



Water Authority of the Cayman Islands

Chemical Storage Building

Lower Valley Water Works

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

All companies who obtain a set of the Tender Documents from the above website 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 us at ContractReview@waterauthority.ky.



Water Authority of the Cayman Islands

**Chemical Storage Building
Lower Valley Water Works**

Tender Documents

23 August 2016

Introduction

This document is the standard document for the construction of building works, used by the Water Authority of the Cayman Islands in connection with the construction of the Chemical Storage Building at the Lower Valley Water Works

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 construction of a reinforced concrete slab, CMU walls, structural steel frame design, supply and erection and installation of proprietary stop-logs

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FIDIC Short Form of Contract	attached
Tender Drawings	attached

Contractor's Initials or Stamp :

Instructions for Tendering

Introduction

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

Relevant Documents

2. Tenderers shall study all the "Tender Documents" comprising the Conditions of Contract, Specifications, Tender Drawings, Agreement (comprising Offer, Acceptance and Appendix) and Schedule (including Schedule of Rates). The whole of the Tender Documents shall be read and their true intent and meaning ascertained before the Schedule of Rates is priced.
3. No unauthorised alteration or addition is to be made to the Specifications, Tender Drawings, Agreement and Schedule of Rates. Any qualification made to a Tender may result in the Tender being rejected.
4. 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.
5. Should any alteration or addition to the Tender Documents be deemed necessary prior to the date for submission of Tenders, these shall be issued by e-mail by the Deputy Director of the Water Authority to Tenderers 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 7 days before the due date for tender submission (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 become a part of the Tender Documents.

6. 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.
7. Tenders shall only be accepted for the whole of the Works.
8. Tenderers shall treat the Tender Documents and all details contained therein as private and confidential.

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Rates to be Entered

9. All items in the Schedule of Rates shall either be priced or alternatively the word "included" shall be entered in the rate or price 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 Schedule of Rates.
10. All rates submitted shall be in Cayman Islands dollars

Rates to be Inclusive

11. The prices to be inserted in the Schedule of Rates 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.
12. Persons tendering are cautioned that no variations or extras whatsoever shall be acknowledged or paid for by the Employer unless an order in writing signed by the Employer's Representative 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.

Time for Completion

13. 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 Employer 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 abnormal bad weather, the Water Authority may extend the time for completion of the work as they may consider fair and reasonable.

Preparing Tender

14. Contractors 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, and all other points which can in any way affect the rates inserted in the Schedule of Rates.

It is strongly recommended that Contractors arrange a visit to the site to familiarize themselves regarding the site conditions, the extent of the work etc. Please make any request for a site visit by e-mail (ContractReview@waterauthority.ky).

15. The Water Authority shall not be responsible for any costs or expenses incurred in the preparation and submission of the Tender.
16. The Water Authority shall not be responsible for the omission, by the Contractor, of any items that are detrimental to the successful completion of the Works.

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Return of Tenders

17. 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. One copy 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 (which envelope shall bear no name or mark indicating the Tenderer, but shall be marked 'Returned Tender for the Chemical Storage Building at the Lower Valley Water Works') and delivered to:

Deputy Director
Water Authority - Cayman
PO Box 1104
13G Red Gate Road, George Town
Grand Cayman KY1-1102

no later than 12:00 noon on Friday 16 September 2016

18. Only tenders received on time will be accepted. Faxed or e-mailed summaries of tenders shall not be accepted as a substitute.
19. 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 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.

20. 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, for approval by the Employer.
22. 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

23. All tenderers will be notified by e-mail of the outcome of the evaluation.
24. 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 rights 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 its best interest 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.
26. The award will be made on the basis of that Tender from the lowest responsive Tenderer which, in the Employer's sole and absolute judgment, will best serve the interest of the Employer.

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27. The Employer will give the Successful Tenderer a Letter of Acceptance within thirty (30) days after the Tender Opening.

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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

Clause 7 Time for Completion

Add the following at the end of sub-clause 7.2

"The Contractor shall maintain adequate staff and plant to comply with the approved Programme for the Works"

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 life or property or 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 at the end of sub-clause 11.3:

"The Employer may withhold interim payments until he has received and approved a current and valid programme for the Works, as per sub-clause 7.2."

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.

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AGREEMENT

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

The Contractor is _____ of

The Employer desires the execution of certain Works known as **Chemical Storage Building at the Lower Valley Water Works**

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 two signed originals, may be accepted by the Employer by signing and returning one original of these documents to the Contractor on or before 16 October 2016.

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: _____

Contractor's Initials or Stamp :

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 one original of this document signed by the Employer.

Signature: _____ Date: _____

Name: _____ Authorized to sign on behalf of:

Capacity: _____ Water Authority of the Cayman Islands

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	
(a) The Agreement		
(b) Conditions of Contract		
(c) The Specification		
(d) The Drawings		See Attached List
(e) The Contractor's design		
(f) The Schedule of Rates		
Time for Completion	1.1.9	49 days
Law of the Contract	1.4	Cayman Islands Law
Language	1.5	English
Provision of Site	2.1	On the Commencement Date
Authorized person	3.1	Director of the Water Authority
Name and address of Employer's representative	3.2	Tom van Zanten, Deputy Director PO Box 1104, Grand Cayman KY1-1102
Performance security	4.4	None
Requirements for Contractor's design	5.1	Structural Steel Frame and Roof
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 Schedule of Rates
Amount payable due to failure to complete	7.4	CI\$ 200.00 per day up to a maximum of 10% 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 with schedule of rates	11.1	As per completed Schedule of Rates
Percentage of value of materials and Plant	11.2	Not Applicable
Percentage of retention	11.3	10% of work done
Currency of payment	11.7	Cayman Islands Dollars (CI\$)
Insurances	14.1	
<u>Type of Cover</u>		<u>Amount of Cover</u>
The Works, Materials, Plant and fees	14.1.a	The sum stated in the Agreement plus 15%
Third Party injury to persons and damage to property	14.1.b	CI\$ 500,000 for any one incident, and unlimited number of incidents
Workers	14.1.c	CI\$ 500,000 for any one incident, and unlimited number of incidents

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SCHEDULE OF RATES

Brief Description of the Works

The Contractor shall construct the Works, as detailed on the Drawings, which consist of the following:

- Clear the designated area of the slab of topsoil and vegetation.
- Excavate and fill as necessary to final compaction and grade.
- Construct reinforced concrete slab and column support plinths
- Construct concrete masonry walls and finish with sand/cement render
- Design and construct structural steel frame with standing seam metal roof
- Install stop log frames and stop logs (supplied by Water Authority) and include a water test
- The Contractor will be required to work within the existing Water Authority facility with minimal disruption to Water Authority operations and in compliance with Water Authority security as noted below.

Security

The area of the works will be in the secure area of the Water Authority Lower Valley Water Works; access to the works is through a secure gate.

The Contractor shall construct the Works as detailed on the Drawings, and in strict compliance with the 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. Note: stop logs and frames to be supplied to the Contractor by Water Authority.

The Employer shall provide a 120 Volt, single phase, 60 Hz power supply, located within 150 feet from the working area boundary, for use by the Contractor during the construction of the works. A ¾" water supply will also be provided.

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Programme of Works

The Contract shall be completed in 49 calendar days (i.e., 7 weeks).

Preamble to Schedule of Rates

Introduction

This Preamble has been provided to clarify the intent, which the Water Authority of the Cayman Islands had in the preparation of the Schedule of Rates. This intent is to provide clearly such information as shall enable Tenderers to submit bids, which are readily comparable.

To avoid unnecessary length, item descriptions in the Schedule of Rates 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.

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

The Schedule of Rates shall be used for the preparation of interim payment certificates. The Contractor shall submit with each interim payment request, a revised Schedule of Rates that shows the percentage of each item completed as of the submission date.

No payment shall be made for any goods or materials delivered on the Site, and not yet incorporated in the Works.

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 include this item in the first Monthly Statement.

Mobilization

The item is to allow the Contractor to include for his mobilization costs to the site.

This item shall not exceed ten percent (10%) of the total tender amount for this contract.

The Contractor shall include for this item on his first Monthly Statement.

Construction Works

The sums entered in the Schedule of Rates against the items 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 and Specifications, which includes restoring the adjacent site and any facilities affected by the Work to a condition acceptable to the Engineer.

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The Contractor shall include in all of his rates for delivery of all materials to and storage within the Working Area (as indicated on the Drawings), and for the uplift and transport of all materials 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 Contractor shall include in all of his rates for the testing of the Works, which 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 any 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.

List of Tender Drawings and Specifications

Drawing. No.

Drawing Title

P114-02

Site Plan and Access Details

P114-03

Chemical Storage Building – Structural Details

Specifications

Section 03300

Concrete

Section 04230

Reinforced Hollow Unit Masonry

Section 05100

Structural Steel

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SCHEDULE OF RATES**PART 1 PRELIMINARIES****Amount**
(CIS)**1.1 ALL INSURANCES AS REQUIRED BY CONTRACT**

Sum _____

1.2 MOBILIZATION

Sum _____

PART 1 TOTAL

--

PART 2 BUILDING WORKS**2.1 SET OUT, EXCAVATE AND FILL AS NECESSARY,
COMPACT AND GRADE TO FINAL LEVELS**

Sum _____

**2.2 CONSTRUCT REINFORCED CONCRETE SLAB AND
COLUMN SUPPORT PLINTHS**

Sum _____

2.3 CONSTRUCT 8" CMU WALLS INC. RENDER FINISH

Sum _____

2.4 DESIGN OF STRUCTURAL STEEL FRAME AND ROOF

Sum _____

**2.5 CONSTRUCT STRUCTURAL STEEL FRAME, INC. ALL
MEMBERS, BRACING AND ROOF COVERING**

Sum _____

**2.6 INSTALL STOP LOGS FRAMES AND STOP LOGS INC
WATER TEST**

Sum _____

PART 2 TOTAL

--

**TOTAL TENDER AMOUNT (PART 1 THROUGH PART 2)
(TO AGREEMENT ON PAGE 8):**

Contractor's Initials or Stamp :

SHAMROCK ROAD

ELECTRONIC ROLLING
VEHICLE GATE SITE ACCESS

PUMP HOUSE

SEPTIC
TANK

WORK
SHOP

PIPE
STORAGE

RESERVOIR
#1

BRINE WELL

RESERVOIR
#2

TRANSFORMER

SEPTIC
TANK

AVAILABLE CONTRACTOR
WORKING AREA SHOWN
DOTTED AND HATCHED
(50' x 25')

EX. CONTAINERS

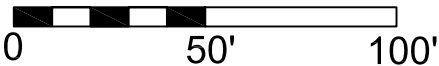
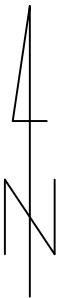
RO PLANT
BUILDING

EX. CONC.
SLAB

CHEMICAL STORAGE
BUILDING

250 mm BRINE LINE

FENCE



LOWER VALLEY WATER WORKS
CHEMICAL STORAGE BUILDING

SITE PLAN
CONTRACTOR WORKING AREA



WATER AUTHORITY – CAYMAN
P.O. BOX 1104
GRAND CAYMAN, KY1-1102
345-949-2837

0	28/06/16	MBT	Tender Issue						
REV	DATE	BY	DESCRIPTION						

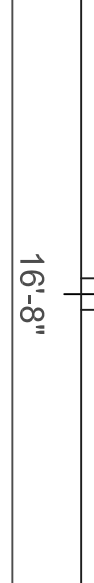
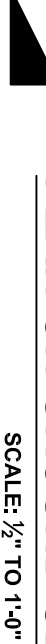
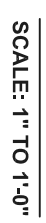
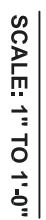
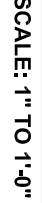
DATE: 09/03/15
DRAWN BY: MBT
CHECKED BY: TIZ
PROJECT NO.
P114

WAC PROJECT NO.
P114
DRAWING NO.
02
SCALE
1:600
SHEET
0
VIEW
REV

1	28/07/16	MBT	DRAFT REVISION TO INCLUDE ROOF
0	29/04/16		ISSUE FOR TENDER
REV	DATE	BY	DESCRIPTION

1	28/07/16	MBT
0	29/04/16	
REV	DATE	BY

SHEET
REV
1



SCALE: 1/2" = 10'-0"

DRAWING NO. P114-02

SECTION 03300

CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This section covers the work necessary to furnish and install, complete, the cast-in-place concrete, including formwork.

1.2 SUBMITTALS

- A. Not Used

1.3 QUALITY ASSURANCES

- A. Not Used

PART 2 PRODUCTS

2.1 CEMENT

- A. Portland cement Type II conforming to ASTM C 150.
- B. For all below grade structures, use Type II cement.

2.2 WATER

- A. In accordance with the requirements of ACI 318.
- B. Water for use with cement 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.
- C. Water from the sea or any other surface water shall not be used for concrete.

2.3 CONCRETE AGGREGATES

- A. General
 - 1. Natural aggregates, free from deleterious coatings. Aggregates shall be thoroughly and uniformly washed before use.
 - 2. Aggregate soundness testing for fine and coarse aggregates shall be in accordance with ASTM C 88.
- B. Fine Aggregates: Conform to ASTM C 33. Materials finer than the 200 sieve shall not exceed 4 percent.
- C. Coarse Aggregate: Use only natural gravels, a combination of gravels and crushed gravels, crushed stone, or a combination of these materials containing no more than 15 percent flat or elongated particles (long dimension more than five times the short dimension). Materials finer than the No. 200 sieve shall not exceed 0.5 percent.

PART 3 EXECUTION

3.1 DESIGN OF CONCRETE MIX

- A. Proportions (General)
 - 1. The contractor shall use a standard concrete mix design from an approved ready mix concrete supplier to produce concrete with a 28 day strength of 3,000 psi.
- B. Proportions
 - 1. The concrete mix shall be designed so that the proportions will produce results that will meet the aesthetic requirements as well as the strength requirements.

2. The concrete shall be proportioned in accordance with ACI 211 subject to the following specifications.
3. The mix shall meet the following requirements:
 - a. The water-cement ratio shall not exceed 0.46 by weight unless otherwise approved in writing by the Engineer.
 - b. Minimum cement content, regardless of design strength, shall be 564 pounds per cubic yard for 3/4-inch maximum size aggregate. The Contractor shall increase cement content as required to meet strength requirements.
 - c. Air content (ASTM C 231); range 4 to 6 percent.
 - d. Maximum Slump Range:
 - i. Slab on Grade: 3 inches
 - ii. Footings: 4 inches

3.2 USE OF SUPERPLASTICIZERS

- A. The use of super-plasticizers shall not be used

3.3 CERTIFICATION

- A. Furnish to the Engineer with each batch of concrete before unloading at the site, a delivery ticket.

3.4 MEASUREMENT OF MATERIALS AND MIXING

- A. Conform to ACI 304 and to other requirements previously specified for mix design, testing, and quality control and to these Specifications.
- B. Concrete shall be discharged at the job within 1-1/2 hours after the cement has been added to the water or the aggregates.
- C. If a water-reducing and retarding admixture is used in the mix, these times specified above may change.
- D. Each batch of concrete shall be mixed in a truck mixer for not less than 70 revolutions of the drum of blades at the rate of rotation designated by the manufacturer of the equipment. Additional mixing, if any, shall be at the speed designated by the manufacturer of the equipment as agitating speed. All materials, including mixing water, shall be in the mixer drum before actuating the revolution counter for determining the number of revolutions of mixing.
- E. Truck mixers and their operation must be such that the concrete throughout the mixed batch as discharged is within acceptable limits of uniformity with respect to consistency, mix, and grading.
- F. The use of non-agitating equipment for transporting ready-mixed concrete will not be permitted.

3.5 RE-TEMPERING

- A. The re-tempering of concrete or mortar in which the cement has partially hydrated will not be permitted.

3.6 ADDITION OF WATER

- A. No water shall be added to the approved concrete mix after leaving the batching plant without prior approval of the Engineer

3.7 FORMS

- A. Forms
 1. All forms and shoring required shall be designed by the Contractor.

2. Form Tolerances: Forms shall be surfaced and constructed to meet the specified finishes. Failure of the forms to produce the specified requirements will be grounds for rejection of the concrete work.
 - B. Slab Tolerances
 1. General
 - a. Exposed slab surfaces shall be comprised of flat planes as shown or as required and these flat planes shall be within the tolerances hereinafter specified.
 - b. Finish slab elevation shall be within 1/2 inch of elevation specified. Slabs shall not be more than 1/4 inch minus or plus from the thickness shown and shall also satisfy the above requirements.
 - C. Form Surface Preparation
 1. General: All form surfaces in contact with the concrete shall be thoroughly cleaned of all previous concrete, dirt, and other surface contaminants.
 2. Exposed Wood Forms: 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 nontoxic after 30 days.
 - D. Beveled Edges (Chamfer)
 1. Form 3/4 –inch bevels at all concrete edges
 - E. Removal of Forms
 1. The Contractor shall be responsible for all damage resulting from improper and premature removal of forms.
- 3.8 PLACING CONCRETE
- A. General
 1. Notify Engineer at least 1 full working day in advance before starting to place concrete.
 2. 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.
 3. Place concrete as soon as possible after leaving mixer, without segregation or loss of ingredients, without splashing forms or rebar above.
 - B. 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.
 - C. 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.
 - D. Concrete shall not be subjected to vibration between 4 and 24 hours after compaction.
- 3.9 PLACING CONCRETE IN HOT WEATHER
- A. Every effort shall be made to maintain a concrete temperature below 90 deg. F at time of placement.
- 3.10 BONDING TO OLD CONCRETE
- A. Old concrete is defined as over 60 days old.
 - B. Coat the contact surfaces with bonding agent specified previously. The method of preparation and application of the bonding agent shall conform to the manufacturer's printed instructions and his written recommendations for specific application for this project.

3.11 PATCHING

A. General

1. Patching of concrete shall provide an acceptable and structurally sound surface finish uniform in appearance or the Contractor shall upgrade the finish by other means at no additional cost.

B. Defective Areas

1. Remove all defective concrete such as honeycombed areas and rock pockets out to sound concrete. Small shallow holes caused by air entrapment at the surface of the forms shall not be considered defects unless the amount is so great as to be considered not the standard of the industry and due primarily to poor workmanship. If chipping is required, the edges shall be perpendicular to the surface. Feather edges shall not be permitted.
2. The defective area shall be filled with a non-shrink, nonmetallic non-shrink grout. Use an approved bonding agent on horizontal patches prior to placing nonmetallic, non-shrink grout.

3.12 CONCRETE SLAB FINISHES

A. General

1. The excessive use of "jitterbugs" or other special tools designed for the purpose of forcing the coarse aggregate away from the surface and allowing a layer of mortar to accumulate will not be permitted on any slab finish.
2. The dusting of surfaces with dry materials will not be permitted.
3. Slabs shall be thoroughly compacted by vibration.
4. All edges of slabs and tops of walls shall be rounded off with a steel edging tool, except where otherwise indicated on the Drawings.

B. Type S-2 (Wood Float 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 surface. All laitance shall be removed and the surface left clean.
2. Sidewalks shall have a brush applied final finish.
3. The slab finish tolerances and slope tolerances and/or repairs shall be as previously specified. Floor flatness measurements will be made the day after a concrete floor is finished and before the shoring is removed, in order to eliminate any effects of shrinkage, curling, and deflection.
4. A check for adequate slope and drainage will also be made to confirm compliance with these Specifications.

3.13 CURING OF CONCRETE

- A. Cure concrete by keeping the surface continuously wet for 7 days, unless otherwise approved by Engineer. Subject to approval by the Engineer, one of the following methods shall be followed:**

B. Slabs

1. Protect surface by ponding or cover with burlap or cotton mats kept continuously wet

END OF SECTION

SECTION 04230

REINFORCED HOLLOW UNIT MASONRY

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This section covers the work necessary to furnish and install, complete, the hollow unit masonry.

1.2 SUBMITTALS

- A. Grout mix, including proposed admixtures

PART 2 PRODUCTS

2.1 MASONRY UNITS

A. General

1. Units shall be of size shown.
2. Units shall be sound, dry, clean, free of cracks, and shall have reached the specified moisture content and compressive strength prior to placing in the structure.
3. Vertical cells to be grouted in all units covered under this Specification shall have vertical alignment sufficient to maintain a clear, unobstructed continuous vertical cell measuring not less than 2-inch by 3-inch.

B. Hollow Concrete Units

1. Hollow concrete masonry units shall be Grade N, Type II in accordance with ASTM C 90.
2. The manufacturer shall certify that the masonry units meet all requirements of ASTM C 90 including the moisture content and linear shrinkage requirements for humid conditions.

2.2 CEMENT

- A. Type I, ASTM C 150, portland cement.

2.3 AGGREGATES

- A. For Mortar: Aggregate for mortar shall conform to ASTM C 144.
- B. For Grout: Aggregate for grout shall conform to ASTM C 404.

2.4 WATER

- A. Water for use with cement 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. Water from the sea or any other surface water shall not be used.

2.5 MORTAR

- A. Mortar shall be freshly prepared and uniformly mixed in the ratio of 1 part portland cement, 1/4 part minimum to 1/2 part maximum hydrated lime, damp loose sand not less than 2-1/4 and not more than 3 times the sum of the volumes of the cement and lime used, and shall conform to ASTM C 279, Type S. The mortar shall be gray.

2.6 MORTAR ADMIXTURE

- A. Mortar admixtures, if requested, shall be approved by Engineer
- B. Quantity of admixture per mortar batch shall be in accordance with manufacturer's recommendations.

2.7 GROUT

- A. Conform to ASTM C 476 except as hereinafter specified.
 - 1. Proportions:
 - a. Grout for pouring shall be of fluid consistency conforming to the requirements of ASTM C 476. Coarse grout may be used in grout spaces measuring 4 inches or more in both horizontal dimensions.
 - b. Fluid consistency shall mean a fluid suitable for pouring without segregation.
 - 2. Compressive Strength: The average 28-day compressive strength of the grout samples for each grout pour tested shall not be less than 3,000 psi.

PART 3 EXECUTION

3.1 WEATHER CONDITIONS

- A. Protect the tops of walls at all times. Cover the tops of walls with waterproof paper when rain is imminent and work is discontinued.
- B. Protect masonry construction from direct exposure to wind and sun when erected in an ambient air temperature of 99 degrees F or higher in the shade with relative humidity less than 50 percent.

3.2 BONDING WALL UNITS

- A. Foundation
 - 1. Prior to placing the initial mortar, the surface of the foundation shall be cleaned by an approved means to remove all laitance, expose the aggregate, and roughen the surface to a minimum of ¼-inch amplitude.
 - 2. The foundation shall be cleaned of all loose material prior to the initial mortar placement.
 - 3. Corners: Unless otherwise shown, corners shall have a standard masonry bond for overlapping units and shall be grouted solid.

3.3 LAYING REINFORCED MASONRY UNITS

- A. General
 - 1. Masonry construction shall conform to the Standard Building Code and as supplemented by these Specifications.
 - 2. The maximum permissible variation from plumb of the wall or of a line of joints in the wall shall be 1/16 inch per foot of height, and 1/4 inch in the total height of the wall. The maximum permissible variation from a horizontal line along the base of the wall or for lines of horizontal joints shall be 1/16 inch per block.
 - 3. Units with chipped edges or corners within permissible ASTM limits may be used.
 - 4. If it is necessary to move a unit after it has been once set in place, the unit shall be removed from the wall, cleaned, and set in fresh mortar.
 - 5. Toothing of masonry units will not be permitted.
 - 6. All masonry work shall be protected from damage until final acceptance of the work. Damaged units will not be accepted.

3.4 MORTAR PREPARATION

- A. Mortar shall be mixed by placing 1/2 the water and aggregate in the operating mixer. Add cement. Add the remaining aggregate and water and mix for at least 2 minutes or any longer period as needed to secure a uniform mass. The addition of the admixture, where permitted, shall be timed in strict accordance with the manufacturer's instructions and the procedure used for adding it to the mix shall provide good dispersion.

- B. The mortar shall be machine mixed in approved mixers. Mixer drums shall be kept clean and free of debris and dried mortar. The mortar shall be in place before the initial setting of the cement has taken place. Re-tempering of mortar in which the cement has started to set will not be permitted.

3.5 MORTAR JOINTS

- A. Mortar joints shall be straight, clean, and shall have a uniform thickness of 3/8 inch.
- B. The horizontal and vertical mortar joints shall have full mortar coverage on the face shells.
- C. All excess mortar shall be removed from the grout space of the cells to be filled as the units are being laid.

3.6 GROUTING

- A. Grout Preparation: Grout shall be mixed as specified previously for mortar preparation if onsite mixing is performed.
- B. General Requirements
 - 1. Grout shall not be mixed, conveyed, or placed with equipment constructed of aluminum.
 - 2. Vertical cells to be filled shall have vertical alignment sufficient to maintain a clear, unobstructed, continuous vertical cell measuring not less than 2-inch by 3-inch.
 - 3. Grout shall be poured as soon as possible after the mortar has cured to reduce shrinkage cracking of the vertical joints. Immediately after the grouting has been completed, the scum and stains on the masonry shall be washed off using clean water and fiber brushes. Grout and mortar stains shall not be allowed to dry on the face of the exposed masonry.
- C. Grouting Requirements
 - 1. Partial Grouting Requirements
 - a. All cells shall be filled with grout.
 - b. Cells to be filled shall be constructed to confine the grout within the cell.
 - 2. When grouting is stopped for 1 hour or longer, horizontal construction joints shall be formed by stopping the pour of grout 1/2 inch below the top of the uppermost filled unit.
 - 3. The grout shall be thoroughly consolidated with an internal "pencil" type vibrator.

3.7 CLEANING

- A. Clean all surfaces of excess mortar, grout spillage, dirt, and other foreign substances.
- B. Walls not requiring painting or sealing shall be cleaned such that there are no visible stains.

3.8 PROTECTION

- A. At the end of each day's work, tops of walls shall be covered with building paper or by other means that will protect the walls from becoming excessively wet.

END OF SECTION

SECTION 05100
STRUCTURAL STEEL

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Structural steel frame.
- B. Complete corrugated zinc roof covering system consisting of the exterior roof panels, panel attachments, sealants, mastics and flashings as shown on the drawings.
- C. Complete wall covering system consisting of 2" galvanized metal mesh and shade cloth.
- D. Wall accessories, including:
 - 1. Doors.
- E. Roof Accessories, Including:
 - 1. Gutters & Downspouts

1.2 REFERENCES

- A. AISC Manual of Steel Construction, Load and Resistance Factor Design Specification.
- B. AISC Code of Practice for Structural Steel Buildings and Bridges.
- C. ASTM A 36/ASTM A36M - Standard Specification for Carbon Structural Steel.
- D. ASTM A 307 - Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.
- E. ASTM A 325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
- F. ASTM A 529/A 529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality.
- G. ASTM A 570/A 570M - Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality.
- H. ASTM A 572/A 572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Steel.
- I. ASTM A 653/A 653M - Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

1.3 DESIGN REQUIREMENTS

- A. Design structural systems according to professionally recognized methods and standards and legally adopted building codes.
- B. Design under supervision of professional engineer.
- C. Manufacturer must be certified by AISC in the Metal Building category.
- D. Design Loads:
 - 1. Applicable Building Code: Current SBC.
 - 2. Roof Live Load: 20 psf, reducible.
 - 3. Roof Live Load: 12 psf, non-reducible.
 - 4. Roof Wind Load: Calculate in accordance with applicable code, using 150 mph Basic Wind Speed, Exposure Category C, and Importance Factor of 1.0.
 - 5. Seismic Loads: On the basis of $A_v = 0.2g$.

- E. Serviceability Criteria: Deflection limits for major components will be based on Manufacturer's standards unless noted otherwise.
- F. Design roof to withstand specified loads with deflection of 1/180 of span, maximum.
- G. Anchor Bolts: Furnish design criteria for anchor bolts furnished, to resist the loads induced by the design loads on the structure.

1.4 SUBMITTALS

- A. Design Data: Provide detailed design criteria, calculations and foundation loads.
- B. Certification: Manufacturer certification that the structure conforms to the Contract Documents and manufacturer's standard design procedures.
- C. Shop Drawings: Show building layout, primary and secondary framing member sizes and locations, cross-sections, and product and connection details.
- D. Anchor Bolt Installation Drawings: Layouts with bolt diameters.

PART 2 PRODUCTS

2.1 METAL MATERIALS

- A. Select materials and material yield strengths based on building design requirements; use the following unless required otherwise.
 - 1. Structural Steel Plate, Bar, Sheet, and Strip for Use in Bolted and Welded Constructions: ASTM A 572/A 572M/A570, A 529/A 529M or A 36, with minimum yield strength of 50,000 psi.
 - 2. Structural Steel Material for Use in Roll Formed or Press Broken Secondary Structural Members: ASTM A 570/A 570M, or A607 with minimum yield strength of 55,000 psi.
 - 3. Corrugated Galvanized Steel Sheet ASTM A 653/A 653M, with minimum yield strength of 50,000 psi.
 - 4. Hot Rolled Steel Shapes: W, M and S shapes, angles, rods, channels and other shapes; ASTM A 572/A 572M or ASTM A 36/A 36M as applicable; with minimum yield strengths required for the design.
 - 5. Structural Bolts and Nuts Used with Primary Framing: High strength, ASTM A 325.
 - 6. Bolts and Nuts Used with Secondary Framing Members: ASTM A 307.
 - 7. Shop Coat: Manufacturer's standard rust inhibitive primer paint; manufacturer's standard color.

2.2 FRAMING COMPONENTS

- A. Primary Framing: To comprise columns, beams, angles and roof support purlins. Provide a clear span that supports the loads at bay spacings indicated.
- B. Purlins: Channel or Zee-shaped; depth as required; with minimum yield strength of 55,000 psi; simple span or continuous span as required for design.
- C. Wind Bracing: Diagonal bracing or diaphragm in accordance with manufacturer's standard design practices; utilizing rods, angles, and other members, with minimum yield strengths as required for design.
- D. Fabrication: Fabricate according to manufacturer's standard practice.
 - 1. All welding operators and processes shall be qualified in accordance with the American Welding Society "Structural Welding Code", AWS D1.1.
 - 2. Field connections. Prepare members for bolted field connections by making punched, drilled, or reamed holes in the shop.

- E. Component Identification: Mark all fabricated parts, either individually or by lot or group, using an identification marking corresponding to the marking shown on the shop drawings, using a method that remains visible after shop painting.
- F. Shop Coating: Finish all structural steel members using one coat of manufacturer's standard shop coat, immediately after blast cleaning of oil, dirt, loose scale and foreign matter.

2.3 ROOF PANEL COMPONENTS

- A. Roof Panels: Snap Seal Architectural Standing Seam Roof Panels; 18 inches wide net coverage with major ribs formed at the panel interlocking side laps. Panels do not require field seaming or batten covers.
 - 1. Material: Galvalume steel
 - 2. Colour: PermaColor Sandstone
 - 3. Thickness: 22 gage, with 3 inch standing seam.
 - 4. Side Joints: Factory applied sealant with interlocking joint design.
 - 5. Length: Continuous from eave to eave
 - 6. Endlaps, where required: 6 inches wide, located at a support member.
 - 7. Finish: KXL pre-painted finish, standard color as approved by Engineer
 - 8. Panel-to-roof purlin structural attachments: Snap Seal clips, with movable tabs that interlock with Snap Seal panel ribs and provide 1 inch of panel movement in either direction from center of clip to compensate for thermal effects.
 - 9. The Snap Seal Roof System shall be tested and certified to meet Underwriters Laboratory UL 90 wind uplift rating with supports 4'-0 on center.
- B. Sealants, Mastics and Closures: Manufacturer's standard type.
 - 1. Provide as required to provide a weather resistant roof system; use tape mastic or gunnable sealant at sidelaps and endlaps.
 - 2. Gunnable Sealant: Non-skinning synthetic elastomer based material; gray or bronze.

2.4 WALL AND ROOF ACCESSORIES

- A. Not required

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that foundations are installed correctly.
- B. Verify that anchor bolts are installed as indicated on anchor bolt shop drawings.

3.2 ERECTION

- A. Erect structural framework in accordance with manufacturer's instructions, erection drawings, and other erection documents.
- B. Provide temporary bracing, shoring, blocking, bridging and securing of components as required during the erection process.

3.3 WARRANTY

- A. Materials and finished product shall be warranted to be free from defects in material and workmanship for a period of one (1) year after certification of installation and acceptance by the Engineer.

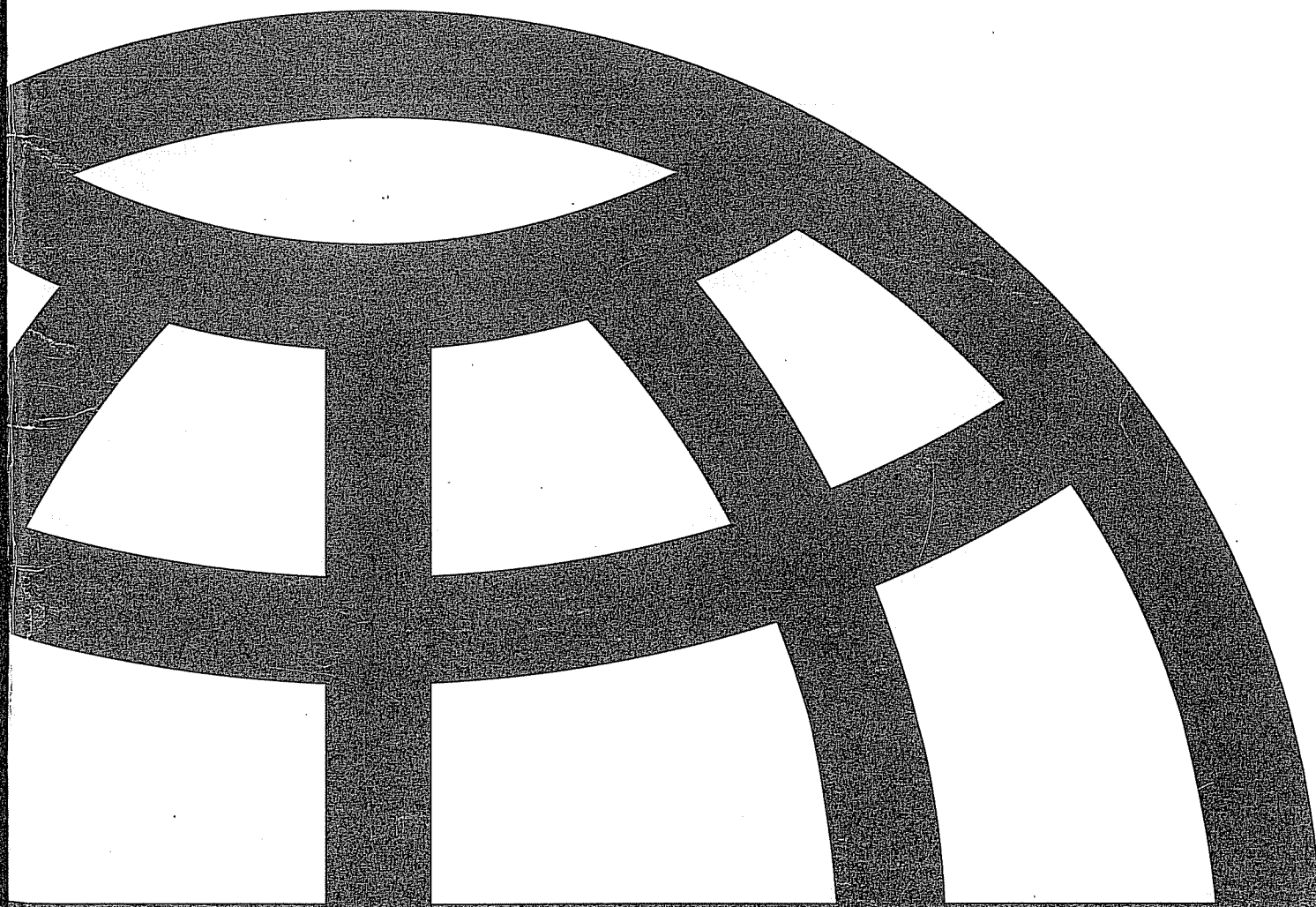
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Fédération Internationale des Ingénieurs-Conseils
International Federation of Consulting Engineers
Internationale Vereinigung Beratender Ingenieure
Federación Internacional de Ingenieros Consultores

Short Form of Contract

AGREEMENT
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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

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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.
