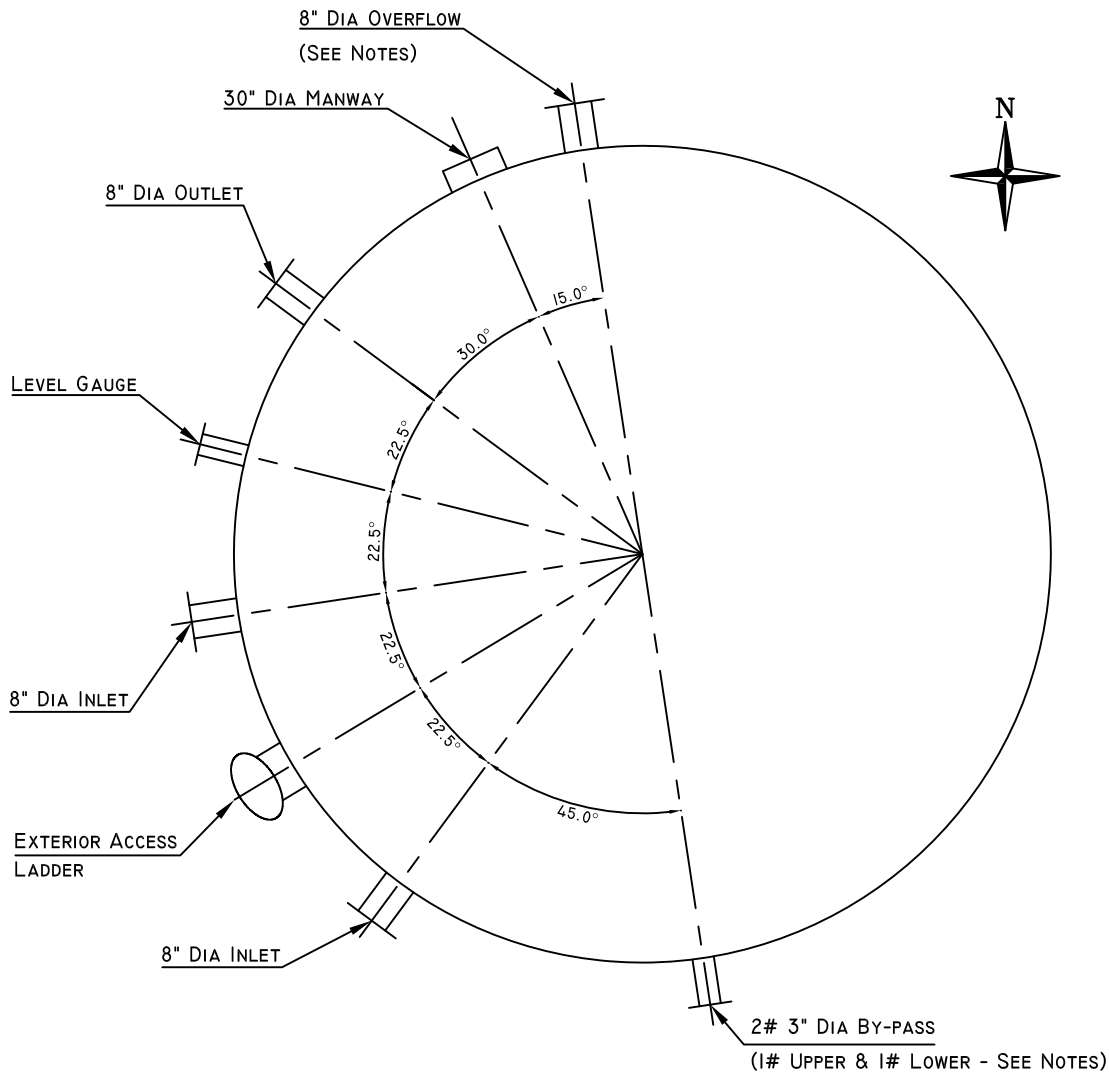
**RED GATE WATER WORKS -
STORAGE TANK - 2017**

SITE PLAN, WORKING AREA,
STORAGE AREA & SITE ACCESS

WAC

WATER AUTHORITY - CAYMAN
P.O. BOX 1104, GT
CAYMAN ISLANDS
345-949-6352

REV	DATE	BY	DESCRIPTION
0	23/10/17	MBT	PRELIMINARY ISSUE FOR TENDERING



APPURTENANCES

NOTES

1. INLETS, OUTLETS AND BOTTOM BY-PASS NOZZLE TO BE LOCATED AS CLOSE AS PRACTICABLE TO THE TANK BASE.
2. OVERFLOW AND UPPER BY-PASS NOZZLE TO BE LOCATED NEAR TANK ROOF.
3. THE LOCATION OF EACH APPURTENANCE INDICATED ABOVE IS FOR INFORMATION ONLY, ACTUAL LOCATION WILL BE CONFIRMED ON SITE DURING CONSTRUCTION

WAC PROJECT NO. PI27		DATE: 23/10/17
DRAWING NO. C-03		DRAWN BY: MBT
SCALE NTS	VIEW	CHECKED:
SHEET 3 OF 4	REV 0	TVZ

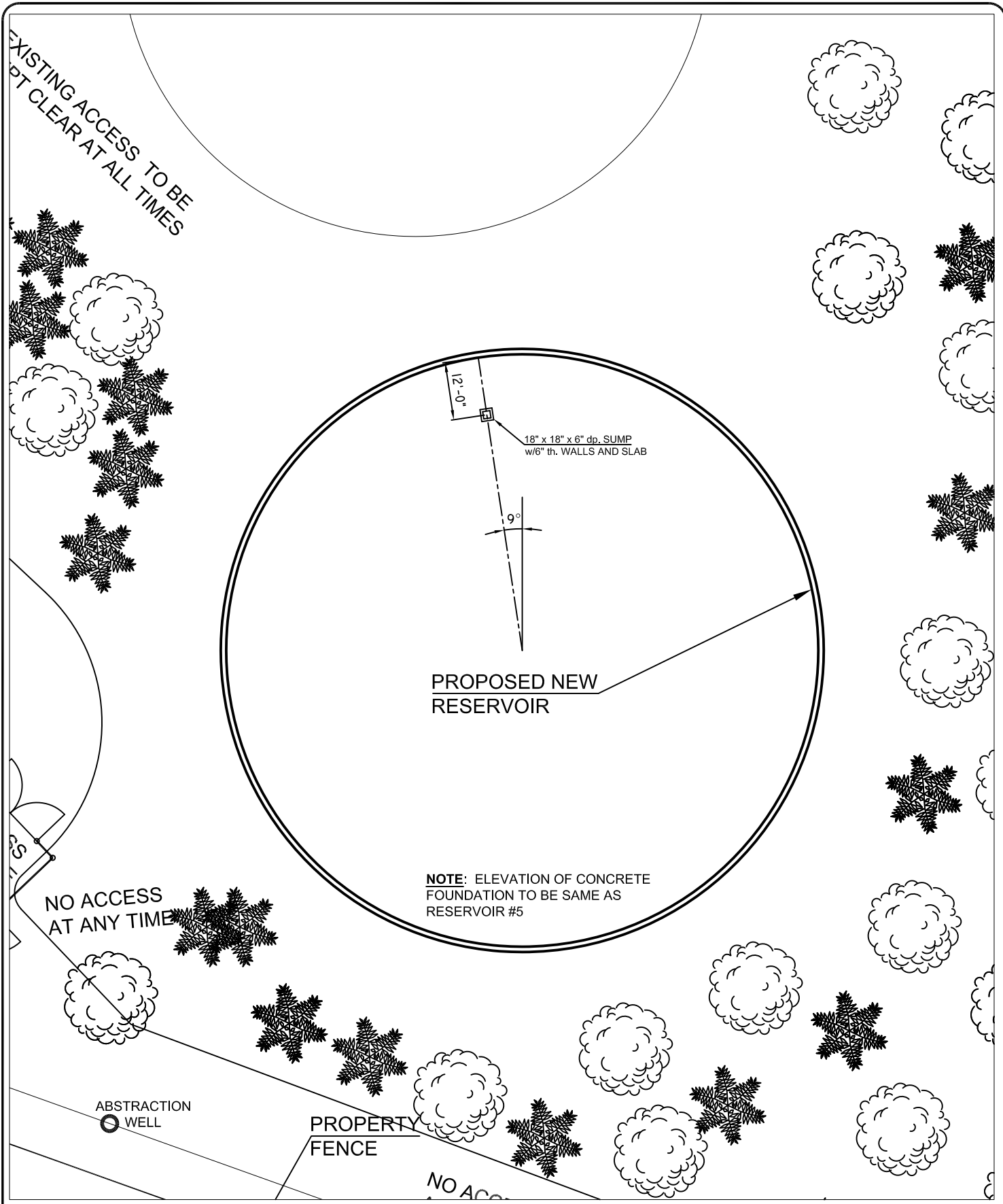
RED GATE WATER WORKS - STORAGE TANK - 2017

LOCATION OF APPURTENANCES



WATER AUTHORITY - CAYMAN
P.O. BOX 1104, GT
CAYMAN ISLANDS
345-949-6352

0	23/10/17	MBT	PRELIMINARY ISSUE FOR TENDERING
REV	DATE	BY	DESCRIPTION



WAC PROJECT NO. P 127		DATE: 23/10/17	
DRAWING NO. C-04		DRAWN BY: MBT	
SCALE NTS	VIEW	CHECKED:	
SHEET 4 OF 4	REV 0	TVZ	

RED GATE WATER WORKS -
STORAGE TANK - 2017

SUMP LOCATION

MC

WATER AUTHORITY - CAYMAN
P.O. BOX 1104, GT
CAYMAN ISLANDS
345-949-6352

0	23/10/17	MBT	ISSUE FOR CONSTRUCTION
REV	DATE	BY	DESCRIPTION

SHORT FORM of Contract

AGREEMENT

GENERAL CONDITIONS

RULES FOR ADJUDICATION

NOTES FOR GUIDANCE

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FEDERATION INTERNATIONALE DES INGENIEURS-CONSEILS
INTERNATIONAL FEDERATION OF CONSULTING ENGINEERS
INTERNATIONALE VEREINIGUNG BERATENDER INGENIEURE
FEDERACION INTERNACIONAL DE INGENIEROS CONSULTORES



FOREWORD

These Conditions of Contract have been prepared by the Fédération Internationale des Ingénieurs-Conseils (FIDIC) and are recommended for engineering and building work of relatively small capital value. However, depending on the type of work and the circumstances, the Conditions may be suitable for contracts of greater value. They are considered most likely to be suitable for fairly simple or repetitive work or work of short duration without the need for specialist sub-contracts.

The main aim has been to produce a straightforward flexible document which includes all essential commercial provisions and which may be used for all types of engineering and building work with a variety of administrative arrangements. Under the usual arrangements for this type of contract, the Contractor constructs the Works in accordance with design provided by the Employer or by his representative (if any). However, this form may also be suitable for contracts which include, or wholly comprise, contractor-designed civil, mechanical and/or electrical works.

In addition, the Employer has a choice of valuation methods. Furthermore, although there is no reference to an impartial Engineer, the Employer may appoint an independent Engineer to act impartially, should he wish to do so.

The form is recommended for general use, though modifications may be required in some jurisdictions. FIDIC considers the official and authentic text to be the version in the English language.

The intention is that all necessary information should be provided in the Appendix to the Agreement, the latter incorporating the tenderer's offer and its acceptance in one simple document. The General Conditions are expected to cover the majority of contracts. Nevertheless, users will be able to introduce Particular Conditions if they wish, to cater for special cases or circumstances. The General Conditions and the Particular Conditions will together comprise the Conditions governing the rights and obligations of the parties.

To assist in the preparation of tender documents using these Conditions, Notes for Guidance are included. These Notes will not become one of the documents forming the Contract. Finally, applicable Rules for Adjudication are also included.

The attention of users is drawn to the FIDIC publication "Tendering Procedure", which presents a systematic approach to the selection of tenderers and the obtaining and evaluation of tenders.

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The preparation was carried out under the general direction of the FIDIC Contracts Committee comprising John B Bowcock (Chairman), Consulting Engineer, UK; Michael Mortimer-Hawkins, SwedPower, Sweden; Axel-Volkmar Jaeger, Schmidt Reuter Partner, Germany; and KB (Tony) Norris (Special Adviser), Consulting Engineer, UK.

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FIDIC wishes to record its appreciation of the time and effort devoted by all the above.

The ultimate decision on the form and content of the document rests with FIDIC.

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General Conditions

1 General Provisions

1.1

Definitions

In the Contract as defined below, the words and expressions defined shall have the following meanings assigned to them, except where the context requires otherwise:

The Contract

1.1.1 "**Contract**" means the Agreement and the other documents listed in the Appendix.

1.1.2 "**Specification**" means the document as listed in the Appendix, including Employer's requirements in respect of design to be carried out by the Contractor, if any, and any Variation to such document.

1.1.3 "**Drawings**" means the Employer's drawings of the Works as listed in the Appendix, and any Variation to such drawings.

Persons

1.1.4 "**Employer**" means the person named in the Agreement and the legal successors in title to this person, but not (except with the consent of the Contractor) any assignee.

1.1.5 "**Contractor**" means the person named in the Agreement and the legal successors in title to this person, but not (except with the consent of the Employer) any assignee.

1.1.6 "**Party**" means either the Employer or the Contractor.

Dates, Times and Periods

1.1.7 "**Commencement Date**" means the date 14 days after the date the Agreement comes into effect or any other date agreed between the Parties.

1.1.8 "**day**" means a calendar day.

1.1.9 "**Time for Completion**" means the time for completing the Works as stated in the Appendix (or as extended under Sub-Clause 7.3), calculated from the Commencement Date.

Money and Payments

1.1.10 "**Cost**" means all expenditure properly incurred (or to be incurred) by the Contractor, whether on or off the Site, including overheads and similar charges, but does not include profit.

Other Definitions

1.1.11 "**Contractor's Equipment**" means all apparatus, machinery, vehicles, facilities and other things required for the execution of the Works but does not include Materials or Plant.

1.1.12 "**Country**" means the country in which the Site is located.

1.1.13 "**Employer's Liabilities**" means those matters listed in Sub-Clause 6.1.

1.1.14 "**Force Majeure**" means an exceptional event or circumstance: which is beyond a Party's control; which such Party could not reasonably have

provided against before entering into the Contract; which, having arisen, such Party could not reasonably have avoided or overcome; and, which is not substantially attributable to the other Party.

- 1.1.15 **"Materials"** means things of all kinds (other than Plant) intended to form or forming part of the permanent work.
- 1.1.16 **"Plant"** means the machinery and apparatus intended to form or forming part of the permanent work.
- 1.1.17 **"Site"** means the places provided by the Employer where the Works are to be executed, and any other places specified in the Contract as forming part of the Site.
- 1.1.18 **"Variation"** means a change to the Specification and /or Drawings (if any) which is instructed by the Employer under Sub-Clause 10.1.
- 1.1.19 **"Works"** means all the work and design (if any) to be performed by the Contractor including temporary work and any Variation

1.2

Interpretation

Words importing persons or parties shall include firms and organisations. Words importing singular or one gender shall include plural or the other gender where the context requires.

1.3

Priority of Documents

The documents forming the Contract are to be taken as mutually explanatory of one another. If an ambiguity or discrepancy is found in the documents, the Employer shall issue any necessary instructions to the Contractor, and the priority of the documents shall be in accordance with the order as listed in the Appendix.

1.4

Law

The law of the Contract is stated in the Appendix.

1.5

Communications

Wherever provision is made for the giving or issue of any notice, instruction, or other communication by any person, unless otherwise specified such communication shall be written in the language stated in the Appendix and shall not be unreasonably withheld or delayed.

1.6

Statutory Obligations

The Contractor shall comply with the laws of the countries where activities are performed. The Contractor shall give all notices and pay all fees and other charges in respect of the Works.

2

The Employer

2.1

Provision of Site

The Employer shall provide the Site and right of access thereto at the times stated in the Appendix.

2.2

Permits and Licences

The Employer shall, if requested by the Contractor, assist him in applying for permits, licences or approvals which are required for the Works.

- 2.3
Employer's Instructions The Contractor shall comply with all instructions given by the Employer in respect of the Works including the suspension of all or part of the Works.
- 2.4
Approvals No approval or consent or absence of comment by the Employer or the Employer's representative shall affect the Contractor's obligations.

3 Employer's Representatives

- 3.1
Authorised Person One of the Employer's personnel shall have authority to act for him. This authorised person shall be as stated in the Appendix, or as otherwise notified by the Employer to the Contractor.
- 3.2
Employer's Representative The Employer may also appoint a firm or individual to carry out certain duties. The appointee may be named in the Appendix, or notified by the Employer to the Contractor from time to time. The Employer shall notify the Contractor of the delegated duties and authority of this Employer's representative.

4 The Contractor

- 4.1
General Obligations The Contractor shall carry out the Works properly and in accordance with the Contract. The Contractor shall provide all supervision, labour, Materials, Plant and Contractor's Equipment which may be required. All Materials and Plant on Site shall be deemed to be the property of the Employer.
- 4.2
Contractor's Representative The Contractor shall submit to the Employer for consent the name and particulars of the person authorised to receive instructions on behalf of the Contractor.
- 4.3
Subcontracting The Contractor shall not subcontract the whole of the Works. The Contractor shall not subcontract any part of the Works without the consent of the Employer.
- 4.4
Performance Security If stated in the Appendix, the Contractor shall deliver to the Employer within 14 days of the Commencement Date a performance security in a form and from a third party approved by the Employer.

5 Design by Contractor

- 5.1
Contractor's Design The Contractor shall carry out design to the extent specified, as referred to in the Appendix. The Contractor shall promptly submit to the Employer all designs prepared by him. Within 14 days of receipt the Employer shall notify any comments or, if the design submitted is not in accordance with the Contract, shall reject it stating the reasons. The Contractor shall not construct any element of the permanent work designed by him within 14 days after the design has been

submitted to the Employer or where the design for that element has been rejected. Design that has been rejected shall be promptly amended and resubmitted. The Contractor shall resubmit all designs commented on taking these comments into account as necessary.

5.2

Responsibility for Design

The Contractor shall remain responsible for his tendered design and the design under this Clause, both of which shall be fit for the intended purposes defined in the Contract and he shall also remain responsible for any infringement of any patent or copyright in respect of the same. The Employer shall be responsible for the Specification and Drawings.

6

Employer's Liabilities

6.1

Employer's Liabilities

In this Contract, Employer's Liabilities mean :

- a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies, within the Country,
- b) rebellion, terrorism, revolution, insurrection, military or usurped power, or civil war, within the Country,
- c) riot, commotion or disorder by persons other than the Contractor's personnel and other employees, affecting the Site and/or the Works,
- d) ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive nuclear assembly or nuclear component of such an assembly, except to the extent to which the Contractor may be responsible for the use of any radio-active material,
- e) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,
- f) use or occupation by the Employer of any part of the Works, except as may be specified in the Contract,
- g) design of any part of the Works by the Employer's personnel or by others for whom the Employer is responsible, and
- h) any operation of the forces of nature affecting the Site and/or the Works, which was unforeseeable or against which an experienced contractor could not reasonably have been expected to take precautions.
- i) Force Majeure,
- j) a suspension under Sub-Clause 2.3 unless it is attributable to the Contractor's failure,
- k) any failure of the Employer,
- l) physical obstructions or physical conditions other than climatic conditions, encountered on the Site during the performance of the Works, which obstructions or conditions were not reasonably foreseeable by an experienced contractor and which the Contractor immediately notified to the Employer,
- m) any delay or disruption caused by any Variation,
- n) any change to the law of the Contract after the date of the Contractor's offer as stated in the Agreement,
- o) losses arising out of the Employer's right to have the permanent work executed on, over, under, in or through any land, and to occupy this land for the permanent work, and
- p) damage which is an unavoidable result of the Contractor's obligations to execute the Works and to remedy any defects.

7 Time for Completion

- 7.1
Execution of the Works The Contractor shall commence the Works on the Commencement Date and shall proceed expeditiously and without delay and shall complete the Works within the Time for Completion.
- 7.2
Programme Within the time stated in the Appendix, the Contractor shall submit to the Employer a programme for the Works in the form stated in the Appendix.
- 7.3
Extension of Time Subject to Sub-Clause 10.3, the Contractor shall be entitled to an extension to the Time for Completion if he is or will be delayed by any of the Employer's Liabilities.
- On receipt of an application from the Contractor, the Employer shall consider all supporting details provided by the Contractor and shall extend the Time for Completion as appropriate.
- 7.4
Late Completion If the Contractor fails to complete the Works within the Time for Completion, the Contractor's only liability to the Employer for such failure shall be to pay the amount stated in the Appendix for each day for which he fails to complete the Works.

8 Taking-Over

- 8.1
Completion The Contractor may notify the Employer when he considers that the Works are complete.
- 8.2
Taking-Over Notice The Employer shall notify the Contractor when he considers that the Contractor has completed the Works stating the date accordingly. Alternatively, the Employer may notify the Contractor that the Works, although not fully complete, are ready for taking over, stating the date accordingly.
- The Employer shall take over the Works upon the issue of this notice. The Contractor shall promptly complete any outstanding work and, subject to Clause 9, clear the Site.

9 Remedying Defects

- 9.1
Remedying Defects The Employer may at any time prior to the expiry of the period stated in the Appendix, notify the Contractor of any defects or outstanding work. The Contractor shall remedy at no cost to the Employer any defects due to the Contractor's design, Materials, Plant or workmanship not being in accordance with the Contract.

The cost of remedying defects attributable to any other cause shall be valued as a Variation. Failure to remedy any defects or complete outstanding work within a reasonable time of the Employer's notice shall entitle the Employer to carry out all necessary work at the Contractor's cost.

9.2

Uncovering and Testing

The Employer may give instruction as to the uncovering and/or testing of any work. Unless as a result of any uncovering and/or testing it is established that the Contractor's design, Materials, Plant or workmanship are not in accordance with the Contract, the Contractor shall be paid for such uncovering and/or testing as a Variation in accordance with Sub-Clause 10.2.

10 Variations and Claims

10.1

Right to Vary

The Employer may instruct Variations.

10.2

Valuation of Variations

Variations shall be valued as follows:

- a) at a lump sum price agreed between the Parties, or
- b) where appropriate, at rates in the Contract, or
- c) in the absence of appropriate rates, the rates in the Contract shall be used as the basis for valuation, or failing which
- d) at appropriate new rates, as may be agreed or which the Employer considers appropriate, or
- e) if the Employer so instructs, at daywork rates set out in the Appendix for which the Contractor shall keep records of hours of labour and Contractor's Equipment, and of Materials used.

10.3

Early Warning

A Party shall notify the other as soon as he is aware of any circumstance which may delay or disrupt the Works, or which may give rise to a claim for additional payment. The Contractor shall take all reasonable steps to minimise these effects.

The Contractor's entitlement to extension to the Time for Completion or additional payment shall be limited to the time and payment which would have been due if he had given prompt notice and had taken all reasonable steps.

10.4

Right to Claim

If the Contractor incurs Cost as a result of any of the Employer's Liabilities, the Contractor shall be entitled to the amount of such Cost. If as a result of any of the Employer's Liabilities, it is necessary to change the Works, this shall be dealt with as a Variation.

10.5

Variation and Claim Procedure

The Contractor shall submit to the Employer an itemised make-up of the value of Variations and claims within 28 days of the instruction or of the event giving rise to the claim. The Employer shall check and if possible agree the value. In the absence of agreement, the Employer shall determine the value.

11

Contract Price and Payment

- 11.1**
Valuation of the Works The Works shall be valued as provided for in the Appendix, subject to Clause 10.
- 11.2**
Monthly Statements The Contractor shall be entitled to be paid at monthly intervals:
- a) the value of the Works executed,
 - b) the percentage stated in the Appendix of the value of Materials and Plant delivered to the Site at a reasonable time,
- subject to any additions or deductions which may be due.
- The Contractor shall submit each month to the Employer a statement showing the amounts to which he considers himself entitled.
- 11.3**
Interim Payments Within 28 days of delivery of each statement, the Employer shall pay to the Contractor the amount shown in the Contractor's statement less retention at the rate stated in the Appendix, and less any amount for which the Employer has specified his reasons for disagreement. The Employer shall not be bound by any sum previously considered by him to be due to the Contractor.
- The Employer may withhold interim payments until he receives the performance security under Sub-Clause 4.4 (if any).
- 11.4**
Payment of First Half of Retention One half of the retention shall be paid by the Employer to the Contractor within 14 days after issuing the notice under Sub-Clause 8.2.
- 11.5**
Payment of Second Half of Retention The remainder of the retention shall be paid by the Employer to the Contractor within 14 days after either the expiry of the period stated in the Appendix, or the remedying of notified defects or the completion of outstanding work, all as referred to in Sub-Clause 9.1, whichever is the later.
- 11.6**
Final Payment Within 42 days of the latest of the events listed in Sub-Clause 11.5 above, the Contractor shall submit a final account to the Employer together with any documentation reasonably required to enable the Employer to ascertain the final contract value.
- Within 28 days after the submission of this final account, the Employer shall pay to the Contractor any amount due. If the Employer disagrees with any part of the Contractor's final account, he shall specify his reasons for disagreement when making payment.
- 11.7**
Currency Payment shall be in the currency stated in the Appendix.
- 11.8**
Delayed Payment The Contractor shall be entitled to interest at the rate stated in the Appendix for each day the Employer fails to pay beyond the prescribed payment period.

12

Default

12.1

Default by Contractor

If the Contractor abandons the Works, refuses or fails to comply with a valid instruction of the Employer or fails to proceed expeditiously and without delay, or is, despite a written complaint, in breach of the Contract, the Employer may give notice referring to this Sub-Clause and stating the default.

If the Contractor has not taken all practicable steps to remedy the default within 14 days after the Contractor's receipt of the Employer's notice, the Employer may by a second notice given within a further 21 days, terminate the Contract. The Contractor shall then demobilise from the Site leaving behind Materials and Plant and any Contractor's Equipment which the Employer instructs in the second notice is to be used until the completion of the Works.

12.2

Default by Employer

If the Employer fails to pay in accordance with the Contract, or is, despite a written complaint, in breach of the Contract, the Contractor may give notice referring to this Sub-Clause and stating the default. If the default is not remedied within 7 days after the Employer's receipt of this notice, the Contractor may suspend the execution of all or parts of the Works.

If the default is not remedied within 28 days after the Employer's receipt of the Contractor's notice, the Contractor may by a second notice given within a further 21 days, terminate the Contract. The Contractor shall then demobilise from the Site.

12.3

Insolvency

If a Party is declared insolvent under any applicable law, the other Party may by notice terminate the Contract immediately. The Contractor shall then demobilise from the Site leaving behind, in the case of the Contractor's insolvency, any Contractor's Equipment which the Employer instructs in the notice is to be used until the completion of the Works.

12.4

Payment upon Termination

After termination, the Contractor shall be entitled to payment of the unpaid balance of the value of the Works executed and of the Materials and Plant reasonably delivered to the Site, adjusted by the following:

- a) any sums to which the Contractor is entitled under Sub-Clause 10.4,
- b) any sums to which the Employer is entitled,
- c) if the Employer has terminated under Sub-Clause 12.1 or 12.3, the Employer shall be entitled to a sum equivalent to 20% of the value of those parts of the Works not executed at the date of the termination,
- d) if the Contractor has terminated under Sub-Clause 12.2 or 12.3, the Contractor shall be entitled to the Cost of his suspension and demobilisation together with a sum equivalent to 10% of the value of those parts of the Works not executed at the date of termination.

The net balance due shall be paid or repaid within 28 days of the notice of termination.

13

Risk and Responsibility

13.1

Contractor's Care of the Works

The Contractor shall take full responsibility for the care of the Works from the Commencement Date until the date of the Employer's notice under Sub-Clause 8.2. Responsibility shall then pass to the Employer. If any loss or damage happens to the Works during the above period, the Contractor shall rectify such loss or damage so that the Works conform with the Contract.

Unless the loss or damage happens as a result of an Employer's Liability, the Contractor shall indemnify the Employer, the Employer's contractors, agents and employees against all loss or damage happening to the Works and against all claims or expense arising out of the Works caused by a breach of the Contract, by negligence or by other default of the Contractor, his agents or employees.

13.2

Force Majeure

If a Party is or will be prevented from performing any of its obligations by Force Majeure, the Party affected shall notify the other Party immediately. If necessary, the Contractor shall suspend the execution of the Works and, to the extent agreed with the Employer, demobilise the Contractor's Equipment.

If the event continues for a period of 84 days, either Party may then give notice of termination which shall take effect 28 days after the giving of the notice.

After termination, the Contractor shall be entitled to payment of the unpaid balance of the value of the Works executed and of the Materials and Plant reasonably delivered to the Site, adjusted by the following:

- a) any sums to which the Contractor is entitled under Sub-Clause 10.4,
- b) the Cost of his suspension and demobilisation,
- c) any sums to which the Employer is entitled.

The net balance due shall be paid or repaid within 28 days of the notice of termination.

14

Insurance

14.1

Extent of Cover

The Contractor shall, prior to commencing the Works, effect and thereafter maintain insurances in the joint names of the Parties:

- a) for loss and damage to the Works, Materials, Plant and the Contractor's Equipment,
- b) for liability of both Parties for loss, damage, death or injury to third parties or their property arising out of the Contractor's performance of the Contract, including the Contractor's liability for damage to the Employer's property other than the Works, and
- c) for liability of both Parties and of any Employer's representative for death or injury to the Contractor's personnel except to the extent that liability arises from the negligence of the Employer, any Employer's representative or their employees.

14.2 Arrangements

All insurances shall conform with any requirements detailed in the Appendix. The policies shall be issued by insurers and in terms approved by the Employer. The Contractor shall provide the Employer with evidence that any required policy is in force and that the premiums have been paid.

All payments received from insurers relating to loss or damage to the Works shall be held jointly by the Parties and used for the repair of the loss or damage or as compensation for loss or damage that is not to be repaired.

14.3 Failure to Insure

If the Contractor fails to effect or keep in force any of the insurances referred to in the previous Sub-Clauses, or fails to provide satisfactory evidence, policies or receipts, the Employer may, without prejudice to any other right or remedy, effect insurance for the cover relevant to such default and pay the premiums due and recover the same as a deduction from any other monies due to the Contractor.

15 Resolution of Disputes

15.1 Adjudication

Unless settled amicably, any dispute or difference which arises between the Contractor and the Employer out of or in connection with the Contract, including any valuation or other decision of the Employer, shall be referred by either Party to adjudication in accordance with the attached Rules for Adjudication ("the Rules"). The adjudicator shall be any person agreed by the Parties. In the event of disagreement, the adjudicator shall be appointed in accordance with the Rules.

15.2 Notice of Dissatisfaction

If a Party is dissatisfied with the decision of the adjudicator or if no decision is given within the time set out in the Rules, the Party may give notice of dissatisfaction referring to this Sub-Clause within 28 days of receipt of the decision or the expiry of the time for the decision. If no notice of dissatisfaction is given within the specified time, the decision shall be final and binding on the Parties. If notice of dissatisfaction is given within the specified time, the decision shall be binding on the Parties who shall give effect to it without delay unless and until the decision of the adjudicator is revised by an arbitrator.

15.3 Arbitration

A dispute which has been the subject of a notice of dissatisfaction shall be finally settled by a single arbitrator under the rules specified in the Appendix. In the absence of agreement, the arbitrator shall be designated by the appointing authority specified in the Appendix. Any hearing shall be held at the place specified in the Appendix and in the language referred to in Sub-Clause 1.5.

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Particular Conditions

Note

It is intended that the Short Form of Contract will work satisfactorily without any Particular Conditions. However, if the requirement of the project makes it desirable to amend any Clause or to add provisions to the Contract, the amendments and additions should be set out on pages headed Particular Conditions. Care should be taken with the drafting of such Clauses especially in view of the high priority given to the Particular Conditions by Sub-Clause 1.3.
