



Bank of Jamaica

**BIDDING DOCUMENTS**  
Issued on: 25 November 2017

# **Supply and Installation of Air-Cooled Liquid Chillers**

**RFP No: 2017-12-02-05**

---

## Acronyms

BDS	Bid Data Sheet
CFR	Cost and Freight
CIF	Cost, Insurance and Freight
CIP	Carriage and Insurance Paid to ( <i>named place of destination</i> )
CPM	Critical Path Method
CPT	Carriage Paid to
CV	Curriculum Vitae
DAF	Delivery at Frontier
DDP	Delivered Duty Paid ( <i>named place of destination</i> )
DDU	Delivered Duty Unpaid
DES	Delivered Ex Ship
DEQ	Delivered Ex Quay
EXW	Ex factory, ex works or ex warehouse
FAS	Free alongside Ship
FCA	Free Carrier
FIDIC	Fédération Internationale des Ingénieurs Conseils (International Federation of Consulting Engineers)
FOB	Free on Board
GCC	General Conditions of Contract
GOJ	Government of Jamaica
ICC	International Chamber of Commerce
IFB	Invitation for Bids
ITB	Instructions to Bidders
OT	Open Tender
SBD	Standard Bidding Document
SCC	Special Conditions of Contract
TS	Technical Specifications and Drawings
UNCITRAL	United Nations Commission on International Trade Law
UNDP	United Nation Development Programme

---

# Glossary

Procuring Entity	One of the two parties to a works contract, the other party being the “Contractor.”
Contractor	The legal entity that is party to and performs a works contract, the other party to the contract being the “Procuring Entity.”
joint venture	An ad hoc association of firms that pool their resources and skills to undertake a large or complex contract in the role of “Contractor,” with all firms (partners in the JV) being legally liable, jointly and severally, for the execution of the contract in the event of a partner’s withdrawal.
management contractor	A firm, acting in the role of “Contractor,” that does not normally perform contract construction work directly, but manages the work of other (sub) contractors, while bearing full responsibility and risk for price, quality, and timely performance of the work contract.
construction manager	A consultant, acting as agent of the Procuring Entity, engaged to coordinate and monitor the timing of preparation, bidding award, and execution of a number of different contracts comprising a project, but does not take on the responsibility for price, quality, or performance of those contracts.
Nominated Subcontractor	A specialist enterprise selected and approved by the Procuring Entity to provide pre-specified works included in the Bill of Quantities and nominated as subcontractor to the main Contractor for such purpose.
Post-qualification	An assessment made by the Procuring Entity after the evaluation of bids and immediately prior to award of contract, to ensure that the lowest responsive, Bidder is qualified to perform the contract in accordance with previously specified prequalification requirements.
prequalification	An assessment made by the Procuring Entity before inviting bids, of the appropriate level of experience and capacity of firms expressing interest in undertaking a particular contract, before inviting them to bid.
prime contractor	A firm that performs a substantial part of a contract construction work itself and the balance, if any, by subcontractors, while bearing full responsibility for the whole contract.

---

provisional sum	A sum included provisionally in the Bill of Quantities of a contract, normally for a specialized part of the Works or for contingencies, which sum shall be used only on the instructions of the Procuring Entity/Engineer for payments to the contractor and/or to nominated subcontractors.
slice and package”	A procedure whereby a large homogeneous project is sliced into smaller similar contracts, which are bid simultaneously so as to attract the interest of both small and large firms; firms offer bids on individual contracts (slices) or on a group of similar contracts (packages), and award is made to the combination of bids offering the lowest cost to the Procuring Entity. Slices comprising a number of similar construction units together in a small area are sometimes referred to as “lots,” which are bid concurrently with other similar “lots” as part of the larger “package.
turnover	The gross earnings of a firm (in this context, a construction contractor), defined as the billings for contract work in progress and/or completed, normally expressed on an annual basis, and excluding income from other sources.
Works	The total work involvement in a construction contract, including the “Permanent” Works or finished product as specified, and the “Temporary” Works required in by the Contractor for the execution and completion of the contract.
In writing	For the purpose of this document, means authenticated handwritten, typed, or printed; a document prepared in writing can be transmitted by telex, electronic mail, facsimile, with proof of receipt; and in the form requested by the sender.

---

# Table of Contents

## Standard Bidding Document

<b>INVITATION FOR BIDS (IFB)</b> .....	<b>2</b>
<b>VOLUME - 1 STANDARD BIDDING DOCUMENT</b> .....	<b>3</b>
<b>SECTION I. INSTRUCTIONS TO BIDDERS (ITB)</b> .....	<b>4</b>
TABLE OF CLAUSES.....	4
<b>SECTION II. CONDITIONS OF CONTRACT</b> .....	<b>18</b>
<b>SECTION III. FORMS OF BID AND QUALIFICATION INFORMATION AND LETTER OF ACCEPTANCE</b> ..	<b>35</b>
<b>SECTION IV. SECURITY FORMS</b> .....	<b>47</b>
<b>VOLUME 2 - SPECIFIC BIDDING DOCUMENTS</b> .....	<b>51</b>
TABLE OF CONTENTS.....	52
<b>SECTION V. BIDDING DATA</b> .....	<b>53</b>
<b>SECTION VI. CONTRACT DATA</b> .....	<b>58</b>
<b>SECTION VII: SPECIFICATIONS</b> .....	<b>62</b>
<b>SECTION VIII. DRAWINGS - NOT APPLICABLE</b> .....	<b>80</b>
<b>SECTION IX. BILL OF QUANTITIES</b> .....	<b>81</b>

---



## Invitation for Bids (IFB)

Date: 25 November 2017  
Contract Identification N<sup>o</sup>: 2017-12-02-05

1. The Bank of Jamaica invites sealed bids from eligible and qualified bidders for the **Supply and Installation of Air-Cooled Chillers at the Bank of Jamaica, Nethersole Place, Kingston, as follows:**
  - Lot 1 - One (1) 60-Ton Air-Cooled Liquid Chiller - Annex Building
  - Lot 2 - One (1) 100-Ton Air-Cooled Liquid Chiller - Auditorium/Concourse
2. For bids to be considered eligible, the submission must have on opening:
  - Valid copy of Tax Compliance Certificate (TCC)
  - Valid copy of Certificate of Registration from the National Contracts Commission in the category of **Heating, Ventilation, Air-Conditioning and Refrigeration (Grade 1 Only)**.
  - Proof of Manufacturer Authorization
  - Bid Security in the amount of \$375,000.00
3. Bids shall be valid for a period of **120 days** after bid closing and shall be deposited in the tender box located in the Foyer of the Bank of Jamaica after being duly stamped at the Information Desk, on or before **10:00 a.m. on Monday, 18 December 2017**. Late bids will be rejected.
4. A mandatory site visit is scheduled for **Wednesday, 29 November 2017 at 10:30 a.m. at the Bank of Jamaica**. Arrangements are to be made with Mr. Milton Vassell at telephone number 922-0750/9, Ext. 2300 or email [Milton.vassell@boj.org.jm](mailto:Milton.vassell@boj.org.jm).
5. Bids will be opened in the presence of the bidders' representatives who choose to attend at address below on **Monday, 18 December 2017 at 10:10 a.m.**

Address: Bank of Jamaica  
Nethersole Place  
Kingston

*The Bank is not obligated to accept the lowest or any of the bids received and reserves the right to terminate the bidding process at any point prior to the award of contract without incurring any liability.*

**Volume - 1 Standard Bidding Document**

# Section I. Instructions to Bidders (ITB)

## TABLE OF CLAUSES

<b>A. GENERAL</b> .....	<b>5</b>
1. SCOPE OF BID .....	5
2. SOURCE OF FUNDS .....	5
3. ELIGIBLE BIDDERS .....	5
4. QUALIFICATION OF THE BIDDER .....	5
5. ONE BID PER BIDDER .....	8
6. COST OF BIDDING .....	8
7. SITE VISIT .....	8
<b>B. BIDDING DOCUMENTS</b> .....	<b>8</b>
8. CONTENT OF BIDDING DOCUMENTS .....	8
9. CLARIFICATION OF BIDDING DOCUMENTS .....	9
10. AMENDMENT OF BIDDING DOCUMENTS .....	9
<b>C. PREPARATION OF BIDS</b> .....	<b>9</b>
11. LANGUAGE OF BID .....	9
12. DOCUMENTS COMPRISING THE BID .....	9
13. BID PRICES .....	9
14. CURRENCY OF BID AND PAYMENT .....	10
15. BID VALIDITY .....	10
16. BID SECURITY .....	10
17. ALTERNATIVE PROPOSALS BY BIDDERS .....	11
18. FORMAT AND SIGNING OF BID .....	11
<b>D. SUBMISSION OF BIDS</b> .....	<b>12</b>
19. SEALING AND MARKING OF BIDS .....	12
20. DEADLINE FOR SUBMISSION OF BIDS .....	12
21. LATE BIDS .....	12
22. MODIFICATION AND WITHDRAWAL OF BIDS .....	12
<b>E. BID OPENING AND EVALUATION</b> .....	<b>13</b>
23. BID OPENING .....	13
24. PROCESS TO BE CONFIDENTIAL .....	13
25. CLARIFICATION OF BIDS AND CONTACTING THE PROCURING ENTITY .....	13
26. EXAMINATION OF BIDS .....	14
27. CORRECTION OF ERRORS .....	14
28. EVALUATION AND COMPARISON OF BIDS .....	15
<b>F. AWARD OF CONTRACT</b> .....	<b>15</b>
29. AWARD CRITERIA .....	15
30. PROCURING ENTITY'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS .....	15
31. NOTIFICATION OF AWARD AND SIGNING OF AGREEMENT .....	16
32. PERFORMANCE SECURITY .....	16
33. ADVANCE PAYMENT AND SECURITY .....	16
34. CORRUPT OR FRAUDULENT PRACTICES .....	17
TABLE OF STANDARD FORMS .....	

---



## Section 1. Instructions to Bidders

### A. General

- 1. Scope of Bid**
- 1.1 The Procuring Entity as defined in Section 2, Conditions of Contract, and as specified in the Contract Data, invites bids for the construction of Works, as described in the Contract Data. The name and identification number of the Contract is provided in the Contract Data.
- 1.2 The successful Bidder will be expected to complete the Works by the Intended Completion Date specified in the Contract Data.
- 2. Source of Funds**
- 2.1 The Procuring Entity has committed funds toward the cost of the project and intends to apply a portion of the funds to eligible payments under the contract;
- 3. Eligible Bidders**
- 3.1 All bidders shall provide in Section 3, Forms of Bid and Qualification Information, a statement that the Bidder (including all members of a joint venture and subcontractors) is not associated, nor has been associated in the past, directly or indirectly, with the consultant or any other entity that has prepared the design, specifications, and other documents for the Project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Procuring Entity to provide consulting services for the preparation or supervision of the Works, and any of its affiliates, shall not be eligible to bid.
- 3.2 Government-owned and majority public-owned enterprises from the Procuring Entity country may only participate if they are legally, managerially and financially autonomous, operate under commercial law and are not a dependent agency of the Procuring Entity.
- 3.3 In accordance with the Government of Jamaica Handbook of Public Sector Procurement Procedures November, 2008 (<http://www.mof.gov.jm>) the Bidder shall have to demonstrate that they have paid such taxes, duties, fees and other impositions as may be levied in Jamaica.
- 3.4 Where deemed necessary, the bidders should be registered with the National Contracts Commission "Registry of Public Sector Contractors" (<http://www.ncc.gov.jm>).
- 4. Qualification of the Bidder**
- 4.1 All bidders shall provide in Section 3, Forms of Bid and Qualification Information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary.
-

- 4.2 In the event that prequalification of potential bidders has been undertaken, only bids from pre-qualified bidders will be considered for award of Contract. These qualified bidders should submit with their bids any information updating their original prequalification applications or, alternatively, confirm in their bids that the originally-submitted prequalification information remains essentially correct as of the date of bid submission. The update or confirmation should be provided in Section 3.
- 4.3 If the Procuring Entity has not undertaken prequalification of potential bidders, all bidders shall include the following information and documents with their bids in Section 3, unless otherwise stated in the Bidding Data:
- (a) copies of original documents defining the constitution or legal status, place of registration, and principal place of business; written power of attorney of the signatory of the Bid to commit the Bidder;
  - (b) total monetary value of construction work performed for each of the last three years;
  - (c) experience in works of a similar nature and size for each of the last three years, and details of work under way or contractually committed; and clients who may be contacted for further information on those contracts;
  - (d) major items of construction equipment proposed to carry out the Contract;
  - (e) qualifications and experience of key site management and technical personnel proposed for the Contract;
  - (f) reports on the financial standing of the Bidder, such as profit and loss statements and auditor's reports for the past three years;
  - (g) evidence of adequacy of working capital for this Contract (access to line(s) of credit and availability of other financial resources);
  - (h) authority to seek references from the Bidder's bankers;
  - (i) information regarding any litigation, current or during the last three years, in which the Bidder is involved, the parties concerned, and disputed amount. ***[N.B. The Procuring Entity reserves the right not to award a contract to any party with whom it is currently in litigation or with whom it has been previously involved in litigation];***and
  - (j) proposals for subcontracting components of the Works amounting to more than 10 percent of the Contract Price.
-

4.4 Bids submitted by a joint venture of two or more firms as partners shall comply with the following requirements, unless otherwise stated in the Bidding Data:

- (a) the Bid shall include all the information listed in Sub-Clause 4.3 above for each joint venture partner;
- (b) the Bid shall be signed so as to be legally binding on all partners;
- (c) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;
- (d) one of the partners will be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of any and all partners of the joint venture; and
- (e) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

4.5 To qualify for award of the Contract, bidders shall meet the following minimum qualifying criteria:

- (a) annual volume of construction work of at least the amount specified in the Bidding Data;
- (b) experience as prime contractor in the construction of at least two works of a nature and complexity equivalent to the Works over the last 5 years (to comply with this requirement, works cited should be at least 70 percent complete);
- (c) proposals for the timely acquisition (own, lease, hire, etc.) of the essential equipment listed in the Bidding Data;
- (d) a Contract Manager with three years' experience in works of an equivalent nature and volume, including no less than one years as Manager; and
- (e) liquid assets and/or credit facilities, net of other contractual commitments and exclusive of any advance payments which may be made under the Contract, of no less than the amount specified in the Bidding Data.

A consistent history of litigation or arbitration awards against the Applicant or any partner of a Joint Venture may result in disqualification.

4.6 The figures for each of the partners of a joint venture shall be

---

added together to determine the Bidder's compliance with the minimum qualifying criteria of Sub-Clause 4.5(a) and (e); however, for a joint venture to qualify, each of its partners must meet at least 25 percent of minimum criteria 4.5(a), (b), and (e) for an individual Bidder, and the partner in charge at least 40 percent of those minimum criteria. Failure to comply with this requirement will result in rejection of the joint venture's Bid. Subcontractors' experience and resources will not be taken into account in determining the Bidder's compliance with the qualifying criteria, unless otherwise stated in the Bidding Data.

- 5. One Bid per Bidder** 5.1 Each Bidder shall submit only one Bid, either individually or as a partner in a joint venture. A Bidder who submits or participates in more than one Bid (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.
- 6. Cost of Bidding** 6.1 The Bidder shall bear all costs associated with the preparation and submission of his Bid, and the Procuring Entity will in no case be responsible or liable for those costs.
- 7. Site Visit** 7.1 The Bidder, at the Bidder's own responsibility and risk, is encouraged to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.

## **B. Bidding Documents**

- 8. Content of Bidding Documents** 8.1 The set of bidding documents comprises the documents listed in the table below and addenda issued in accordance with Clause 10:

### **Volume 1**

Section	1	Instructions to Bidders
	2	Conditions of Contract
	3	Forms of Bid and Qualification
	4	Forms of Securities

### **Volume 2**

Section	5	Bidding Data
	6	Contract Data
	7	Specifications
	8	Drawings
	9	Bill of Quantities or Activity Schedule for lump sum contracts

---

8.2 The number of copies to be completed and returned with the Bid is specified in the Bidding Data.

**9. Clarification of Bidding Documents**

9.1 A prospective Bidder requiring any clarification of the bidding documents may notify the Procuring Entity in writing or by cable ("cable" includes telex and facsimile) at the Procuring Entity's address indicated in the invitation to bid. The Procuring Entity will respond to any request for clarification received earlier than 14 days prior to the deadline for submission of bids. Copies of the Procuring Entity's response will be forwarded to all purchasers of the bidding documents, including a description of the inquiry, but without identifying its source.

**10. Amendment of Bidding Documents**

10.1 Before the deadline for submission of bids, the Procuring Entity may modify the bidding documents by issuing addenda.

10.2 Any addendum thus issued shall be part of the bidding documents and shall be communicated in writing or by cable to all purchasers of the bidding documents. Prospective bidders shall acknowledge receipt of each addendum by cable to the Procuring Entity.

10.3 To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Procuring Entity shall extend, as necessary, the deadline for submission of bids, in accordance with Sub-Clause 20.2 below.

### **C. Preparation of Bids**

**11. Language of Bid**

11.1 All documents relating to the Bid shall be in the language specified in the Contract Data.

**12. Documents Comprising the Bid**

12.1 The Bid submitted by the Bidder shall comprise the following:

- (a) The Bid (in the format indicated in Section 3);
- (b) Bid Security;
- (c) priced Bill of Quantities or priced Activity Schedule;
- (d) Qualification Information Form and Documents;
- (e) Alternative offers where invited;

and any other materials required to be completed and submitted by bidders, as specified in the Bidding Data.

**13. Bid Prices**

13.1 The Contract shall be for the whole Works, as described in Sub-Clause 1.1, based on the priced Bill of Quantities/priced

Activity Schedule for lump sum contracts submitted by the Bidder. The type of contract (Unit Price or Lump Sum) shall be specified in the Bidding Data.

13.2 The Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities (for lump sum contracts, described in the drawings and specifications and listed in the Activity Schedule). Items for which no rate or price is entered by the Bidder will not be paid for by the Procuring Entity when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities/Activity Schedule.

13.3 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the rates, prices, and total Bid price submitted by the Bidder (for lump sum contracts, "the rates and prices" are not applicable).

**14. Currency of Bid and Payment**

14.1 The unit rates and prices (or the lump sum price for lump-sum contracts) shall be quoted by the Bidder entirely in the currency of the Procuring Entity's country specified in the Bidding Data.

**15. Bid Validity**

15.1 Bids shall remain valid for the period specified in the Bidding Data.

15.2 In exceptional circumstances, the Procuring Entity may request that the bidders extend the period of validity for a specified additional period. The request and the bidders' responses shall be made in writing. A Bidder may refuse the request without forfeiting the Bid Security. A Bidder agreeing to the request will not be required or permitted to otherwise modify the Bid, but will be required to extend the validity of Bid Security for the period of the extension, and in compliance with Clause 16 in all respects.

**16. Bid Security**

16.1 The Bidder shall furnish, as part of the Bid, a Bid Security in local currency in the amount specified in the Bidding Data.

16.2 The Bid Security shall, at the Bidder's option, be in the form of a certified check, bank draft, standby letter of credit, or guarantee from a local bank which has been determined by the Bidder to be acceptable to the Procuring Entity. The format of the Bid Security should be in accordance with the form of Bid Security included in Section 4 or another form acceptable to the Procuring Entity.

16.3 Any Bid not accompanied by an acceptable Bid Security shall be rejected by the Procuring Entity. The bid security of a joint venture must define a "bidder" as all joint venture partners and

---

list them in the following manner: a joint venture consisting of " \_\_\_\_\_ ", " \_\_\_\_\_ ", and " \_\_\_\_\_ ".

16.4 The Bid Security of unsuccessful bidders will be returned within 28 days of the end of the Bid validity period specified in Sub-Clause 15.1.

16.5 The Bid Security of the successful Bidder will be discharged when the Bidder has signed the Agreement and furnished the required Performance Security.

16.6 The Bid Security may be forfeited

- (a) if the Bidder withdraws the Bid after Bid opening during the period of Bid validity;
- (b) if the Bidder does not accept the correction of the Bid price, pursuant to Clause 27; or
- (c) in the case of a successful Bidder, if the Bidder fails within the specified time limit to
  - (i) sign the Agreement; or
  - (ii) furnish the required Performance Security.

#### 17. Alternative Proposals by Bidders

17.1 Bidders shall submit offers that comply with the requirements of the bidding documents, including the basic technical design as indicated in the drawings and specifications. Alternatives will not be considered, unless specifically allowed in the Bidding Data.

#### 18. Format and Signing of Bid

18.1 The Bidder shall prepare one original of the documents comprising the Bid as described in Clause 12 of these Instructions to Bidders, bound with the volume containing the Form of Bid, and clearly marked "**ORIGINAL**". In addition, the Bidder shall submit copies of the Bid, in the number specified in the Bidding Data, and clearly marked as "**COPIES**". In the event of discrepancy between them, the original shall prevail.

18.2 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder, pursuant to Sub-Clauses 4.3(a) or 4.4(b), as the case may be. All pages of the Bid where entries or amendments have been made shall be initialed by the person or persons signing the Bid.

18.3 The Bid shall contain no alterations or additions, except those to comply with instructions issued by the Procuring Entity, or as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the Bid.

- 18.4 The Bidder shall furnish information as described in the Form of Bid on commissions or gratuities, if any, paid or to be paid to agents relating to this Bid, and to contract execution if the Bidder is awarded the contract.

#### **D. Submission of Bids**

##### **19. Sealing and Marking of Bids**

- 19.1 The Bidder shall seal the original and all copies of the Bid in two inner envelopes and one outer envelope, duly marking the inner envelopes as “ORIGINAL” and “COPIES”.

- 19.2 The inner and outer envelopes shall

- (a) be addressed to the Procuring Entity at the address provided in the Bidding Data;
- (b) bear the name and identification number of the Contract as defined in the Bidding and Contract Data; and
- (c) provide a warning not to open before the specified time and date for Bid opening as defined in the Bidding Data.

- 19.3 In addition to the identification required in Sub-Clause 19.2, the inner envelopes shall indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared late, pursuant to Clause 21.

- 19.4 If the outer envelope is not sealed and marked as above, the Procuring Entity will assume no responsibility for the misplacement or premature opening of the Bid.

##### **20. Deadline for Submission of Bids**

- 20.1 Bids shall be delivered to the Procuring Entity at the address specified in Clause 19.2 (a) above no later than the time and date specified in the Bidding Data.

- 20.2 The Procuring Entity may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 10, in which case all rights and obligations of the Procuring Entity and the bidders previously subject to the original deadline will then be subject to the new deadline.

##### **21. Late Bids**

- 21.1 Any Bid received by the Procuring Entity after the deadline prescribed in Clause 20 will be returned unopened to the Bidder.

##### **22. Modification and Withdrawal of Bids**

- 22.1 Bidders may modify or withdraw their bids by giving notice in writing before the deadline prescribed in Clause 20.

- 22.2 Each Bidder's modification or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with Clauses 18 and 19, with the outer and inner envelopes additionally marked “MODIFICATION” or “WITHDRAWAL”, as



appropriate.

- 22.3 No Bid may be modified after the deadline for submission of Bids.
- 22.4 Withdrawal of a Bid between the deadline for submission of bids and the expiration of the period of Bid validity specified in the Bidding Data or as extended pursuant to Sub-Clause 15.2 may result in the forfeiture of the Bid Security pursuant to Clause 16.
- 22.5 Bidders may only offer discounts to, or otherwise modify the prices of their bids by submitting Bid modifications in accordance with this clause, or included in the original Bid submission.

## **E. Bid Opening and Evaluation**

- 23. Bid Opening**

    - 23.1 The Procuring Entity will open the bids, including modifications made pursuant to Clause 22, in the presence of the bidders' representatives who choose to attend at the time and in the place specified in the Bidding Data.
    - 23.2 The bidders' names, the Bid prices, the total amount of each Bid and of any alternative Bid (if alternatives have been requested or permitted), any discounts, Bid modifications and withdrawals, the presence or absence of Bid Security, and such other details as the Procuring Entity may consider appropriate, will be announced by the Procuring Entity at the opening.
    - 23.3 The Procuring Entity will prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Sub-Clause 23.2.
  - 24. Process to Be Confidential**

    - 24.1 Information relating to the examination, clarification, evaluation, and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by a Bidder to influence the Procuring Entity's processing of bids or award decisions may result in the rejection of his Bid.
  - 25. Clarification of Bids and Contacting the Procuring Entity**

    - 25.1 To assist in the examination, evaluation, and comparison of bids, the Procuring Entity may, at the Procuring Entity's discretion, ask any Bidder for clarification of the Bidder's Bid, including breakdowns of unit rates (or the prices in the Activity Schedule for lump-sum contracts). The request for clarification and the response shall be in writing or by cable, telex, or facsimile, but no change in the price or substance of the Bid shall be sought, offered, or permitted except as required to
-

confirm the correction of arithmetic errors discovered by the Procuring Entity in the evaluation of the bids in accordance with Clause 27.

25.2 From the time of bid opening to the time of contract award, if any bidder wishes to contact the Procuring Entity on any matter related to the bid, it should do so in writing.

25.3 Any effort by the Bidder to influence the Procuring Entity in the Procuring Entity's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidders' bid.

## **26. Examination of Bids**

26.1 Prior to the detailed evaluation of bids, the Procuring Entity will determine whether each Bid (a) meets the eligibility criteria defined in Clause 3; (b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the bidding documents.

26.2 A substantially responsive Bid is one which conforms to all the terms, conditions, and specifications of the bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the bidding documents, the Procuring Entity's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

26.3 If a Bid is not substantially responsive, it will be rejected by the Procuring Entity, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

## **27. Correction of Errors**

27.1 Bids determined to be substantially responsive will be checked by the Procuring Entity for any arithmetic errors. Errors will be corrected by the Procuring Entity as follows:

(a) where there is a discrepancy between the amounts in figures and in words, the amount in words will govern; and

(b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern, unless in the opinion of the Procuring Entity there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted will govern, and the unit rate will be corrected.

27.2 The amount stated in the Bid will be adjusted by the Procuring

---

Entity in accordance with the above procedure for the correction of errors and, with the concurrence of the Bidder, shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount, the Bid will be rejected, and the Bid Security may be forfeited in accordance with Sub-Clause 16.6(b).

## **28. Evaluation and Comparison of Bids**

28.1 The Procuring Entity will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 26.

28.2 In evaluating the bids, the Procuring Entity will determine for each Bid the evaluated Bid price by adjusting the Bid price as follows:

- (a) making any correction for errors pursuant to Clause 27;
- (b) excluding provisional sums and the provision, if any, for contingencies in the Bill of Quantities (or Activity Schedule for lump sum contracts), but including Daywork, where priced competitively;
- (c) making an appropriate adjustment for any other acceptable variations, deviations, or alternative offers submitted in accordance with Clause 17; and
- (d) making appropriate adjustments to reflect discounts or other price modifications offered in accordance with Sub-Clause 22.5.

28.3 The Procuring Entity reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors which are in excess of the requirements of the bidding documents or otherwise result in unsolicited benefits for the Procuring Entity will not be taken into account in Bid evaluation.

## **F. Award of Contract**

### **29. Award Criteria**

29.1 Subject to Clause 30, the Procuring Entity will award the Contract to the Bidder whose Bid has been determined to be substantially responsive to the bidding documents and who has offered the lowest responsive bid price, provided that such Bidder has been determined to be (a) eligible in accordance with the provisions of Clause 3, and (b) qualified in accordance with the provisions of Clause 4.

### **30. Procuring Entity's Right to Accept any Bid and to Reject any or all Bids**

30.1 Notwithstanding Clause 29, the Procuring Entity reserves the right to accept or reject any Bid, and to cancel the bidding process and reject all bids, at any time prior to the award of Contract, without thereby incurring any liability to the

affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Procuring Entity's action.

*N.B. The Procuring Entity reserves the right not to award a contract to any party with whom it is currently in litigation or with whom it has been previously involved in litigation.*

**31. Notification of Award and Signing of Agreement**

31.1 The Bidder whose Bid has been accepted will be notified of the award by the Procuring Entity prior to expiration of the Bid validity period by cable, telex, or facsimile confirmed by registered letter. This letter (hereinafter and in the Conditions of Contract called the “Letter of Acceptance”) will state the sum that the Procuring Entity will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the “Contract Price”).

31.2 The notification of award will constitute the formation of the Contract, subject to the Bidder furnishing the Performance Security in accordance with Clause 32 and signing the Agreement in accordance with Sub-Clause 31.3.

31.3 The Agreement will incorporate all agreements between the Procuring Entity and the successful Bidder. It will be signed by the Procuring Entity and sent to the successful Bidder, within 28 days following the notification of award along with the Letter of Acceptance. Within 28 days of receipt, the successful Bidder will sign the Agreement and deliver it to the Procuring Entity.

31.4 Upon the furnishing by the successful Bidder of the Performance Security, the Procuring Entity will promptly notify the other bidders that their bids have been unsuccessful.

**32. Performance Security**

32.1 Within 28 days after receipt of the Letter of Acceptance the successful Bidder shall deliver to the Procuring Entity a Performance Security in the amount stipulated in the Contract Data and in the form stipulated in the Bidding Data.

32.2 If the Performance Security is provided by the successful Bidder in the form of a Bank Guarantee, it shall be issued by a local bank.

32.3 Failure of the successful Bidder to comply with the requirements of Sub-Clause 32.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid Security.

**33. Advance Payment and Security**

33.1 The Procuring Entity will provide an Advance Payment on the Contract price as stipulated in the Conditions of Contract, subject to a maximum amount, as stated in the Bidding Data.

**34. Corrupt or Fraudulent Practices**

34.1 Government of Jamaica requires that Bidders, Suppliers, Contractors, and Consultants, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuit of this policy, GOJ:

- (a) defines, for the purposes of this provision, the terms set forth below as follows:
    - (i) “corrupt practice” means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution; and
    - (ii) “fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract, to the detriment of Government of Jamaica and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial non-competitive levels and to deprive Government of the benefits of free and open competition;
    - (iii) “collusive practice” means a scheme or arrangement between two or more bidders, with or without the knowledge of the Procuring Entity, designed to establish bid prices at artificial non-competitive levels or to influence the action of any party in the procurement process or the execution of a contract; and
    - (iv) “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract;
  - (b) will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
  - (c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded a GOJ-financed contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a GOJ-financed contract.
-

## Section II. Conditions of Contract

- 1. Definitions**      **1.1** Terms that are defined in the Contract Data are not also defined in the Conditions of Contract but keep their defined meanings. Boldface type is used to identify defined terms.

**Bill of Quantities** means the priced and completed Bill of Quantities forming part of the Bid.

**Compensation Events** are those defined in Clause 42 hereunder.

The **Completion Date** is the date of completion of the Works as certified by the Project Manager, in accordance with Sub-Clause 52.1.

The **Contract** is the Contract between the Procuring Entity and the Contractor to execute, complete, and maintain the Works. It consists of the documents listed in Clause 2.3 below.

The **Contractor** is a person or corporate body whose Bid to carry out the Works has been accepted by the Procuring Entity.

The **Contractor's Bid** is the completed bidding document submitted by the Contractor to the Procuring Entity.

The **Contract Price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

**Day works** are varied work inputs subject to payment on a time basis for the Contractor's employees and Equipment, in addition to payments for associated Materials and Plant.

**Days** are calendar days; **months** are calendar months.

A **Defect** is any part of the Works not completed in accordance with the Contract.

The **Defects Liability Period** is the period named in the Contract Data and calculated from the Completion Date.

**Drawings** include calculations and other information provided or approved by the Project Manager for the execution of the Contract.

The **Procuring Entity** is the party who employs the Contractor to carry out the Works.

---

The **Project Manager** is the person named in the Contract Data (or any other competent person appointed by the Procuring Entity and notified to the Contractor, to act in replacement of the Project Manager) who is responsible for supervising the execution of the Works and administering the Contract.

**Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

The **Initial Contract Price** is the Contract Price listed in the Procuring Entity's Letter of Acceptance.

The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Project Manager by issuing an extension of time or an acceleration order.

**Materials** are all supplies, including consumable, used by the Contractor for incorporation in the Works.

**Plant** is any integral part of the Works that shall have a mechanical, electrical, chemical, or biological function.

The **Site** is the area defined as such in the Contract Data.

**Site Investigation Reports** are those that were included in the bidding documents and are factual and interpretative reports about the surface and subsurface conditions at the Site.

**Specification** means the Specification of the Works included in the Contract and any modification or addition made or approved by the Project Manager.

The **Start Date** is given in the Contract Data. It is the latest date when the Contractor shall commence execution of the Works. It does not necessarily coincide with any of the Site Possession Dates.

A **Subcontractor** is a person or corporate body who has a Contract with the Contractor to carry out a part of the work in the Contract, which includes work on the Site.

**Temporary Works** are works designed, constructed, installed, and removed by the Contractor that are needed for construction or installation of the Works.

A **Variation** is an instruction given by the Project Manager which varies the Works.

---

The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Procuring Entity, as defined in the Contract Data.

- 2. Interpretation**
- 2.1 The documents forming the Contract shall be interpreted in the following order of priority:
- (1) Agreement,
  - (2) Letter of Acceptance,
  - (3) Contractor's Bid,
  - (4) Contract Data,
  - (5) Conditions of Contract,
  - (6) Specifications,
  - (7) Drawings,
  - (8) Bill of Quantities or Activity Schedule and
  - (9) any other document listed in the Contract Data as forming part of the Contract.
- 3. Language and Law**
- 3.1 The language of the Contract and the law governing the Contract are stated in the Contract Data.
- 4. Project Manager's Decisions**
- 4.1 Except where otherwise specifically stated, the Project Manager will decide contractual matters between the Procuring Entity and the Contractor in the role representing the Procuring Entity.
- 5. Delegation**
- 5.1 The Project Manager may delegate any of his duties and responsibilities to other people except to the Adjudicator, after notifying the Contractor, and may cancel any delegation after notifying the Contractor.
- 6. Communications**
- 6.1 Communications between parties that are referred to in the Conditions shall be effective only when in writing. A notice shall be effective only when it is delivered.
- 7. Sub-contracting**
- 7.1 The Contractor may subcontract with the approval of the Project Manager, but may not assign the Contract without the approval of the Procuring Entity in writing. Subcontracting shall not alter the Contractor's obligations.
- 8. Other Contractors**
- 8.1 The Contractor shall cooperate and share the Site with other contractors, public authorities, utilities, and the Procuring Entity between the dates given in the Schedule of Other Contractors, as referred to in the Contract Data. The Contractor shall also provide facilities and services for them as described in the Schedule. The Procuring Entity may modify the Schedule of Other Contractors, and shall notify the Contractor of any such modification.
- 9. Personnel**
- 9.1 The Contractor shall employ the key personnel named in the Schedule of Key Personnel, as referred to in the Contract Data, to carry out the functions stated in the Schedule or other personnel approved by the Project Manager. The Project
-



Manager will approve any proposed replacement of key personnel only if their relevant qualifications and abilities are substantially equal to or better than those of the personnel listed in the Schedule.

- 9.2 If the Project Manager asks the Contractor to remove a person who is a member of the Contractor's staff or work force, stating the reasons, the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

**10. Procuring Entity's and Contractor's Risks**

- 10.1 The Procuring Entity carries the risks which this Contract states are Procuring Entity's risks, and the Contractor carries the risks which this Contract states are Contractor's risks.

**11. Procuring Entity's Risks**

- 11.1 From the Start Date until the Defects Correction Certificate has been issued, the following are Procuring Entity's risks:

- (a) The risk of personal injury, death, or loss of or damage to property (excluding the Works, Plant, Materials, and Equipment), which are due to

(i) use or occupation of the Site by the Works or for the purpose of the Works, which is the unavoidable result of the Works or

(ii) negligence, breach of statutory duty, or interference with any legal right by the Procuring Entity or by any person employed by or contracted to him except the Contractor.

- (b) The risk of damage to the Works, Plant, Materials, and Equipment to the extent that it is due to a fault of the Procuring Entity or in the Procuring Entity's design, or due to war or radioactive contamination directly affecting the country where the Works are to be executed.

- 11.2 From the Completion Date until the Defects Correction Certificate has been issued, the risk of loss of or damage to the Works, Plant, and Materials is an Procuring Entity's risk except loss or damage due to

(a) a Defect which existed on the Completion Date,

(b) an event occurring before the Completion Date, which was not itself an Procuring Entity's risk, or

(c) the activities of the Contractor on the Site after the Completion Date.

---

- 
- 12. Contractor's Risks** 12.1 From the Starting Date until the Defects Correction Certificate has been issued, the risks of personal injury, death, and loss of or damage to property (including, without limitation, the Works, Plant, Materials, and Equipment) which are not Procuring Entity's risks are Contractor's risks.
- 13. Insurance** 13.1 The Contractor shall provide, in the joint names of the Procuring Entity and the Contractor, insurance cover from the Start Date to the end of the Defects Liability Period, in the amounts and deductibles stated in the Contract Data for the following events which are due to the Contractor's risks:
- (a) loss of or damage to the Works, Plant, and Materials;
  - (b) loss of or damage to Equipment;
  - (c) loss of or damage to property (except the Works, Plant, Materials, and Equipment) in connection with the Contract; and
  - (d) personal injury or death.
- 13.2 Policies and certificates for insurance shall be delivered by the Contractor to the Project Manager for the Project Manager's approval before the Start Date. All such insurance shall provide for compensation to be payable in the types and proportions of currencies required to rectify the loss or damage incurred.
- 13.3 If the Contractor does not provide any of the policies and certificates required, the Procuring Entity may effect the insurance which the Contractor should have provided and recover the premiums the Procuring Entity has paid from payments otherwise due to the Contractor or, if no payment is due, the payment of the premiums shall be a debt due.
- 13.4 Alterations to the terms of insurance shall not be made without the approval of the Project Manager.
- 13.5 Both parties shall comply with any conditions of the insurance policies.
- 14. Site Investigation Reports** 14.1 The Contractor, in preparing the Bid, shall rely on any Site Investigation Reports referred to in the Contract Data, supplemented by any information available to the Bidder.
- 15. Queries about the Contract Data** 15.1 The Project Manager will clarify queries on the Contract Data.
- 16. Contractor to Construct the Works** 16.1 The Contractor shall construct and install the Works in accordance with the Specifications and Drawings.
-

---

<b>17. The Works to Be Completed by the Intended Completion Date</b>	17.1 The Contractor may commence execution of the Works on the Start Date and shall carry out the Works in accordance with the Program submitted by the Contractor, as updated with the approval of the Project Manager, and complete them by the Intended Completion Date.
<b>18. Approval by the Project Manager</b>	18.1 The Contractor shall submit Specifications and Drawings showing the proposed Temporary Works to the Project Manager, who is to approve them if they comply with the Specifications and Drawings.  18.2 The Contractor shall be responsible for design of Temporary Works.  18.3 The Project Manager's approval shall not alter the Contractor's responsibility for design of the Temporary Works.  18.4 The Contractor shall obtain approval of third parties to the design of the Temporary Works, where required.  18.5 All Drawings prepared by the Contractor for the execution of the temporary or permanent Works, are subject to prior approval by the Project Manager before this use.
<b>19. Safety</b>	19.1 The Contractor shall be responsible for the safety of all activities on the Site.
<b>20. Discoveries</b>	20.1 Anything of historical or other interest or of significant value unexpectedly discovered on the Site shall be the property of the Procuring Entity. The Contractor shall notify the Project Manager of such discoveries and carry out the Project Manager's instructions for dealing with them.
<b>21. Possession of the Site</b>	21.1 The Procuring Entity shall give possession of all parts of the Site to the Contractor. If possession of a part is not given by the date stated in the Contract Data, the Procuring Entity will be deemed to have delayed the start of the relevant activities, and this will be a Compensation Event.
<b>22. Access to the Site</b>	22.1 The Contractor shall allow the Project Manager and any person authorized by the Project Manager access to the Site and to any place where work in connection with the Contract is being carried out or is intended to be carried out.
<b>23. Instructions, Inspections and Audits</b>	23.1 The Contractor shall carry out all instructions of the Project Manager which comply with the applicable laws where the Site is located.  23.2 The Contractor shall permit the Procuring Entity to inspect the Contractor's accounts and records relating to the performance of the Contractor and to have them audited by auditors appointed by the GOJ, if so required.

---

- 24. Disputes** 24.1 If the Contractor believes that a decision taken by the Project Manager was either outside the authority given to the Project Manager by the Contract or that the decision was wrongly taken, the decision shall be referred to Arbitration within 14 days of the notification of the Project Manager's decision.
- 25. Procedure for Disputes** 25.1 The Arbitrator shall give a decision in writing within 28 days of receipt of a notification of a dispute.

## **B. Time Control**

- 26. Program** 26.1 Within the time stated in the Contract Data, the Contractor shall submit to the Project Manager for approval a Program showing the general methods, arrangements, order, and timing for all the activities in the Works.
- 26.2 An update of the Program shall be a program showing the actual progress achieved on each activity and the effect of the progress achieved on the timing of the remaining work, including any changes to the sequence of the activities.
- 26.3 The Contractor shall submit to the Project Manager for approval an updated Program at intervals no longer than the period stated in the Contract Data. If the Contractor does not submit an updated Program within this period, the Project Manager may withhold the amount stated in the Contract Data from the next payment certificate and continue to withhold this amount until the next payment after the date on which the overdue Program has been submitted.
- 26.4 The Project Manager's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Project Manager again at any time. A revised Program shall show the effect of Variations and Compensation Events.
- 27. Extension of the Intended Completion Date** 27.1 The Project Manager shall extend the Intended Completion Date if a Compensation Event occurs or a Variation is issued which makes it impossible for Completion to be achieved by the Intended Completion Date without the Contractor taking steps to accelerate the remaining work, which would cause the Contractor to incur additional cost.
- 27.2 The Project Manager shall decide whether and by how much to extend the Intended Completion Date within 21 days of the Contractor asking the Project Manager for a decision upon the effect of a Compensation Event or Variation and submitting full supporting information. If the Contractor has failed to give early warning of a delay or has failed to cooperate in dealing
-

with a delay, the delay by this failure shall not be considered in assessing the new Intended Completion Date.

**28. Acceleration**

28.1 When the Procuring Entity wants the Contractor to finish before the Intended Completion Date, the Project Manager will obtain priced proposals for achieving the necessary acceleration from the Contractor. If the Procuring Entity accepts these proposals, the Intended Completion Date will be adjusted accordingly and confirmed by both the Procuring Entity and the Contractor.

28.2 If the Contractor's priced proposals for acceleration are accepted by the Procuring Entity, they are incorporated in the Contract Price and treated as a Variation.

**29. Delays Ordered by the Project Manager**

29.1 The Project Manager may instruct the Contractor to delay the start or progress of any activity within the Works.

**30. Early Warning**

30.1 The Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price or delay the execution of the Works. The Project Manager may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and Completion Date. The estimate shall be provided by the Contractor as soon as reasonably possible.

30.2 The Contractor shall cooperate with the Project Manager in making and considering proposals for how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the work and in carrying out any resulting instruction of the Project Manager.

### **C. Quality Control**

**31. Identifying Defects**

31.1 The Project Manager shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a Defect and to uncover and test any work that the Project Manager considers may have a Defect.

**32. Tests**

32.1 If the Project Manager instructs the Contractor to carry out a test not specified in the Specification to check whether any work has a Defect and the test shows that it does, the Contractor shall pay for the test and any samples. If there is no Defect, the test shall be a Compensation Event.

- 33. Correction of Defects**
- 33.1 The Project Manager shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion, and is defined in the Contract Data. The Defects Liability Period shall be extended for as long as Defects remain to be corrected.
- 33.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Project Manager's notice.
- 34. Uncorrected Defects**
- 34.1 If the Contractor has not corrected a Defect within the time specified in the Project Manager's notice, the Project Manager will assess the cost of having the Defect corrected, and the Contractor will pay this amount.

#### **D. Cost Control**

- 35. Bill of Quantities**
- 35.1 The Bill of Quantities (for lump sum contracts entire Clause 37 shall be replaced with a new Clause as indicated in Contract Data) shall contain items for the construction, installation, testing, and commissioning work to be done by the Contractor.
- 35.2 The Bill of Quantities is used to calculate the Contract Price. The Contractor is paid for the quantity of the work done at the rate in the Bill of Quantities for each item.
- 36. Changes in the Quantities**
- 36.1 If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent (25%), provided the change exceeds one percent (1%) of the Initial Contract Price, the Project Manager shall adjust the rate to allow for the change. (For lump-sum contracts, this clause shall be substituted by a new clause as indicated in Contract Data).
- 36.2 The Project Manager shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the prior approval of the Procuring Entity.
- 36.3 If requested by the Project Manager, the Contractor shall provide the Project Manager with a detailed cost breakdown of any rate in the Bill of Quantities.
- 37. Variations**
- 37.1 All Variations shall be included in updated Programs or Activity Schedules produced by the Contractor.
- 38. Payments for Variations**
- 38.1 The Contractor shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager. The Project Manager shall assess the quotation, which shall be given within seven days of the request or within any longer period stated by the Project Manager and before the Variation is ordered.
-

- 38.2 If the work in the Variation corresponds with an item description in the Bill of Quantities and if, in the opinion of the Project Manager, the quantity of work above the limit stated in Sub-Clause 37.1 or the timing of its execution do not cause the cost per unit of quantity to change, the rate in the Bill of Quantities shall be used to calculate the value of the Variation. If the cost per unit of quantity changes, or if the nature or timing of the work in the Variation does not correspond with items in the Bill of Quantities, the quotation by the Contractor shall be in the form of new rates for the relevant items of work. (For lump sum contracts, this clause shall be deleted as indicated in Contract Data).
- 38.3 If the Contractor's quotation is unreasonable, the Project Manager may order the Variation and make a change to the Contract Price, which shall be based on the Project Manager's own forecast of the effects of the Variation on the Contractor's costs.
- 38.4 If the Project Manager decides that the urgency of varying the work would prevent a quotation being given and considered without delaying the work, no quotation shall be given and the Variation shall be treated as a Compensation Event.
- 38.5 The Contractor shall not be entitled to additional payment for costs that could have been avoided by giving early warning.

### **39. Payment Certificates**

- 39.1 The Contractor shall submit to the Project Manager monthly statements of the estimated value of the work executed less the cumulative amount certified previously.
- 39.2 The Project Manager shall check the Contractor's monthly statement and certify the amount to be paid to the Contractor.
- 39.3 The value of work executed shall be determined by the Project Manager.
- 39.4 The value of work executed shall comprise the value of the quantities of the items in the Bill of Quantities completed. (For lump sum contracts, this Clause shall be substituted by a new Clause as indicated in the Contract Data).
- 39.5 The value of work executed shall include the valuation of Variations and Compensation Events.
- 39.6 The Project Manager may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.
-

**40. Payments**

- 40.1 Payments shall be adjusted for deductions for advance payments and retention. The Procuring Entity shall pay the Contractor the amounts certified by the Project Manager within 28 days of the date of each certificate. If the Procuring Entity makes a late payment, the Contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made.
- 40.2 If an amount certified is increased in a later certificate or as a result of an award by Arbitration, the Contractor shall be paid interest upon the delayed payment as set out in this clause. Interest shall be calculated from the date upon which the increased amount would have been certified in the absence of dispute.
- 40.3 Unless otherwise stated, all payments and deductions will be paid or charged in the proportions of currencies comprising the Contract Price.
- 40.4 Items of the Works for which no rate or price has been entered in will not be paid for by the Procuring Entity and shall be deemed covered by other rates and prices in the Contract.

**41. Compensation Events**

- 41.1 The following shall be Compensation Events:
- (a) The Procuring Entity does not give access to a part of the Site by the Site Possession Date stated in the Contract Data.
  - (b) The Procuring Entity modifies the Schedule of Other Contractors in a way that affects the work of the Contractor under the Contract.
  - (c) The Project Manager orders a delay or does not issue Drawings, Specifications, or instructions required for execution of the Works on time.
  - (d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects.
  - (e) The Project Manager unreasonably does not approve a subcontract to be let.
  - (f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to bidders (including the Site Investigation Reports), from information available publicly and from a visual
-



inspection of the Site.

- (g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Procuring Entity, or additional work required for safety or other reasons.
- (h) Other contractors, public authorities, utilities, or the Procuring Entity does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.
- (i) The advance payment is delayed.
- (j) The effects on the Contractor of any of the Procuring Entity's Risks.
- (k) The Project Manager unreasonably delays issuing a Certificate of Completion.
- (l) Other Compensation Events described in the Contract or determined by the Project Manager shall apply.

41.2 If a Compensation Event would cause additional cost or would prevent the work being completed before the Intended Completion Date, the Contract Price shall be increased and/or the Intended Completion Date shall be extended. The Project Manager shall decide whether and by how much the Contract Price shall be increased and whether and by how much the Intended Completion Date shall be extended.

41.3 As soon as information demonstrating the effect of each Compensation Event upon the Contractor's forecast cost has been provided by the Contractor, it shall be assessed by the Project Manager, and the Contract Price shall be adjusted accordingly. If the Contractor's forecast is deemed unreasonable, the Project Manager shall adjust the Contract Price based on the Project Manager's own forecast. The Project Manager will assume that the Contractor will react competently and promptly to the event.

41.4 The Contractor shall not be entitled to compensation to the extent that the Procuring Entity's interests are adversely affected by the Contractor's not having given early warning or not having cooperated with the Project Manager.

## 42. Taxes

42.1 The Project Manager shall adjust the Contract Price if taxes, duties, and other levies are changed between the date 28 days before the submission of bids for the Contract and the date of the last Completion certificate. The adjustment shall be the change in the amount of tax payable by the Contractor, provided such changes are not already reflected in the Contract Price or are a result of Clause 43.

---

**43. Price Adjustment**

43.1 Prices shall be adjusted for fluctuations in the cost of inputs only if provided for in the Contract Data. If so provided, the amounts certified in each payment certificate shall be adjusted by applying the respective price adjustment factor to the payment amounts. A formula of the type indicated below applies:

$$P = A + B \quad I_{mc} / I_{oc}$$

Where

P is the adjustment factor for the portion of the Contract Price.

A and B are coefficients specified in the Contract Data, representing the nonadjustable and adjustable portions, respectively, of the Contract Price; and

$I_{mc}$  is the index prevailing at the end of the month being invoiced and  $I_{oc}$  is the index prevailing 28 days before Bid opening for inputs payable.

Note: The sum of the two coefficients A and B should be 1 (one) in the formula.

43.2 If the value of the index is changed after it has been used in a calculation, the calculation shall be corrected and an adjustment made in the next payment certificate. The index value shall be deemed to take account of all changes in cost due to fluctuations in costs.

**44. Retention**

44.1 The Procuring Entity shall retain from each payment due to the Contractor the proportion stated in the Contract Data until Completion of the whole of the Works.

44.2 On Completion of the whole of the Works, half the total amount retained shall be repaid to the Contractor and half when the Defects Liability Period has passed and the Project Manager has certified that all Defects notified by the Project Manager to the Contractor before the end of this period have been corrected.

44.3 On completion of the whole Works, the Contractor may substitute retention money with an "on demand" Bank guarantee.

**45. Liquidated Damages**

45.1 The Contractor shall pay liquidated damages to the Procuring Entity at the rate per day stated in the Contract Data for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the Contract Data. The Procuring Entity may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities.

- 45.2 If the Intended Completion Date is extended after liquidated damages have been paid, the Project Manager shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in Sub-Clause 41.1.
- 46. Bonus**
- 46.1 The Contractor shall be paid a Bonus calculated at the rate per calendar day stated in the Contract Data for each day (less any days for which the Contractor is paid for acceleration) that the Completion is earlier than the Intended Completion Date. The Project Manager shall certify that the Works are complete, although they may not be due to be complete.
- 47. Advance Payment**
- 47.1 The Procuring Entity shall make advance payment to the Contractor of the amounts stated in the Contract Data by the date stated in the Contract Data, against provision by the Contractor of an Unconditional Bank Guarantee in a form and by a bank acceptable to the Procuring Entity in amounts and currencies equal to the advance payment. The Guarantee shall remain effective until the advance payment has been repaid, but the amount of the Guarantee shall be progressively reduced by the amounts repaid by the Contractor. Interest will not be charged on the advance payment.
- 47.2 The Contractor is to use the advance payment only to pay for Equipment, Plant, Materials, and mobilization expenses required specifically for execution of the Contract. The Contractor shall demonstrate that advance payment has been used in this way by supplying copies of invoices or other documents to the Project Manager.
- 47.3 The advance payment shall be repaid by deducting proportionate amounts from payments otherwise due to the Contractor, following the schedule of completed percentages of the Works on a payment basis. No account shall be taken of the advance payment or its repayment in assessing valuations of work done, Variations, price adjustments, Compensation Events, Bonuses, or Liquidated Damages.
- 48. Securities**
- 48.1 The Performance Security shall be provided to the Procuring Entity no later than the date specified in the Letter of Acceptance and shall be issued in an amount and form and by a bank or surety acceptable to the Procuring Entity. The Performance Security shall be valid until a date 28 days from the date of issue of the Certificate of Completion in the case of a Bank Guarantee.
- 49. Dayworks**
- 49.1 If applicable, the Dayworks rates in the Contractor's Bid shall be used for small additional amounts of work only when the
-

Project Manager has given written instructions in advance for additional work to be paid for in that way.

49.2 All work to be paid for as Dayworks shall be recorded by the Contractor on forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the work being done.

49.3 The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

#### **50. Cost of Repairs**

50.1 Loss or damage to the Works or Materials to be incorporated in the Works between the Start Date and the end of the Defects Correction periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions.

### **E. Finishing the Contract**

#### **51. Completion**

51.1 The Contractor shall request the Project Manager to issue a Certificate of Completion of the Works, and the Project Manager will do so upon deciding that the work is completed.

#### **52. Taking Over**

52.1 The Procuring Entity shall take over the Site and the Works within seven days of the Project Manager's issuing a certificate of Completion.

#### **53. Final Account**

53.1 The Contractor shall supply the Project Manager with a detailed account of the total amount that the Contractor considers payable under the Contract before the end of the Defects Liability Period. The Project Manager shall issue a Defects Liability Certificate and certify any final payment that is due to the Contractor within 56 days of receiving the Contractor's account if it is correct and complete. If it is not, the Project Manager shall issue within 56 days a schedule that states the scope of the corrections or additions that are necessary. If the Final Account is still unsatisfactory after it has been resubmitted, the Project Manager shall decide on the amount payable to the Contractor and issue a payment certificate.

#### **54. Operating and Maintenance Manuals**

54.1 If "as built" Drawings and/or operating and maintenance manuals are required, the Contractor shall supply them by the dates stated in the Contract Data.

54.2 If the Contractor does not supply the Drawings and/or manuals by the dates stated in the Contract Data, or they do not receive the Project Manager's approval, the Project Manager shall withhold the amount stated in the Contract Data from payments due to the Contractor.

**55.  
Termination**

55.1 The Procuring Entity or the Contractor may terminate the Contract if the other party causes a fundamental breach of the Contract.

55.2 Fundamental breaches of Contract shall include, but shall not be limited to, the following:

- (a) the Contractor stops work for 28 days when no stoppage of work is shown on the current Program and the stoppage has not been authorized by the Project Manager;
- (b) the Project Manager instructs the Contractor to delay the progress of the Works, and the instruction is not withdrawn within 28 days;
- (c) the Procuring Entity or the Contractor is made bankrupt or goes into liquidation other than for a reconstruction or amalgamation;
- (d) a payment certified by the Project Manager is not paid by the Procuring Entity to the Contractor within 84 days of the date of the Project Manager's certificate;
- (e) the Project Manager gives Notice that failure to correct a particular Defect is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;
- (f) the Contractor does not maintain a Security, which is required; and
- (g) the Contractor has delayed the completion of the Works by the number of days for which the maximum amount of liquidated damages can be paid, as defined in the Contract Data.
- (h) If the Contractor, in the judgment of the Procuring Entity, has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

For the purpose of this paragraph:

“corrupt practice” means offering, giving, receiving or soliciting directly or indirectly of any thing of value to influence the action of a public official in the procurement process or in contract execution;

“fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract to the detriment of the Government of Jamaica, and includes collusive practice among Bidders (prior to or after bid submission)

---

designed to establish bid prices at artificial non-competitive levels and to deprive the Government of the benefits of free and open competition.

55.3 When either party to the Contract gives notice of a breach of Contract to the Project Manager for a cause other than those listed under Sub-Clause 55.2 above, the Project Manager shall decide whether the breach is fundamental or not.

55.4 Notwithstanding the above, the Procuring Entity may terminate the Contract for convenience.

55.5 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible.

**56. Payment upon Termination**

56.1 If the Contract is terminated because of a fundamental breach of Contract by the Contractor, the Project Manager shall issue a certificate for the value of the work done and Materials ordered less advance payments received up to the date of the issue of the certificate and less the percentage to apply to the value of the work not completed, as indicated in the Contract Data. Additional Liquidated Damages shall not apply. If the total amount due to the Procuring Entity exceeds any payment due to the Contractor, the difference shall be a debt payable to the Procuring Entity.

56.2 If the Contract is terminated for the Procuring Entity's convenience or because of a fundamental breach of Contract by the Procuring Entity, the Project Manager shall issue a certificate for the value of the work done, Materials ordered, the reasonable cost of removal of Equipment, repatriation of the Contractor's personnel employed solely on the Works, and the Contractor's costs of protecting and securing the Works, and less advance payments received up to the date of the certificate.

**57. Property**

57.1 All Materials on the Site, Plant, Temporary Works, and Works shall be deemed to be the property of the Procuring Entity if the Contract is terminated because of the Contractor's default.

**58. Release from Performance**

58.1 If the Contract is frustrated by the outbreak of war or by any other event entirely outside the control of either the Procuring Entity or the Contractor, the Project Manager shall certify that the Contract has been frustrated. The Contractor shall make the Site safe and stop work as quickly as possible after receiving this certificate and shall be paid for all work carried out before receiving it and for any work carried out afterwards to which a commitment was made.

---

## Section III. Forms of Bid and Qualification Information and Letter of Acceptance

### Table of Standard Forms

A. Contractor's Bid .....	36
B. Qualification Information .....	38
C. Declaration Form.....	42
D. Disclaimer.....	43
E. Letter of Acceptance.....	44
F. Agreement.....	45

### Standard Form: Contractor's Bid

\_\_\_\_\_ [date]

To: Bank of Jamaica  
Address: Nethersole Place  
Kingston

We offer to execute the **SUPPLY AND INSTALLATION OF AIR-COOLED LIQUID CHILLERS AT THE BANK OF JAMAICA** in accordance with the Conditions of Contract accompanying this Bid for the Contract Price of \_\_\_\_\_ [amount in words and numbers] ( \_\_\_\_\_ ) [name of currency] \_\_\_\_\_).

The advance payment required is: *[insert amount and currency]*

This Bid and your written acceptance of it shall constitute a binding Contract between us. We understand that you are not bound to accept the lowest or any Bid you receive.

We hereby confirm that this Bid complies with the Bid validity and Bid Security required by the bidding documents and specified in the Bidding Data.

Authorized Signature:-

\_\_\_\_\_

Name and Title of Signatory:

\_\_\_\_\_

Name of Bidder:

\_\_\_\_\_

Address:

\_\_\_\_\_

\_\_\_\_\_



The Contract shall be paid in the following currencies:

Currency	Percentage payable in currency	Rate of exchange: one foreign equals <i>[insert local]</i> (delete if no foreign currency is permitted) <sup>1</sup>	Inputs for which foreign currency is required (delete if no foreign currency is permitted)
(a) _____	_____	_____	_____
(b) _____  _____	_____  _____	_____  _____	_____  _____  _____  _____

**Standard Form: Qualification Information**

**1. Individual Bidders or Individual Members of Joint Ventures**

1.1 Constitution or legal status of Bidder *[attach copy]*

Place of registration: \_\_\_\_\_

Principal place of business: \_\_\_\_\_

Power of attorney of signatory of Bid *[attach]*

1.2 Total annual volume of construction work performed in three (3) years, in local currency. \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

1.3 Work performed as prime Contractor on works of a similar nature and volume over the last three (3) years. The values should be indicated in the same currency used for Item 1.2 above. Also list details of work under way or committed, including expected completion date.

Project name and country	Name of client and contact person	Type of work performed and year of completion	Value of contract
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
<i>[etc.]</i>			

1.4 Major items of Contractor's Equipment proposed for carrying out the Works. List all information requested below. Refer also to Sub-Clause 4.3(d) of the Instructions to Bidders. **Not Applicable**

Item of equipment	Description, make, and age (years)	Condition (new, good, poor) and number available	Owned, leased (from whom?), or to be purchased (from whom?)
_____	_____	_____	_____

1.5 Qualifications and experience of key personnel proposed for administration and execution of the Contract. Attach biographical data. Refer also to Sub-Clause 4.3(e) of the Instructions to Bidders and Sub-Clause 9.1 of the Conditions of Contract.

Position	Name	Years of experience (general)	Years of experience in proposed position
Project Manager			
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
<i>[etc.]</i>	_____	_____	_____

1.6 Proposed subcontracts and firms involved. Refer to Clause 7 of Conditions of Contract.

Sections of the Works	Value of subcontract	Subcontractor (name and address)	Experience in similar work
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
<i>[etc.]</i>	_____	_____	_____

1.7 Financial reports for the last three years: balance sheets, profit and loss statements, auditors' reports, etc. List below and attach copies.

**Not Applicable**

---



---



---

---

1.8 Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List below and attach copies of support documents.

---



---



---

1.9 Name, address, and telephone, telex, and facsimile numbers of banks that may provide references if contacted by the Procuring Entity.

---



---



---

1.10 Information on current litigation\* in which the Bidder is involved.  
**See Declaration Form, Page 42**

Other party(ies)	Cause of dispute	Amount involved
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

1.11 Statement of compliance with the requirements of Sub-Clause 3.1 of the Instructions to Bidders.

---



---



---

1.12 Proposed Program (work method and schedule). Descriptions, drawings, and charts, as necessary, to comply with the requirements of the bidding documents.

2. **Joint Ventures**

---

*\*N.B. [The Procuring Entity reserves the right not to award a contract to any party with whom it is currently in litigation or with whom it has been previously involved in litigation]*

---

- 2.1 The information listed in 1.1 - 1.11 above shall be provided for each partner of the joint venture.
- 2.2 The information in 1.12 above shall be provided for the joint venture.
- 2.3 Attach the power of attorney of the signatory(ies) of the Bid authorizing signature of the Bid on behalf of the joint venture.
- 2.4 Attach the Agreement among all partners of the joint venture (and which is legally binding on all partners), which shows that
  - (a) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;
  - (b) one of the partners will be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of any and all partners of the joint venture; and
  - (c) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

### 3. Additional Requirements

- 3.1 Bidders should provide any additional information required in the Bidding Data or to fulfill the requirements of Sub-Clause 4.1.
    - Declaration
    - Disclaimer Form
    - Proof of Manufacturer's Authorization
-

## Declaration Form

Name of Bidder: \_\_\_\_\_

Address of Bidder: \_\_\_\_\_  
\_\_\_\_\_

We ( \_\_\_\_\_ ) hereby declare that to the best of our information, knowledge and belief and after due inquiry, the Bidder is not insolvent nor has it taken any corporate action nor has any other steps been taken or legal proceedings started or threatened against the bidder for its winding up, dissolution or reorganization or for the appointment of a receiver, administrator, trustee or subsidiary of the Bidder or any or all of its assets and undertaking.

That, so far as we are aware after due enquiry, no litigation, arbitration or administrative proceedings are at present current, pending or threatened, which might if adversely determined have a material adverse effect on the business, assets or financial condition of the Bidder or those of any of its subsidiaries.

\_\_\_\_\_  
Signature and Seal

\_\_\_\_\_  
Date

**Note: This letter of authority must be on the letterhead of the Auditor or Legal firm and must be included by the Bidder with its bid.**

---

## Disclaimer

TO: Bank of Jamaica  
Nethersole Place  
Kingston

NAME OF BIDDER:

ADDRESS OF BIDDER:

RFP NAME AND NUMBER: **RFP# 2017-12-02-05 Supply & Installation of Air-Cooled Liquid Chillers**

We, the above-mentioned Bidder for the bid referred to above, hereby verify that the information contained in our bid document is accurate and hereby acknowledge that the Bank of Jamaica does not give any representation, warranty or undertaking, expressed or implied in respect of the information contained in the bid document and no responsibility or liability will be accepted by the Bank of Jamaica as to the accuracy or completeness of the document or for any other written or oral information made available to bidders.

---

Signature and Seal

---

Date

**Note: This letter of authority must be on the letterhead of the Contractor/Company and must be included by the Bidder with its bid.**

---

**Standard Form: Letter of Acceptance**  
*[letterhead paper of the Procuring Entity]*

\_\_\_\_\_ *[date]*

To: \_\_\_\_\_  
*[name of the Contractor]*

\_\_\_\_\_  
*[address of the Contractor]*

6. This is to notify you that your Bid dated \_\_\_\_\_ for execution of the **Supply and Installation of Air-Cooled Liquid Chillers at Bank of Jamaica, Nethersole Place, Kingston (RFP# 2017-12-02-05)**, as given in the *Contract Data* for the Contract Price of the equivalent<sup>1</sup> of \_\_\_\_\_) *[amount in numbers and words]* \_\_\_\_\_ *[name of currency]*, as corrected and modified<sup>2</sup> in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are hereby instructed to proceed with the execution of the said Works in accordance with the Contract documents.

Authorized Signature:  
\_\_\_\_\_

Name and Title of Signatory:  
\_\_\_\_\_

Name of Agency:  
\_\_\_\_\_

Attachment: Agreement



## Standard Form: Agreement

### AGREEMENT

This Agreement, made the \_\_\_\_\_ day of \_\_\_\_\_  
20\_\_\_\_\_, between

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ *[name and address of Procuring Entity]* (hereinafter called “the Procuring Entity”) and

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ *[name and address of Contractor]* (hereinafter called “the Contractor”) of the other part.

Whereas the Procuring Entity is desirous that the Contractor execute **Supply and Installation of Air-Cooled Liquid Chillers at Bank of Jamaica, Nethersole Place, Kingston (2017-12-02-05)** (hereinafter called “the Works”) and the Procuring Entity has accepted the Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

**Now this Agreement Witnesseth** as follows:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Procuring Entity to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Procuring Entity to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.
3. The Procuring Entity hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

**In Witness** whereof the parties thereto have caused this Agreement to be executed the day and year first before written.

The Common Seal of

\_\_\_\_\_  
\_\_\_\_\_

was hereunto affixed in the presence of:

Signed, Sealed, and Delivered by the said

\_\_\_\_\_

In the presence of:

Binding Signature of Procuring Entity: \_\_\_\_\_

Binding Signature of Contractor: \_\_\_\_\_ -

## Section IV. Security Forms

### Table of Forms

<b>Annex A Form: Bid Security (Bank Guarantee) .....</b>	<b>48</b>
<b>Annex B Form: Performance Bank Guarantee as indicated in Contract Data.....</b>	<b>49</b>
<b>Annex C Form: Bank Guarantee for Advance Payment.....</b>	<b>50</b>

---

### Annex A Form: Bid Security (Bank Guarantee)

WHEREAS, \_\_\_\_\_ [name of Bidder] (hereinafter called “the Bidder”) has submitted his Bid dated \_\_\_\_\_ [date] for the construction of \_\_\_\_\_ [name of Contract] (hereinafter called “the Bid”).

KNOW ALL PEOPLE by these presents that We \_\_\_\_\_ [name of Bank] of \_\_\_\_\_ [name of country] having our registered office at \_\_\_\_\_ (hereinafter called “the Bank”) are bound unto \_\_\_\_\_ [name of Procuring Entity] (hereinafter called “the Procuring Entity”) in the sum of<sup>1</sup> \_\_\_\_\_ for which payment well and truly to be made to the said Procuring Entity, the Bank binds itself, its successors, and assigns by these presents.

SEALED with the Common Seal of the said Bank this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

THE CONDITIONS of this obligation are:

- (1) If, after Bid opening, the Bidder withdraws his Bid during the period of Bid validity specified in the Form of Bid;
- or
- (2) If the Bidder having been notified of the acceptance of his Bid by the Procuring Entity during the period of Bid validity:
    - (a) fails or refuses to execute the Form of Agreement in accordance with the Instructions to Bidders, if required; or
    - (b) fails or refuses to furnish the Performance Security, in accordance with the Instruction to Bidders; or
    - (c) does not accept the correction of the Bid Price pursuant to Clause 27.

We undertake to pay to the Procuring Entity up to the above amount upon receipt of his first written demand, without the Procuring Entity's having to substantiate his demand, provided that in his demand the Procuring Entity will note that the amount claimed by him is due to him owing to the occurrence of one or any of the three conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date \_\_\_\_\_<sup>2</sup> days after the deadline for submission of bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Procuring Entity, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this Guarantee should reach the Bank not later than the above date.

DATE \_\_\_\_\_ SIGNATURE OF THE BANK \_\_\_\_\_

WITNESS \_\_\_\_\_ SEAL \_\_\_\_\_

\_\_\_\_\_  
[signature, name, and address]

<sup>1</sup> *The Bidder should insert the amount of the Guarantee in words and figures denominated in the currency of the Procuring Entity's country. This figure should be the same as shown in Clause 16.1 of the Instructions to Bidders.*

### Annex B Form: Performance Bank Guarantee

To: \_\_\_\_\_ *[name of Procuring Entity]*

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

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

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

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of \_\_\_\_\_ *[amount of Guarantee]*<sup>1</sup> \_\_\_\_\_ *[amount in words]*, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of \_\_\_\_\_ *[amount of Guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

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

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

This Guarantee shall be valid until a date 28 days from the date of issue of the Certificate of Completion.

SIGNATURE AND SEAL OF THE GUARANTOR \_\_\_\_\_  
 Name of Bank \_\_\_\_\_  
 Address \_\_\_\_\_  
 Date \_\_\_\_\_

<sup>1</sup> *An amount is to be inserted by the Guarantor, representing the percentage of the Contract Price specified in the Contract, and denominated in the currency of the Contract.*

### Annex C Form: Bank Guarantee for Advance Payment

To: \_\_\_\_\_ [*name of Procuring Entity*]  
 \_\_\_\_\_ [*address of Procuring Entity*]  
 \_\_\_\_\_ [*name of Contract*]

Gentlemen:

In accordance with the provisions of the Conditions of Contract, Clause 51 (“Advance Payment”) of the above-mentioned Contract, \_\_\_\_\_ [*name and address of Contractor*] (hereinafter called “the Contractor”) shall deposit with \_\_\_\_\_ [*name of Procuring Entity*] a Bank Guarantee to guarantee his proper and faithful performance under the said Clause of the Contract in an amount of \_\_\_\_\_ [*amount of Guarantee*] \_\_\_\_\_ [*amount in words*].

We, the \_\_\_\_\_ [*Bank or Financial Institution*], as instructed by the Contractor, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to \_\_\_\_\_ [*name of Procuring Entity*] on his first demand without whatsoever right of objection on our part and without his first claim to the Contractor, in the amount not exceeding \_\_\_\_\_ [*amount of Guarantee*] \_\_\_\_\_ [*amount in words*].

We further agree that no change or addition to or other modification of the terms of the Contract or of Works to be performed there under or of any of the Contract documents which may be made between \_\_\_\_\_ [*name of Procuring Entity*] and the Contractor, shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any such change, addition, or modification.

This Guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until \_\_\_\_\_ [*name of Procuring Entity*] receives full repayment of the same amount from the Contractor.

Yours truly,  
 SIGNATURE AND SEAL: \_\_\_\_\_  
 Name of Bank/Financial Institution: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Date: \_\_\_\_\_

---

<sup>1</sup> *An amount is to be inserted by the Surety, representing the percentage of the Contract Price specified in the Contract Data, and denominated in the currency of the Contract.*

## **Volume 2 - Specific Bidding Documents**

---

**TABLE OF CONTENTS**

Section 5. Bidding Data.....	56
Section 6. Contract Data.....	60
Section 7. Specifications.....	65
Section 8. Drawings.....	67
Section 9. Bill of Quantities.....	68

---



## Section V. Bidding Data

This section should be filled out by the Procuring Entity before issuance of the bidding documents.

### Instructions to Bidders

#### Clause Reference

- (1.1) The Procuring Entity is **The Bank of Jamiaca.**
- (1.2) The Project is **Supply and Installation of Air-Cooled Liquid Chillers at Bank of Jamaica, Nethersole Place, Kingston**
- Lot 1 - One (1) 60-Ton Air-Cooled Liquid Chiller - Annex Building**  
**Lot 2 - One (1) 100-Ton Air-Cooled Liquid Chiller -Auditorium/Concourse**
- Supply and install microprocessor controlled air-cooled liquid chiller for outdoor installation in a **coastal environment.**
  - Supply of all parts and labour required for installation.
  - Disconnection, removal and disposal of existing equipment.
  - Installation of new Chiller.
  - Reconnection of Chiller to existing supply and return chilled water piping.
  - Modification to chilled water pipe, insulation and wiring as necessary.
- (4.3) The information required from bidders in Sub-Clause 4.3 is modified as follows:
- 4.3(a) copies of original documents defining the constitution or legal status, place of registration, and principal place of business; written power of attorney of the signatory of the Bid to commit the Bidder; **Applicable**
- 4.3(b) Total monetary value of construction work performed for each of the last three (3) years; **Not Applicable**
- 4.3(c) Experience in works of a similar nature and size for each of the last five (5) years, and details of work under way or contractually committed; and clients who may be contacted for further information on those contracts; **Applicable**
- 4.3(d) Major items of construction equipment proposed to carry out the Contract; **Not Applicable**
- 4.3(e) Qualifications and experience of key site management and technical personnel proposed for the Contract; **Applicable**
- 4.3(f) Reports on the financial standing of the Bidder, such as profit and loss statements and auditor's reports for the past three (3) years; **Not Applicable**
-

- 4.3(g) Evidence of adequacy of working capital for this Contract (access to line(s) of credit and availability of other financial resources); **Applicable**.
- 4.3(h) Authority to seek references from the Bidder's bankers; **Applicable**
- 4.3(i) Information regarding any litigation, current or during the last three years, in which the Bidder is involved, the parties concerned, and disputed amount. **Applicable**
- (4.4) The qualification data required from bidders in Sub-Clause 4.4 are modified as follows: **None**
- (4.5) The qualification criteria in Sub-Clause 4.5 are modified as follows:
- (4.5a) The minimum required annual volume of construction work for the Successful Bidder in any of the last two (2) years shall be: **Not Applicable**
- (4.5c) The essential equipment to be made available for the Contract by the successful Bidder shall be: **Not Applicable**
- (4.5e) The minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the successful Bidder shall be **\$5,000,000.00**.
- (7.1) **A mandatory Site Visit is scheduled to be held on Wednesday, 29 November 2017 @ 10:30 a.m.**
- (9.1) All enquiries regarding the RFP shall be made by **Friday, 01 December 2017**. Responses to all queries and requests for clarification will be made available to all Bidders by **Wednesday, 06 December 2017** via the Bank's website: <http://www.boj.org.jm>. *(It is therefore incumbent on Bidders to monitor the BOJ website).*
- (12.1) The additional materials required to be completed and submitted by the bidder are as follows:
- Declaration
  - Disclaimer Form
  - Proof of Manufacturer Authorization
- (13.1) This shall be a **"Lump Sum Contract based on Specifications"**.
- (13.4) The Contract is **not** subject to price adjustment in accordance with Clause 44 of the Conditions of Contract.
- (14.1)1. The currency of Bid shall be in **Jamaican Dollars**.
- (15.1) The period of Bid validity shall be **120 days**.
- (16.1) The amount of Bid Security shall be: **\$375,000.00**
- (17.1) Alternative proposals to the requirements of the bidding documents **will not** be permitted.
-

- (18.1) The number of copies of the Bid to be completed and returned shall be **Two (2) Hard Copies and One (1) Soft Copy of equal content and validity**. Proposal should be submitted in a properly sealed envelope clearly marked: **RFP# 2017-12-02-05 - Supply and Installation of Air-Cooled Liquid Chillers**
- (19.2) The Procuring Entity's address for the purpose of Bid submission is: **Bank of Jamaica, Nethersole Place, Kingston.**
- (20.1) The deadline for submission of bids shall be **Monday, 18 December 2017, at 10:00 a.m.**
- (23.1) Time, Date and Place of Bid Opening: **Monday, 18 December 2017 at 10:10 a.m. at Bank of Jamaica, Nethersole Place, Kingston**
- (25.3) The dispute resolution process shall be:

#### **Amicable Settlement**

Any claim for loss or damage arising out of breach or termination of Agreement shall be settled between the Procuring Entity and Supplier by negotiation. If this negotiation is not successfully settled within fifteen (15) days after the date of initiation or negotiation or within such longer period as the parties may mutually agree, then the parties will jointly agree, within ten (10) days after the date of expiration of the period in which the parties should have successfully concluded their negotiations, to appoint a Mediator to assist in reaching an amicable resolution of dispute. This procedure shall be private and without prejudice. If the parties fail to agree upon the appointment of a Mediator within the stipulated period, then, within seven (7) days of expiration of this period, the Procuring Entity shall request appointment of a Mediator by the Dispute Resolution Foundation of Jamaica. The Mediator shall not have the power to impose a settlement on the parties. If the dispute is not resolved between the parties within thirty (30) days after the appointment of the Mediator by the Dispute Resolution Foundation of Jamaica, or after such longer period as the parties may mutually agree, the mediator shall advise the parties of the failure of the Mediation.

For the purposes of this clause, a negotiation is deemed to have been initiated as of the date of receipt of notice by one party of a request from the other party to meet and negotiate the matter in dispute.

For the purposes of this clause, a Mediator is deemed to have been appointed as of the date of notice of such appointment being given to both parties.

#### **Dispute Settlement**

In the event of the failure of the mediation between parties, the mediator will record those verifiable facts that the parties have agreed. Subsequently the case will be handled by arbitration. The parties agree to accept the award of the Arbitrator as binding and irrevocable within the provisions of the Arbitration Act of Jamaica. The mediator's role in the dispute resolution process shall cease upon appointment of the Arbitrator. During the dispute settlement process, the Supplier shall continue to perform the work in accordance with this contract. Failure to do so shall be considered a breach of contract.

---

## Arbitration

The seat of the arbitration shall be Jamaica and disputes shall be settled in accordance with the Arbitration Act of Jamaica. Rules of procedure to be adopted shall be those as published by the United Nations Commission on International Trade Law (UNCITRAL) *Arbitration Rules of 1976*.

(27.1(b)) In case of a lump-sum Contract, this Clause is deleted.

(28.1) Bids shall be evaluated using the criteria and weightings set out below and at [Appendix I](#). The minimum required score for the Technical Evaluation is **Eighty (80)** points. The contractor attaining the minimum required score will be given further consideration.

1. Corporate Profile & Qualifications - 10 points
2. Technical Specifications - 55 points
3. Services & Support - 35 points

### GENERAL EVALUATION FORMULA

A. The **Technical Score** will be scored using the following formula, where:

$Q_t$  is the score of the Technical Proposal

$t$  = Technical weighting (**60%**)

TP is total points (out of 100) for Technical Proposal,

$$Q_t = TP / 100 \times t$$

B. The **Financial Score** will be scored using the following formula, where:

$C_f$  is the score of the Financial Proposal;

$c$  = Cost weighting (**40%**)

$F_{low}$  is the lowest Bid price; and

$F$  is the Bid price of the Proposal under consideration,

$$C_f = c \times F_{low} / F$$

C. **Total Score =  $Q_t + C_f$**

**Total Score = Technical Score + Financial Score**

(29.1) The Contract will be awarded to the bidder attaining the highest evaluated score.

(32.1) The Standard Form of Performance Security acceptable to the Procuring Entity shall be: **Applicable** Unconditional Bank Guarantee or a Bond issued by a Bank or Surety.

(33.1) The Advance Payment shall be limited to \_\_\_\_\_ *[insert]* percent of the Contract Price.

## APPENDIX I - TECHNICAL EVALUATION MATRIX

Name of Tender: <b>Supply &amp; Installation of Air-Cooled Liquid Chillers</b>		
RFP #: 2017-12-02-05		
Date: 18 December 2017		
DESCRIPTION	POINTS	
<b><u>Bid Qualification Checklist</u></b>	<b>POINTS</b>	
Tax Compliance Certificate	Y/N	
NCC Registration	Y/N	
Bid Security	Y/N	
Disclaimer	Y/N	
Declaration Form	Y/N	
Contractor's Bid Form	Y/N	
Qualification Information Form	Y/N	
Proof of Manufacturer Authorization	Y/N	
<b><u>A. Corporate Profile &amp; Qualifications</u></b>		
Experience and Qualification to include list of projects of a similar nature over the last 5 years: ≤5 contracts = 5pts; > 5 contracts = 10pts	<b>10</b>	
<b><u>B. Technical Specifications</u></b>	<b>55</b>	
Conformity with Product/Equipment Specifications including brochures	40	
Quality Assurance	5	
Chiller Warranty (1 Year)	5	
Warranty (Parts and Labour-Min. 1 year)	5	
<b><u>C. Services and Support</u></b>	<b>35</b>	
Key Project Resource Personnel - Qualifications and Experience in air conditioning system design, supply and maintenance: Satisfactory-6; Good =8; Very Good =10	10	
After Sales Service & Support to include Availability of Spare Parts/Maintenance Cost Proposal	15	
Customer References: (Min. of 3 References from clients on similar projects)	10	
Project Delivery Schedule: ≤ 10 weeks = 10 pts.; over 10 weeks = 5 pts.	10	
<b>TOTAL TECHNICAL SCORE</b>	<b>100</b>	

**The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents. Failure to furnish all information or documentation required by the Bidding Documents may result in the rejection of the bid.**

---

## Section VI. Contract Data

Serial No.		Contract Clause Reference
1.	The following documents are also part of the Contract:	
	· Schedule of Operating and Maintenance Manuals <b>Applicable</b>	[54]
	· Schedule of Other Contractors <b>Not Applicable</b>	[8]
	· The Schedule of Key Personnel <b>Applicable</b>	[9]
	· Site Investigation Reports <b>Not Applicable</b>	[14]
2.	The Procuring Entity is: Name: <b>Bank of Jamaica</b> Address: <b>Nethersole Place, Kingston.</b> Name of Authorized Representative: <b>Head of Procurement</b>	
3.	The Project Manager is <b>to be determined</b> Name: Address: Name of Authorized Representative:	[1.1]
4.	The name and identification number of the Contract is: <b>RFP# 2017-12-02-05 Supply and Installation of Air-Cooled Liquid Chillers</b> [1.1]	
5.	The Works consist of <b>Supply and Installation of Air-Cooled Liquid Chillers at the Bank of Jamaica:</b> <ul style="list-style-type: none"> <li>• <b>Lot 1 - 60-Ton Air-Cooled Liquid Chiller-Annex Building</b></li> <li>• <b>Lot 2 - 100-Ton Air Cooled Liquid Chiller-Auditorium/Concourse</b></li> </ul>	
6.	The Start Date shall be determined upon the signing of the Contract.	[1.1]
7.	The Intended Completion Date for the whole of the Works shall be: _____. [17, 27] <i>[If different dates are specified for completion of the Works by section, "sectional completion", these dates should be listed here.]</i>	
8.	The following documents also form part of the Contract:	[2.1]
	i. Agreement	
	ii. Letter of Acceptance	
	iii. Contractor's Bid	
	iv. Contract Data	
	v. Condition of Contract	
	vi. Specifications	
	vii. Drawings	
9.	The Contractor shall submit a revised Program for the Works Within <b>seven (7) days</b> of delivery of the Letter of Acceptance.	[26]
10.	The Site Possession Date shall be <b>determined upon signing of the contract.</b> [21]	

- 
11. The Site is located at **Nethersole Place, Kingston** [1]
12. The Defects Liability Period is **Twelve (12) months.** [33]
13. The minimum insurance covers shall be: **Not Applicable:** [13]
14. The following events shall also be Compensation Events: **None** [41]  
1. \_\_\_\_\_.  
2. \_\_\_\_\_.  
3. \_\_\_\_\_.  
4. \_\_\_\_\_.
15. The period between Program updates is \_\_\_\_\_ **days.** [26]
16. The amount to be withheld for late submission of an updated Program is **nil.** [26]
17. The amount to be retained from each payment due to the Contractor is \_\_\_\_\_ **(%)** [44]
18. The language of the Contract documents is **English.** [3]
19. The law that applies to the Contract is the law of **International Trade.** [3]
20. Institution whose arbitration procedures shall be used: **UNCITRAL.** [25]
21. In case of lump sum contracts, clause 40.2 is hereby deleted [40]
22. In case of lump sum contracts, clause 40.2 is replaced as follows [40]  
"40.2 - The value of work executed shall comprise the value of completed activities in the Activity Schedule."
23. The Contract *is not* subject to price adjustment in accordance with Clause 44 of the Conditions of Contract, and the following information regarding coefficients *does not* apply.
24. The coefficients for adjustment of prices are: **Not Applicable** [43]  
\_\_\_\_\_ percent nonadjustable element (coefficient A).  
\_\_\_\_\_ percent adjustable element (coefficient B).
25. The liquidated damages for the whole of the Works are \_\_\_\_\_% per day. [45.1]
26. The maximum amount of liquidated damages for the whole of the Works is \_\_\_\_\_ **(%) of the final Contract Price.** [45.1]
27. The Bonus for the whole of the Works is **zero (0).** The maximum amount of Bonus for the whole of the Works is **zero percent (0%) of the final Contract Price.** [46]
28. The Advance Payment of \_\_\_\_\_ of the contract price shall be made to the Contractor by \_\_\_\_\_. [47.1]
29. The Performance Security shall be for the following minimum amount equivalent as a percentage of the Contract Price: [48.1]
-



- 
30. The standard form of Bank Performance Security acceptable to the Procuring Entity shall be of that of a Bank Guarantee issued by a reputable financial institution. [48.1]
33. The date by which operating and maintenance manuals are required is **Applicable** [54.1]
34. The date by which “as built” drawings are required is **Not Applicable**. [54.1]
35. The amount to be withheld for failing to produce “as built” drawings and/or operating and maintenance manuals by the date required is **Not Applicable**. [54.2]
36. The percentage to apply to the value of the work not completed, representing the Procuring Entity’s additional cost for completing the Works, is \_\_\_\_\_(%). [56.1]
-

## Section VII: Specifications

### LOT I - ANNEX AIR-COOLED LIQUID CHILLER

#### OVERVIEW

The Bank of Jamaica (BOJ) invites proposals from qualified contractors for the supply and installation of a **60 Ton Air-cooled Liquid Chiller**. The proposed Chiller shall be designed for operating in **coastal environment** and shall be energy efficient, easy to maintain and reliable. The unit will replace an existing Chiller in the Annex Building.

#### SCOPE OF WORK

- Supply and install microprocessor controlled air-cooled liquid chiller for outdoor installation in a **coastal environment**.
- Supply of all parts and labour required for installation.
- Disconnection, removal and disposal of the existing equipment
- Installation of new Chiller.
- Reconnection of Chiller to existing supply and return chilled water piping.
- Modification to chilled water pipe, insulation and wiring as necessary.

The successful Contractor must:

- Be in the air condition business twenty or more years.
- Be the authorized Agent/ Dealer of the proposed equipment
- Be experience in the engineering design of air conditioning systems for medium to large size buildings.
- Have experienced engineers and technicians on staff.
- Be able to supply, install and service proposed Chiller.

#### SPECIFICATION

##### PART 1 – GENERAL

###### 1.1 SYSTEM DESCRIPTION

Microprocessor controlled, **60 ton air-cooled liquid chiller** for outdoor installation, utilizing scroll compressors, low sound fans and include hydronic pump system package.

All fans are controlled with variable speed fan drive motors. Chiller software shall be specifically developed to coordinate optimal fan speed for application conditions and provide refrigerant circuit optimization, resulting in higher part-load efficiency and reduced acoustic levels.

###### 1.2 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with AHRI (Air-Conditioning, Heating and Refrigeration Institute) Standard 550/590, latest edition (U.S.A.) and all units shall

be in compliance with ASHRAE (American Society of Heating, Refrigeration, and Air-Conditioning Engineers) 90.1.2007 and ASHRAE 90.1 2010.

- B. Unit construction shall comply with ASHRAE 15 Safety Code, UL (Underwriters Laboratories) latest edition, and ASME (American Society of Mechanical Engineers) applicable codes (U.S.A. Codes).
- C. The management system governing the manufacture of this product is ISO 9001: 2008 certified.
- D. Unit shall be full load run tested at the factory.

### 1.3 DELIVERY, STORAGE AND HANDLING

- A. Unit controls shall be capable of withstanding 150 F (66 C) storage temperatures in the control compartment.
- B. Unit shall be stored and handled per unit manufacturer's recommendations.

### 1.4 WARRANTY

- A. The manufacturer shall warrant Chiller against defects of workmanship and material for a minimum period of one (1) year from the date of initial start-up.
- B. Contractor shall provide one (1) year warranty on parts and labour relative to installation.

### 1.5 SUBMITTALS

- A. Unit performance including: capacity, nominal and operating performance
- B. Mechanical Specifications for unit and accessories describing construction, components and options.
- C. Shop drawings indicating overall dimensions as well as installation, operation and service clearances. Indicate lift points and recommendations and center of gravity. Indicate unit shipping, installation and operating weights including dimensions.
- D. Product Data and Installation Instructions.
- E. Data on electrical requirements and connection points. Include recommended wire and fuse sizes or MCA, sequence of operation, safety and start-up instructions.

## Part 2 – PRODUCTS

### 2.1 EQUIPMENT

#### A. General:

Factory assembled, single-piece or factory-matched duplex chassis, **60 ton air-cooled liquid chiller**. Contained within the unit cabinet shall be all factory wiring, piping, controls, refrigerant charge (R-410A), and special features required prior to field start-up.

---

**B. Materials of Construction:**

1. The base rail is industrial-quality, 7ga, zinc-dipped, galvanized frame (with Magni-coated screws).
2. Cabinet shall be galvanized steel casing with a baked enamel powder or pre-painted finish.
3. Cabinet shall be capable of withstanding 500-hour salt spray test in accordance with the ASTM (American Society for Testing and Materials) (U.S.A.) B-117 standard.

**C. Fans: High-efficiency variable condenser fans**

All fans on the unit shall have variable speed fan motors to provide higher part load efficiency and reduced acoustic levels. Each fan circuit shall have a factory-installed, independent variable speed drive with display. Variable speed drives are rated IP-55 enclosures and UL Listed. Condenser fans shall be reinforced polymer construction, shrouded-axial type, and shall be statically and dynamically balanced with inherent corrosion resistance. Fans shall be protected by coated steel wire safety guards.

**D. Compressor/Compressor Assembly:**

Fully hermetic scroll type compressors.

2. Direct drive, **3000 rpm (50 Hz)**, protected by motor temperature sensors, suction gas cooled motor.
3. External vibration isolation rubber-in-shear.
4. Each compressor shall be equipped with crankcase heaters to minimize oil dilution.

**E. Cooler:**

1. Shell-and-tube type, direct expansion.
2. Tubes shall be internally enhanced seamless-copper type rolled into tube sheets.
3. Shall be equipped with Victaulic-type water connections.
4. Shell shall be insulated with 3/4-in. (19-mm) PVC foam (closed-cell) with a maximum K factor of 0.28.
5. Design shall incorporate a minimum of 2 independent direct-expansion refrigerant circuits.
6. Cooler shall be tested and stamped in accordance with ASME Code for a refrigerant working side pressure of 445 psig (3068 kPa). Cooler shall have a maximum water-side pressure of 300 psig (2068 kPa).
7. Cooler shall be provided with a factory-installed flow switch.

**F. Condenser: E-Coated Copper-fin Coils**

Coil shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. Coating process shall ensure complete coil encapsulation. Color shall be high gloss black with gloss –

---

60° of 65 to 90% per ASTM D523-89. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges. Superior hardness characteristics of 2H per ASTM D3363-92A and cross hatch adhesion of 4B-5B per ASTM D3359-93. Impact resistance shall be up to 160 in./lb (ASTM D2794-93). Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92). Corrosion durability shall be confirmed through testing to no less than 3000 hours salt spray per ASTM B117-90. Coil construction shall be copper-fins mechanically bonded to copper tube sheets. Galvanized steel tube sheets shall not be acceptable. A polymer strip shall prevent coil assembly from contacting sheet metal coil pan to maintain coating integrity and minimize corrosion potential between the coil and pan. Assembled condenser coils shall be leak tested and pressure tested at 656 psig (4522 kPa).

#### **G. Refrigeration Components:**

Refrigerant circuit components shall include replaceable-core filter drier, moisture indicating sight glass, electronic expansion device, discharge service valve and liquid line service valves, and complete operating charge of both refrigerant R-410A and compressor oil.

#### **H. Controls, Safeties, and Diagnostics:**

1. Unit controls shall include the following minimum components:
    - a. Microprocessor with non-volatile memory. Battery backup system shall not be accepted.
    - b. Separate terminal block for power and controls.
    - c. Control transformer to serve all controllers, relays, and control components.
    - d. ON/OFF control switch.
    - e. Replaceable solid-state controllers.
    - f. Pressure sensors shall be installed to measure suction and discharge pressure. Thermistors shall be installed to measure cooler entering and leaving fluid temperatures as well as optional heat reclaim condenser entering and leaving fluid temperatures, and refrigerant pump down pressure and temperature.
  2. Unit controls shall include the following functions:
    - a. Automatic circuit lead/lag.
    - b. Hermetic scroll compressors are maintenance free and protected by an auto-adaptive control that minimizes compressor wear.
    - c. Capacity control based on leaving chilled fluid temperature and compensated by rate of change of return-fluid temperature with temperature set point accuracy to 0.1° F (0.06° C).
    - d. Limiting the chilled fluid temperature pull-down rate at start-up to an adjustable range of 0.2° F to 2° F (0.11° C to 1.1° C) per minute to prevent excessive demand spikes at start-up.
    - e. Seven-day time schedule.
-

- f. Leaving chilled fluid temperature reset from return fluid and outside air temperature.
- g. Chilled water pump and optional heat reclaim condenser water pump start/stop control and primary/standby sequencing to ensure equal pump run time.
- h. Dual chiller control for parallel chiller applications without addition of hardware modules and control panels (additional thermistors and wells are required).
- i. Timed maintenance scheduling to signal maintenance activities for pumps, strainer maintenance and user-defined maintenance activities.
- j. Low ambient protection to energize cooler and optional heat reclaim or hydronic system heaters.
- k. Periodic pump start to ensure pump seals are properly maintained during off-season periods.
- l. Single step demand limit control activated by remote contact closure.
- m. Generation of 0 to 10 vdc signal to control 3-way valve position when optional heat reclaim is employed.
- n. Nighttime sound mode to reduce the sound of the machine by a user-defined schedule.

### 3. Diagnostics:

- a. The control panel shall include, as standard, a scrolling marquee display capable of indicating the safety lockout condition by displaying a code for which an explanation may be scrolled at the display with time and date stamp.
  - b. Information included for display shall be:
    - 1) Compressor lockout.
    - 2) Loss of charge.
    - 3) Low fluid flow.
    - 4) Cooler coil and optional heat reclaim coil freeze protection.
    - 5) Cooler set point.
    - 6) Optional heat reclaim set point.
    - 7) Chilled water reset parameters.
    - 8) Thermistor and transducer malfunction.
    - 9) Entering and leaving-fluid temperature.
    - 10) Evaporator and condenser pressure.
    - 11) System refrigerant temperatures.
    - 12) Chiller run hours.
    - 13) Compressor run hours.
    - 14) Compressor number of starts.
-

## 15) Time of day:

- a) Display module, in conjunction with the microprocessor, must also be capable of displaying the output (results) of a service test. Service test shall verify operation of every switch, thermistor, fan, and compressor before chiller is started.
- b) Diagnostics shall include the ability to review a list of the 30 most recent alarms with clear language descriptions of the alarm event. Display of alarm codes without the ability for clear language descriptions shall be prohibited.
- c) An alarm history buffer shall allow the user to store no less than 30 alarm events with clear language descriptions, time and date stamp event entry.
- d) The chiller controller shall include multiple connection ports for communicating with the local equipment network, the Carrier Comfort Network® (CCN) system and access to chiller control functions from any point on the chiller.
- e) The control system shall allow software upgrade without the need for new hardware modules.

## 16) Crankcase heater failure.

**4. Safeties:**

- a. Unit shall be equipped with thermistors and all necessary components in conjunction with the control system to provide the unit with the following protections:
  - 1) Loss of refrigerant charge.
  - 2) Reverse rotation.
  - 3) Low chilled fluid temperature.
  - 4) Thermal overload.
  - 5) High pressure.
  - 6) Electrical overload.
  - 7) High heat reclaim leaving fluid temperature.
- b. Condenser fan and factory pump motors shall have external overcurrent protection.

**I. Operating Characteristics:**

1. Unit shall be capable of starting and running at outdoor ambient temperatures from 32 F to 125 F (0° to 52 C) for all sizes.
2. Unit shall be capable of starting up with 95 F (35 C) entering fluid temperature to the cooler.

**J. Electrical Requirements:**

1. Unit/module primary electrical power supply shall enter the unit at a single location (some chiller voltage/size combinations require 2 power supplies).
  2. Unit shall operate on **240/415 vac 3-phase 50 hz** -
-

3. Control points shall be accessed through terminal block.
4. Unit shall be shipped with factory control and power wiring installed.

**K. Chilled Water Circuit:**

1. Chilled water circuit with optional pump package shall be rated for 150 psig (1034 kPa) working pressure.
2. Thermal dispersion proof of flow switch shall be factory installed and wired.
3. Hydronic package with VFD (variable frequency drive)
  - 1) Field pipe connections shall be Victaulic type.
  - 2) Optional single or primary/standby operation pump systems. Dual pump systems shall have a pump discharge check valve.
  - 3) Pumps shall be vertical in-line, single stage design, and capable of being serviced without disturbing piping connections.
    - a) Pump casing shall be of class 30 cast iron.
    - b) The impeller shall be of cast bronze, closed type, dynamically balanced, keyed to the shaft and secured by locking cap screw.
    - c) The hydronic kit will be provided with a flush line connection to ensure lubrication at the seal face and allow for positive venting of the seal chamber.
    - d) Each port shall be fitted with an isolation valve that allow the units to operate in parallel or standby, yet may be used to isolate one pumping unit for servicing or removal with the other pump still running.
    - e) Pump shall be rated for 150 psig (1034 kPa) working pressure.
    - f) The pump case shall have gage tappings at the suction and discharge nozzles and include drain ports.
    - g) Dual pumps shall allow for the servicing of one pump without draining the chilled water loop.
    - h) Motors shall be premium efficiency, totally enclosed fan cooled (TEFC) 3-phase type with grease lubricated ball bearings.
    - i) Each pump shall be factory tested per Hydraulic Institute Standards.
  - 4) Pressure/temperature taps (3) shall be factory installed to measure the pressure differential across the pump and across the strainer.
  - 5) Combination valve (which includes check, isolation, and modulation) shall be factory installed. Pressure/temperature taps (2) shall be factory installed to measure the pressure differential across the combination valve.
  - 6) Hydronic assembly shall have factory-supplied electric freeze protection to -20 F (-29 C).
  - 7) Piping shall be Schedule 40 black steel.



- 8) Cast iron or ductile iron body 1/8-in. perforated strainer. A factory-installed, removable fine mesh start-up strainer for initial run period shall be included. The start-up strainer must be removed within 24 hours after chiller start-up.
  - 9) The drive shall be of the VVC-PWM (voltage vector control - pulse with modulation) type, providing near unity displacement power factor without the need for external power factor correction capacitors at all loads and speeds.
  - 10) The drive and motor protection shall include; motor phase to ground fault, loss of supply phase, over voltage, under voltage, motor over temperature, inverter overload, over current. Over current is not allowed, ensuring hydronic units will not overload the motor at any point in the operating range of the unit.
  - 11) Sensorless control software shall be available in the hydronic unit to provide automatic speed control without the need for pump mounted (internal/external) or remotely mounted differential pressure system feedback sensors. Control mode setting and minimum/maximum head set points shall be set at the factory and be user adjustable via the programming interface.
  - 12) The integrated control shall incorporate an integrated graphical user interface that shall provide running and diagnostic information and identify faults and status in clear English language. Faults shall be logged/recorded for review at a later date. It shall be possible to upload parameters from one drive into the non-volatile memory of a computer and download the parameters into other drives requiring the same settings. The key pad shall incorporate Hand-Off-Auto pushbuttons to enable switching between BMS (Building Management System) and manual control. The drive shall incorporate a USB port for direct connection to a PC and an RS485 connection with Modbus RTU protocol. Optional protocols available should include BACnet and LonWorks.
  - 13) The control shall have the following additional features: Sensorless override for BMS, manual pump control or closed loop PID control; programmable skip frequencies and adjustable switching frequency for noise/vibration control; auto alarm reset; motor pre-heat function; six programmable digital inputs; two analog inputs; one programmable analog/digital output; two volt-free contacts.
  - 14) The hydronic unit shall be capable of operating in any of the following control modes:
    - a) Duty pump and standby pumps with Sensorless control
    - b) Duty pump and standby pumps with remote sensor or building system (BAS) control.
7. Chillervisor System Manager Multi-Unit Control:

Field-installed control shall sequence between 2 and 8 chillers in parallel in a single system.

---

8. Minimum Load Control:

Unit shall be equipped with factory (or field) installed, microprocessor-controlled, minimum load control that shall permit unit operation down to a minimum of 6` capacity (varies with unit size). This option/accessory is not available on applications with leaving fluid temperature less than 38 F (3.3 C).

9. Energy Management Control Module:

A factory or field-installed module shall provide the following energy management capabilities: 4 to 20 mA signals for leaving fluid temperature reset, cooling set point reset or demand limit control; 2-step demand limit control (from 0% to 100%) activated by a remote contact closure; and discrete input for "Ice Done" indication for ice storage system interface.

14. BACnet\* Communication Option:

Shall provide pre-programmed factory-installed communication capability with a **BACnet MS/TP** and **BACnet/IP** network. Allows integration with a third-party BACnet building automation system. No field programming shall be required.

19. Compressor Suction Service Valve:

Standard refrigerant discharge isolation and liquid valves shall enable service personnel to store the refrigerant charge in the cooler or condenser during servicing. This factory-installed option (one valve per refrigerant circuit) shall allow for further isolation of the compressor from the cooler vessel.

24. Service Option:

The service option shall provide a remote service port for Navigator connection and a factory-installed convenience outlet which includes 4-amp GFI (ground fault interrupt) receptacle with independent fuse protection. Convenience outlet shall be a 115-v female receptacle. Service option shall not be available with 380-v.

---

## LOT 2 - AUDITORIUM/CONCOURSE AIR-COOLED LIQUID CHILLER

### OVERVIEW

The Bank of Jamaica (BOJ) request proposals from qualified companies for the supply and installation of a **100 Ton Air-cooled Liquid Chiller**. The proposed Chiller shall be designed for operating in **marine environment** and shall be energy efficient, easy to maintain and reliable. The Chiller will replace an existing unit in the Concourse/Auditorium area (Ground Floor).

### SCOPE OF WORK

- Supply and install microprocessor controlled air-cooled liquid chiller for outdoor installation in a **marine environment**.
- Supply of all parts and labour required for installation
- Disconnection, removal and disposal of existing equipment
- Installation of new Chiller
- Reconnection of Chiller to existing supply and return chilled water piping
- Modification to chilled water pipe, insulation and wiring as necessary

The successful Contractor must:

- Be in the air condition business twenty or more years
- Be the authorized Agent/ Dealer of the proposed equipment
- Be experience in the engineering design of air conditioning systems for medium to large size buildings
- Have experienced engineers and technicians on staff
- Be able to supply, install and service proposed Chiller

### SPECIFICATIONS

#### Part I – GENERAL

##### 1.1 SYSTEM DESCRIPTION

Microprocessor controlled, **100 ton air-cooled liquid chiller** for outdoor installation, utilizing scroll compressors, low sound fans and include optional hydronic pump system.

All fans are controlled with variable speed fan drive motors. Chiller software shall be specifically developed to coordinate optimal fan speed for application conditions and provide refrigerant circuit optimization, resulting in higher part-load efficiency and reduced acoustic levels.

---

## 1.2 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with AHRI (Air-Conditioning, Heating and Refrigeration Institute) Standard 550/590, latest edition (U.S.A.) and all units shall be in compliance with ASHRAE (American Society of Heating, Refrigeration, and Air-Conditioning Engineers) 90.1.2007 and ASHRAE 90.1 2010.
- B. Unit construction shall comply with ASHRAE 15 Safety Code, UL (Underwriters Laboratories) latest edition, and ASME (American Society of Mechanical Engineers) applicable codes (U.S.A. codes).
- C. The management system governing the manufacture of this product is ISO 9001: 2008 certified.
- D. Unit shall be full load run tested at the factory.

## 1.3 DELIVERY, STORAGE AND HANDLING

- A. Unit controls shall be capable of withstanding 150 F (66 C) storage temperatures in the control compartment.
- B. Unit shall be stored and handled per unit manufacturer's recommendations.

## 1.4 WARRANTY

- A. The manufacturer shall warrant Chiller against defects of workmanship and material for a minimum period of one (1) year from the date of initial start-up.
- B. Contractor shall provide one (1) year warranty on parts and labour relative to installation.

## 1.5 SUBMITTALS

- A. Unit performance including: capacity, nominal and operating performance
- B. Mechanical Specifications for unit and accessories describing construction, components and options.
- C. Shop drawings indicating overall dimensions as well as installation, operation and service clearances. Indicate lift points and recommendations and center of gravity. Indicate unit shipping, installation and operating weights including dimensions.
- D. Product Data and Installation Instructions.
- E. Data on electrical requirements and connection points. Include recommended wire and fuse sizes or MCA, sequence of operation, safety and start-up instructions.

## Part 2 – PRODUCTS

### 2.1 EQUIPMENT

#### A. General:

Factory assembled, single-piece or factory-matched duplex chassis, **100 ton air-cooled liquid chiller**. Contained within the unit cabinet shall be all factory wiring,

---

pipng, controls, refrigerant charge (R-410A), and special features required prior to field start-up.

**B. Materials of Construction:**

1. The base rail is industrial-quality, 7ga, zinc-dipped, galvanized frame (with Magni-coated screws).
2. Cabinet shall be galvanized steel casing with a baked enamel powder or pre-painted finish.
3. **Cabinet shall be capable of withstanding 500-hour salt spray test in accordance with the ASTM (American Society for Testing and Materials) (U.S.A.) B-117 standard.**

**C. Fans: High-efficiency variable condenser fans**

All fans on the unit shall have variable speed fan motors to provide higher part load efficiency and reduced acoustic levels. Each fan circuit shall have a factory-installed, independent variable speed drive with display. Variable speed drives are rated IP-55 enclosures and UL Listed. Condenser fans shall be reinforced polymer construction, shrouded-axial type, and shall be statically and dynamically balanced with inherent corrosion resistance. Fans shall be protected by coated steel wire safety guards.

**D. Compressor/Compressor Assembly:**

Fully hermetic scroll type compressors.

2. Direct drive, **3000 rpm (50 Hz)**, protected by motor temperature sensors, suction gas cooled motor.
3. External vibration isolation rubber-in-shear.
4. Each compressor shall be equipped with crankcase heaters to minimize oil dilution.

**E. Cooler:**

1. Shell-and-tube type, direct expansion.
2. Tubes shall be internally enhanced seamless-copper type rolled into tube sheets.
3. Shall be equipped with Victaulic-type water connections.
4. Shell shall be insulated with 3/4-in. (19-mm) PVC foam (closed-cell) with a maximum K factor of 0.28.
5. Design shall incorporate a minimum of 2 independent direct-expansion refrigerant circuits.
6. Cooler shall be tested and stamped in accordance with ASME Code for a refrigerant working side pressure of 445 psig (3068 kPa). Cooler shall have a maximum water-side pressure of 300 psig (2068 kPa).
7. Cooler shall be provided with a factory-installed flow switch.

**F. Condenser: E-coated copper-fin coils**

Coil shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. Coating process shall

---

ensure complete coil encapsulation. Color shall be high gloss black with gloss — 60° of 65 to 90% per ASTM D523-89. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges. Superior hardness characteristics of 2H per ASTM D3363-92A and cross hatch adhesion of 4B-5B per ASTM D3359-93. Impact resistance shall be up to 160 in./lb (ASTM D2794-93). Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92). Corrosion durability shall be confirmed through testing to no less than 3000 hours salt spray per ASTM B117-90. **Coil construction shall be copper-fins mechanically bonded to copper tube sheets.** Galvanized steel tube sheets shall not be acceptable. A polymer strip shall prevent coil assembly from contacting sheet metal coil pan to maintain coating integrity and minimize corrosion potential between the coil and pan. Assembled condenser coils shall be leak tested and pressure tested at 656 psig (4522 kPa).

#### G. Refrigeration Components:

Refrigerant circuit components shall include replaceable-core filter drier, moisture indicating sight glass, electronic expansion device, discharge service valve and liquid line service valves, and complete operating charge of both refrigerant R-410A and compressor oil.

#### H. Controls, Safeties, and Diagnostics:

1. Unit controls shall include the following minimum components:
    - a. Microprocessor with non-volatile memory. Battery backup system shall not be accepted.
    - b. Separate terminal block for power and controls.
    - c. Control transformer to serve all controllers, relays, and control components.
    - d. ON/OFF control switch.
    - e. Replaceable solid-state controllers.
    - f. Pressure sensors shall be installed to measure suction and discharge pressure. Thermistors shall be installed to measure cooler entering and leaving fluid temperatures as well as optional heat reclaim condenser entering and leaving fluid temperatures, and refrigerant pump down pressure and temperature.
  2. Unit controls shall include the following functions:
    - a. Automatic circuit lead/lag.
    - b. Hermetic scroll compressors are maintenance free and protected by an auto-adaptive control that minimizes compressor wear.
    - c. Capacity control based on leaving chilled fluid temperature and compensated by rate of change of return-fluid temperature with temperature set point accuracy to 0.1° F (0.06° C).
    - d. Limiting the chilled fluid temperature pull-down rate at start-up to an adjustable range of 0.2° F to 2° F (0.11° C to 1.1° C) per minute to prevent excessive demand spikes at start-up.
    - e. Seven-day time schedule.
-

- f. Leaving chilled fluid temperature reset from return fluid and outside air temperature.
  - g. Chilled water pump and optional heat reclaim condenser water pump start/stop control and primary/standby sequencing to ensure equal pump run time.
  - h. Dual chiller control for parallel chiller applications without addition of hardware modules and control panels (additional thermistors and wells are required).
  - i. Timed maintenance scheduling to signal maintenance activities for pumps, strainer maintenance and user-defined maintenance activities.
  - j. Low ambient protection to energize cooler and optional heat reclaim or hydronic system heaters.
  - k. Periodic pump start to ensure pump seals are properly maintained during off-season periods.
  - l. Single step demand limit control activated by remote contact closure.
  - m. Generation of 0 to 10 vdc signal to control 3-way valve position when optional heat reclaim is employed.
  - n. Nighttime sound mode to reduce the sound of the machine by a user-defined schedule.
3. Diagnostics:
- a. The control panel shall include, as standard, a scrolling marquee display capable of indicating the safety lockout condition by displaying a code for which an explanation may be scrolled at the display with time and date stamp.
  - b. Information included for display shall be:
    - 1) Compressor lockout.
    - 2) Loss of charge.
    - 3) Low fluid flow.
    - 4) Cooler coil and optional heat reclaim coil freeze protection.
    - 5) Cooler set point.
    - 6) Optional heat reclaim set point.
    - 7) Chilled water reset parameters.
    - 8) Thermistor and transducer malfunction.
    - 9) Entering and leaving-fluid temperature.
    - 10) Evaporator and condenser pressure.
    - 11) System refrigerant temperatures.
    - 12) Chiller run hours.
    - 13) Compressor run hours.
    - 14) Compressor number of starts.
-

## 15) Time of day:

- a) Display module, in conjunction with the microprocessor, must also be capable of displaying the output (results) of a service test. Service test shall verify operation of every switch, thermistor, fan, and compressor before chiller is started.
- b) Diagnostics shall include the ability to review a list of the 30 most recent alarms with clear language descriptions of the alarm event. Display of alarm codes without the ability for clear language descriptions shall be prohibited.
- c) An alarm history buffer shall allow the user to store no less than 30 alarm events with clear language descriptions, time and date stamp event entry.
- d) The chiller controller shall include multiple connection ports for communicating with the local equipment network, the Carrier Comfort Network® (CCN) system and access to chiller control functions from any point on the chiller.
- e) The control system shall allow software upgrade without the need for new hardware modules.

## 16) Crankcase heater failure.

## 4. Safeties:

- a. Unit shall be equipped with thermistors and all necessary components in conjunction with the control system to provide the unit with the following protections:
  - 1) Loss of refrigerant charge.
  - 2) Reverse rotation.
  - 3) Low chilled fluid temperature.
  - 4) Thermal overload.
  - 5) High pressure.
  - 6) Electrical overload.
  - 7) High heat reclaim leaving fluid temperature.
- b. Condenser fan and factory pump motors shall have external overcurrent protection.

## I. Operating Characteristics:

1. Unit shall be capable of starting and running at outdoor ambient temperatures from 32 F to 125 F (0° to 52 C) for all sizes.
  2. Unit shall be capable of starting up with 95 F (35 C) entering fluid temperature to the cooler.
-



**J. Electrical Requirements:**

1. Unit/module primary electrical power supply shall enter the unit at a single location (some chiller voltage/size combinations require 2 power supplies).
2. Unit shall operate on **240/415 vac 3-phase 50 hz** -
3. Control points shall be accessed through terminal block.
4. Unit shall be shipped with factory control and power wiring installed.

**K. Chilled Water Circuit:**

1. Chilled water circuit with optional pump package shall be rated for 150 psig (1034 kPa) working pressure.
2. Thermal dispersion proof of flow switch shall be factory installed and wired.
3. Hydronic package with VFD (variable frequency drive)
  - 1) Field pipe connections shall be Victaulic type.
  - 2) Optional single or primary/standby operation pump systems. Dual pump systems shall have a pump discharge check valve.
  - 3) Pumps shall be vertical in-line, single stage design, and capable of being serviced without disturbing piping connections.
    - a) Pump casing shall be of class 30 cast iron.
    - b) The impeller shall be of cast bronze, closed type, dynamically balanced, keyed to the shaft and secured by locking cap screw.
    - c) The hydronic kit will be provided with a flush line connection to ensure lubrication at the seal face and allow for positive venting of the seal chamber.
    - d) Each port shall be fitted with an isolation valve that allow the units to operate in parallel or standby, yet may be used to isolate one pumping unit for servicing or removal with the other pump still running.
    - e) Pump shall be rated for 150 psig (1034 kPa) working pressure.
    - f) The pump case shall have gage tappings at the suction and discharge nozzles and include drain ports.
    - g) Dual pumps shall allow for the servicing of one pump without draining the chilled water loop.
    - h) Motors shall be premium efficiency, totally enclosed fan cooled (TEFC) 3-phase type with grease lubricated ball bearings.
    - i) Each pump shall be factory tested per Hydraulic Institute Standards.
  - 4) Pressure/temperature taps (3) shall be factory installed to measure the pressure differential across the pump and across the strainer.
  - 5) Combination valve (which includes check, isolation, and modulation) shall be factory installed. Pressure/temperature taps (2) shall be factory installed to measure the pressure differential across the combination valve.

- 6) Hydronic assembly shall have factory-supplied electric freeze protection to -20 F (-29 C).
  - 7) Piping shall be Schedule 40 black steel.
  - 8) Cast iron or ductile iron body 1/8-in. perforated strainer. A factory-installed, removable fine mesh start-up strainer for initial run period shall be included. The start-up strainer must be removed within 24 hours after chiller start-up.
  - 9) The drive shall be of the VVC-PWM (voltage vector control - pulse with modulation) type, providing near unity displacement power factor without the need for external power factor correction capacitors at all loads and speeds.
  - 10) The drive and motor protection shall include; motor phase to ground fault, loss of supply phase, over voltage, under voltage, motor over temperature, inverter overload, over current. Over current is not allowed, ensuring hydronic units will not overload the motor at any point in the operating range of the unit.
  - 11) Sensorless control software shall be available in the hydronic unit to provide automatic speed control without the need for pump mounted (internal/external) or remotely mounted differential pressure system feedback sensors. Control mode setting and minimum/maximum head set points shall be set at the factory and be user adjustable via the programming interface.
  - 12) The integrated control shall incorporate an integrated graphical user interface that shall provide running and diagnostic information and identify faults and status in clear English language. Faults shall be logged/recorded for review at a later date. It shall be possible to upload parameters from one drive into the non-volatile memory of a computer and download the parameters into other drives requiring the same settings. The key pad shall incorporate Hand-Off-Auto pushbuttons to enable switching between BMS (Building Management System) and manual control. The drive shall incorporate a USB port for direct connection to a PC and an RS485 connection with Modbus RTU protocol. Optional protocols available should include BACnet and LonWorks.
  - 13) The control shall have the following additional features: Sensorless override for BMS, manual pump control or closed loop PID control; programmable skip frequencies and adjustable switching frequency for noise/vibration control; auto alarm reset; motor pre-heat function; six programmable digital inputs; two analog inputs; one programmable analog/digital output; two volt-free contacts.
  - 14) The hydronic unit shall be capable of operating in any of the following control modes:
    - a) Duty pump and standby pumps with Sensorless control
    - b) Duty pump and standby pumps with remote sensor or building system (BAS) control.
-

7. Chillervisor System Manager Multi-Unit Control:

Field-installed control shall sequence between 2 and 8 chillers in parallel in a single system.

8. Minimum Load Control:

Unit shall be equipped with factory (or field) installed, microprocessor-controlled, minimum load control that shall permit unit operation down to a minimum of 6% capacity (varies with unit size). This option/accessory is not available on applications with leaving fluid temperature less than 38 F (3.3 C).

9. Energy Management Control Module:

A factory or field-installed module shall provide the following energy management capabilities: 4 to 20 mA signals for leaving fluid temperature reset, cooling set point reset or demand limit control; 2-step demand limit control (from 0% to 100%) activated by a remote contact closure; and discrete input for "Ice Done" indication for ice storage system interface.

14. BACnet\* Communication Option:

Shall provide pre-programmed factory-installed communication capability with a **BACnet MS/TP** and **BACnet/IP** network. Allows integration with a third-party BACnet building automation system. No field programming shall be required.

19. Compressor Suction Service Valve:

Standard refrigerant discharge isolation and liquid valves shall enable service personnel to store the refrigerant charge in the cooler or condenser during servicing. This factory-installed option (one valve per refrigerant circuit) shall allow for further isolation of the compressor from the cooler vessel.

24. Service Option:

The service option shall provide a remote service port for Navigator connection and a factory-installed convenience outlet which includes 4-amp GFI (ground fault interrupt) receptacle with independent fuse protection. Convenience outlet shall be a 115-v female receptacle. Service option shall not be available with 380-v.

---

---

## **Section VIII. Drawings - Not Applicable**

**Section IX. Bill of Quantities Not Applicable**