

EAST BAY MUNICIPAL UTILITY DISTRICT

REQUEST FOR QUOTATION (RFQ) No. 2603 for AIR-COOLED CHILLER FOR POWER GENERATION STATION

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For complete information regarding this project, see RFQ posted at <https://www.ebmud.com/business-center/materials-and-supplies-bids/current-requests-quotation-rfq/> or contact the EBMUD representative listed above. Please note that prospective bidders are responsible for reviewing this site during the RFQ process, for any published addenda regarding this RFQ.

Bids Due
by
2:00 p.m.
on
October 22, 2025

All bid submissions hand delivered or mailed (USPS, FedEx, UPS, etc.) to the address or PO Box noted below and must be received no later than 2:00 p.m. on the bid due date.

RESPONSE DELIVERED BY SERVICE (UPS, FedEx, DHL, etc., during business hours: 8:00 AM – 3:30 PM only) to:	RESPONSE DELIVERED BY MAIL (U.S. Postal Service) to:	RESPONSE HAND-DELIVERED (during business hours: 8:00 AM – 4:00 PM only) to:
EBMUD–Purchasing Division RFQ 2603 – Air Cooled Chiller for Power Generation Station 375 11 th Street Oakland, CA 94607	EBMUD–Purchasing Division RFQ 2603 – Air Cooled Chiller for Power Generation Station P.O. Box 24055 Oakland, CA 94623	EBMUD–Purchasing Division RFQ 2603 – Air Cooled Chiller for Power Generation Station Purchasing Office 375-11 TH Street, 1 st Floor Oakland, CA 94607

EAST BAY MUNICIPAL UTILITY DISTRICT

RFQ No. 2603

for

Air-Cooled Chiller for Power Generation Station

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ATTACHMENTS

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EXHIBIT C – GENERAL REQUIREMENTS

EXHIBIT D – IRAN CONTRACTING ACT CERTIFICATION

EXHIBIT E – SPECIFICATIONS

01 33 00 – SUBMITTAL PROCEDURES

01 33 01 – O&M MANUAL REVIEW CHECKLIST

01 33 02 – MAINTENANCE SUMMARY FORM

01 75 17 – FIELD TESTING AND STARTUP FORM

42 22 20 – AIR-COOLED CHILLER

I. STATEMENT OF WORK**A. SCOPE**

It is the intent of these specifications, terms, and conditions to describe, furnish, and deliver one (1) rotary screw air-cooled chiller for cooling of digester gas as part of a low pressure digester gas conditioning system to f.o.b. destination: 2020 Wake Ave. Oakland, CA 94607.

East Bay Municipal Utility District (District) intends to award a contract to the lowest cost bidder whose response meets the District's requirements.

B. BIDDER QUALIFICATIONS**1. Bidder Minimum Qualifications**

- a. Bidder, bidder's principal, or bidder's staff shall have been regularly engaged in the business of providing construction and/or heavy equipment for at least five (5) years.
- b. Bidder shall be a certified or authorized manufacturer, dealer, or provider for specified equipment.
- c. Bidder shall possess all permits, licenses, and professional credentials necessary to supply product and perform services as specified under this RFQ.

C. SPECIFIC REQUIREMENTS

The District is seeking to purchase one (1) packaged rotary screw air-cooled chiller, skid mounted, factory assembled and tested, complete in accordance with specification 42 22 00. Work includes, but is not limited to:

1. Provide one (1), 130 nominal tons capacity, air-cooled chiller packaged complete with screw compressors, condensers, refrigerant system, hydronic pumps, electrical, variable frequency drives, harmonic filters, and controls.
 - a. HFC-410A or HFC-454B refrigerant type.
 - b. Similar in overall dimensions of 88" W x 290" L to fit the existing installation location.
 - c. Hydronic package integral to chiller with pumps, valves, buffering tank system, and air separator.
 - d. Sound attenuation to reduce operating sound levels to not exceed 72 dBA sound pressure at 30 feet at full load chiller operation.

2. Provide all coordination with third-party applicator of ES2 coating system, including delivery to and from shop prior to final delivery to District.
3. Provide FOB delivery to District's Main Wastewater Treatment Plant, 2020 Wake Avenue, Oakland, CA 94607 for installation by District forces.
4. Provide manufacturer services for installation, testing, startup, and training of District staff.
5. Provide Operating and Maintenance Manuals.
6. Manufacturer/Model: Trane, Model RTAF130.
7. An acceptable equivalent to the above preferred equipment shall be:
 - a. Daikin Applied
 - b. Quantech
 - c. Carrier

The District reserves the right to award the contract to the bidder with the proposed equipment that offers the best value and meets the needs of the department. The District also reserves the right to be the sole judge of what shall be considered equal and/or acceptable and may require the bidder to provide additional information.

This RFQ is subject to acceptance only on the terms and conditions stated in this RFQ. Any additional or different terms and conditions proposed by the bidder are hereby rejected and shall be of no force or effect unless expressly assented to in writing by the District.

- a. Use Exhibit A "Exceptions, Clarification and Amendments" to clearly describe the alternate offered and indicate specifically how it differs from the product specified in this RFQ.
- b. Include complete descriptive literature and/or specifications for the proposed equipment.

D. DELIVERABLES / REPORTS

The District will receive the units between 8:00 a.m. and 3:30 p.m., Mondays through Fridays except on District holidays. Precise delivery schedules are to be arranged by contacting Erwin Munasque.

Delivery to: Main Wastewater Treatment Plant, 2020 Wake Ave. Oakland, CA 94607

Upon delivery, the District will inspect the condition of the equipment. In the event Contractor's product is damaged or does not meet the specification, the District may

reject the equipment at its option and may purchase this material from any supplier on the open market who can meet the District's specification requirements, or the District may demand immediate replacement by Contractor of the non-conforming product. Any costs over and above the original contract price will be charged back to the Contractor. In addition, Contractor shall bear the costs of removal and disposition for any delivery which fails to conform to the specifications.

1. PARTS BOOKS, SERVICE MANUALS, AND OPERATION INSTRUCTIONS

One complete set of operating instructions, parts books and service repair manuals for all components that make up the equipment must be furnished at the time new equipment is delivered. **NO EXCEPTIONS. PAYMENT WILL NOT BE MADE UNLESS MANUALS ARE RECEIVED.**

2. COMPLIANCE

Unit(s) offered shall comply with all applicable regulations and codes in effect on the date of the bid opening.

3. SERVICE

Prior to delivery, the equipment shall receive the manufacturer's standard pre-delivery service and the equipment shall be tested and functionally ready to operate.

4. CONTRACTOR WARRANTY REPAIR REQUIREMENTS

Equipment under warranty shall be repaired and returned within five (5) working days or a replacement unit acceptable to the District shall be provided to the District on the sixth day and thereafter until the original unit is returned to District service. Cost associated with the replacement unit shall be the responsibility of the Contractor. In addition, any unit out of service for warranty repair in excess of fifteen (15) working days in a calendar year shall be replaced with a unit acceptable to the District commencing on the sixteenth day and everyday thereafter at the expense of the Contractor.

E. INSPECTION

The District will inspect material after its arrival at the delivery point. If the rejection rate of a sample of components is 10% or higher, all components will be rejected. Contractor is solely responsible for ensuring the material arrives at the District's ship-to location free of defects and manufactured in strict conformance with the specifications.

In the case that an item or lot is rejected, District Inspectors will provide Contractor and the EBMUD Purchasing Division with an Inspectors Job Report which will itemize the product deficiencies and required corrective action.

The District reserves the right-of-access to the Contractor's facility to verify conformance to this specification at the District's expense.

F. FAILURE TO MEET SPECIFICATIONS

In the event any shipment or shipments of a Contractor's product do not meet the specification or delivery requirements, the District may reject the shipment or shipments and, at its option, may purchase this material from any supplier on the open market who can meet the District's specification requirements, or the District may demand immediate replacement by Contractor of the non-conforming product. Any costs over and above the original contract price will be charged back to the Contractor. In addition, Contractor shall bear the costs of removal and disposition for any delivery which fails to conform to the specifications.

II. CALENDAR OF EVENTS

EVENT	DATE/LOCATION
RFQ Issued	September 24, 2025
Deadline For Submission of Questions	September 29, 2025
Response Due	October 22, 2025 by 2:00 p.m. At this time all bids will be opened publicly in the EBMUD Board Room at 375 Eleventh St., Oakland, CA 94607
Anticipated Contract Start Date	November 25, 2025

Note: All dates are subject to change by District.

Bidders are responsible for reviewing <https://www.ebmud.com/business-center/materials-and-supplies-bids/current-requests-quotation-rfq/> for any published addenda. Hard copies of addenda will not be mailed out.

III. DISTRICT PROCEDURES, TERMS, AND CONDITIONS

A. RFQ ACCEPTANCE AND AWARD

1. RFQ responses will be evaluated to determine that they are responsive, responsible, and that they meet the specifications as stated in this RFQ.
2. The District reserves the right to award to a single or to multiple Contractors, dependent upon what provides the lowest overall cost to the District.
3. The District has the right to decline to award this contract or any part of it for any reason.

4. Any specifications, terms, or conditions issued by the District, or those included in the bidder's submission, in relation to this RFQ, may be incorporated into any purchase order or contract that may be awarded as a result of this RFQ.
5. Award of contract. The District reserves the right to reject any or all proposals, to accept one part of a proposal and reject the other, unless the bidder stipulates to the contrary, and to waive minor technical defects and administrative errors, as the interest of the District may require. Award will be made, or proposals rejected by the District as soon as possible after bids have been opened.

B. BRAND NAMES, APPROVED EQUIVALENTS, DEVIATIONS, AND EXCEPTIONS

Any references to manufacturers, trade names, brand names, and/or catalog numbers are intended to be descriptive, but not restrictive, unless otherwise stated, and are intended to indicate the quality level desired. Bidders may offer an equivalent product that meets or exceeds the specifications.

The District reserves the right to be the sole judge of what shall be considered equal and/or acceptable and may require the bidder to provide additional information and/or samples. If the bidder does not specify otherwise, it is understood that the brand and/or product referenced in this RFQ will be supplied.

Taking exception to the RFQ, or failure on the part of the bidder to comply with all requirements and conditions of this RFQ, may subject the RFQ response to rejection. If no deviations are shown, the bidder will be required to furnish the material exactly as specified. The burden of proof of compliance with the specifications will be the responsibility of the bidder.

This RFQ is subject to acceptance only on the terms and conditions stated in this RFQ. Any additional or different terms and conditions proposed by the bidder are hereby rejected and shall be of no force or effect unless expressly assented to in writing by the District.

RFQ responses based on equivalent products must:

1. Use Exhibit A "Exceptions, Clarification and Amendments" to clearly describe the alternate offered and indicate specifically how it differs from the product specified in this RFQ.
2. Include complete descriptive literature and/or specifications as proof that the proposed alternate will be equal to or better than the product named in this RFQ.
3. District reserves the right to be the sole judge of what shall be considered equal and/or acceptable.

C. PRICING

1. All prices are to be F.O.B. destination. Any freight/delivery charges are to be included.
2. All prices quoted shall be in United States dollars.
3. Price quotes shall include any and all payment incentives available to the District.
4. Bidders are advised that in the evaluation of cost, if applicable, it will be assumed that the unit price quoted is correct in the case of a discrepancy between the unit price and extended price.

D. NOTICE OF INTENT TO AWARD AND PROTESTS

At the conclusion of the RFQ response evaluation process, all entities who submitted a bid package will be notified in writing by e-mail or USPS mail with the name of the Bidder being recommended for contract award. The document providing this notification is the Notice of Intent to Award.

Protests must be in writing and must be received no later than seven (7) workdays after the District issues the Notice of Intent to Award. The District will reject the protest as untimely if it is received after this specified time frame. Protests will be accepted from bidders or potential bidders only.

If the protest is mailed and not received by the District, the protesting party bears the burden of proof to submit evidence (e.g., certified mail receipt) that the protest was sent in a timely manner so that it would be received by the District within the RFQ protest period.

Bid protests must contain a detailed and complete written statement describing the reason(s) for protest. The protest must include the name and/or number of the bid, the name of the firm protesting, and include a name, telephone number, email address and physical address of the protester. If a firm is representing the protester, they shall include their contact information in addition to that of the protesting firm.

Protests must be mailed, hand delivered, or emailed to the Manager of Purchasing, Mailstop 102, East Bay Municipal Utility District, 375 Eleventh Street, Oakland, CA 94607 or P.O. Box 24055, Oakland, CA 94623. Facsimile and electronic mail protests must be followed by a mailed or hand delivered identical copy of the protest and must arrive within the seven workday time limit. Any bid protest filed with any other District office shall be forwarded immediately to the Manager of Purchasing.

The bid protester can appeal the determination to the requesting organization's Department Director. The appeal must be submitted to the Department Director no later than five workdays from the date which the protest determination was transmitted

by the District, to the protesting party. The appeal shall focus on the points raised in the original protest, and no new points shall be raised in the appeal.

Such an appeal must be made in writing and must include all grounds for the appeal and copies of the original protest and the District's response. The bid protester must also send the Purchasing Division a copy of all materials sent to the Department Director. The Department Director will make a determination of the appeal and respond to the protester by certified mail in a timely manner. If the appeal is denied, the letter will include the date, time, and location of the Board of Directors meeting at which staff will make a recommendation for award and inform the protester it may request to address the Board of Directors at that meeting.

The District may transmit copies of the protest and any attached documentation to all other parties who may be affected by the outcome of the protest. The decision of the District as to the validity of any protest is final. This District's final decision will be transmitted to all affected parties in a timely manner.

E. METHOD OF ORDERING

1. Written POs may be issued upon approval of written itemized quotations received from the Contractor.
2. POs and payments for products and/or services will be issued only in the name of Contractor.
3. Any and all change orders shall be in writing and agreed upon, in advance, by Contractor and the District.

F. TERM / TERMINATION / RENEWAL

1. The term of the contract, which may be awarded pursuant to this RFQ, will be 1 (one) year.
2. At the sole discretion of the District, any contract which may be awarded pursuant to this RFQ, may be extended for two (2) additional one-year terms at agreed prices with all other terms and conditions remaining the same. In the event that a Contractor does not agree to an extension, the District shall be given a minimum of 90 days' notice to locate a suitable replacement contractor.
3. This Agreement may be terminated for convenience by the District provided the Contractor is given written notice of not less than 30 calendar days. Upon such termination, the District shall pay the Contractor the amount owing for the products ordered and satisfactorily received by the District. This shall be the sole and exclusive remedy to which the Contractor is properly entitled in the event of termination by the District.

4. This Agreement may be terminated for cause at any time, provided that the District notifies Contractor of impending action.

G. WARRANTY

1. For any contract awarded pursuant to this RFQ, Contractor expressly warrants that all goods furnished will conform strictly with the specifications and requirements contained herein and with all approved submittals, samples and/or models and information contained or referenced therein, all affirmations of fact or promises, and will be new, of merchantable quality, free from defects in materials and workmanship, including but not limited to leaks, breaks, penetrations, imperfections, corrosion, deterioration, or other kinds of product deficiencies. Contractor expressly warrants that all goods to be furnished will be fit and sufficient for the purpose(s) intended. Contractor expressly warrants that all goods shall be delivered free from any security interest, lien, or encumbrance of any kind, and free from any claim of infringement, copyright or other intellectual property violation, or other violation of laws, statutes, regulations, ordinances, rules, treaties, import restrictions, embargoes or other legal requirements. Contractor guarantees all products and services against faulty or inadequate design, manufacture, negligent or improper transport, handling, assembly, installation or testing, and further guaranties that there shall be strict compliance with all manufacturer guidelines, recommendations, and requirements, and that Contractor guaranties that it will conform to all requirements necessary to keep all manufacturer warranties and guarantees in full force and effect. These warranties and guarantees are inclusive of all parts, labor, and equipment necessary to achieve strict conformance, and shall take precedence over any conflicting warranty or guarantee. These warranties and guaranties shall not be affected, limited, discharged, or waived by any examination, inspection, delivery, acceptance, payment, course of dealing, course of performance, usage of trade, or termination for any reason and to any extent. In the absence of any conflicting language as to duration, which conflicting language will take precedence as being more specific, Contractor's aforesaid warranties and guarantees shall be in full force and effect for a period of one year from the date of acceptance by the District but shall continue in full force and effect following notice from District of any warranty or guarantee issue, until such issue has been fully resolved to the satisfaction of District.

H. INVOICING

1. Following the Districts acceptance of product(s) meeting all specified requirements, and/or the complete and satisfactory performance of services, the District will render payment within thirty (30) days of receipt of a correct invoice.
2. The District shall notify Contractor of any invoice adjustments required.

3. Invoices shall contain, at a minimum, District purchase order number, invoice number, remit to address, and itemized products and/or services description.
4. The District will pay Contractor in an amount not to exceed the total amount quoted in the RFQ response.

IV. RFQ RESPONSE SUBMITTAL INSTRUCTIONS AND INFORMATION

A. DISTRICT CONTACTS

All contact during the competitive process is to be through the contact listed on the first page of this RFQ. The following persons are to be contacted only for the purposes specified below.

TECHNICAL SPECIFICATIONS:

Attn: Erwin Munasque, Plant Supervisor

E-Mail: erwin.munasque@ebmud.com

PHONE: 510-287-1245

Cell: 510-410-7408

CONTRACT EQUITY PROGRAM:

Attn: Contract Equity Office

PHONE: (510) 287-0114

AFTER AWARD:

Attn: Erwin Munasque, Plant Supervisor

E-Mail: erwin.munasque@ebmud.com

PHONE: 510-287-1245

Cell: 510-410-7408

B. SUBMITTAL OF RFQ RESPONSE

1. Responses must be submitted in accordance with Exhibit A – RFQ Response Packet, including all additional documentation stated in the “Required Documentation and Submittals” section of Exhibit A.
2. Late and/or unsealed responses will not be accepted.
3. RFQ responses submitted via electronic transmissions will not be accepted. Electronic transmissions include faxed RFQ responses or those sent by electronic mail (“e-mail”).
4. All RFQ responses must be SEALED and received by 2:00 p.m. on the due date specified in the Calendar of Events. Any RFQ response received after that time/date, or at a place other than the stated addresses, cannot be considered and will be returned to the bidder unopened. The EBMUD mailroom and Purchasing

Division timestamp shall be considered the official timepiece for the purpose of establishing the actual receipt of RFQ responses.

5. RFQ responses are to be addressed/delivered as follows:

Mailed (USPS):

East Bay Municipal Utility District
Air Cooled Chiller for Power Generation Station
RFQ No. 2603
EBMUD–Purchasing Division
P.O. Box 24055
Oakland, CA 94623

Hand Delivered, delivered by courier or package delivery service (UPS, FedEx, DHL, etc.):

East Bay Municipal Utility District
Air Cooled Chiller for Power Generation Station
RFQ No. 2603
EBMUD–Purchasing Division
375 Eleventh Street, First Floor
Oakland, CA 94607

Bidder's name, return address, and the RFQ number and title must also appear on the mailing package.

6. All costs required for the preparation and submission of an RFQ response shall be borne by the bidder.
7. California Government Code Section 4552: In submitting an RFQ response to a public purchasing body, the bidder offers and agrees that if the RFQ response is accepted, it will assign to the purchasing body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2, commencing with Section 16700, of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, materials, or services by the bidder for sale to the purchasing body pursuant to the RFQ response. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the bidder.
8. Bidder expressly acknowledges that it is aware that if a false claim is knowingly submitted (as the terms “claim” and “knowingly” are defined in the California False Claims Act, Cal. Gov. Code, §12650 et seq.), the District will be entitled to civil remedies set forth in the California False Claim Act.

9. The RFQ response shall remain open to acceptance and is irrevocable for a period of one hundred eighty (180) days, unless otherwise specified in the RFQ documents.
10. It is understood that the District reserves the right to reject any or all RFQ responses.
11. RFQ responses, in whole or in part, are NOT to be marked confidential or proprietary. The District may refuse to consider any RFQ response or part thereof so marked. RFQ responses submitted in response to this RFQ may be subject to public disclosure. The District shall not be liable in any way for disclosure of any such records.



EXHIBIT A
RFQ RESPONSE PACKET
RFQ No. 2603 – Air-Cooled Chiller for Power Generation Station

To: The EAST BAY MUNICIPAL UTILITY District (“District”)

From: _____
(Official Name of Bidder)

RFQ RESPONSE PACKET GUIDELINES

- **BIDDERS ARE TO SUBMIT ONE (1) ORIGINAL HARDCOPY RFQ RESPONSE WITH ORIGINAL INK SIGNATURES, CONTAINING THE FOLLOWING IN THEIR ENTIRETY:**
 - **EXHIBIT A – RFQ RESPONSE PACKET**
 - **INCLUDING ALL REQUIRED DOCUMENTATION AS DESCRIBED IN “EXHIBIT A-REQUIRED DOCUMENTATION AND SUBMITTALS”**
- **ALL PRICES AND NOTATIONS MUST BE PRINTED IN INK OR TYPEWRITTEN; NO ERASURES ARE PERMITTED; ERRORS MAY BE CROSSED OUT AND CORRECTIONS PRINTED IN INK OR TYPEWRITTEN ADJACENT AND MUST BE INITIALED IN INK BY PERSON SIGNING THE RFQ RESPONSE.**
- **BIDDERS THAT DO NOT COMPLY WITH THE REQUIREMENTS, AND/OR SUBMIT AN INCOMPLETE RFQ RESPONSE MAY BE SUBJECT TO DISQUALIFICATION AND THEIR RFQ RESPONSE REJECTED IN TOTAL.**
- **IF BIDDERS ARE MAKING ANY CLARIFICATIONS AND/OR AMENDMENTS, OR TAKING EXCEPTION TO ANY PART OF THIS RFQ, THESE MUST BE SUBMITTED IN THE EXCEPTIONS, CLARIFICATIONS, AND AMENDMENTS SECTION OF THIS EXHIBIT A – RFQ RESPONSE PACKET. THE DISTRICT, AT ITS SOLE DISCRETION, MAY ACCEPT AMENDMENTS/EXCEPTIONS, OR MAY DEEM THEM TO BE UNACCEPTABLE, THEREBY RENDERING THE RFQ RESPONSE DISQUALIFIED.**
- **BIDDERS SHALL NOT MODIFY DISTRICT LANGUAGE IN ANY PART OF THIS RFQ OR ITS EXHIBITS, NOR SHALL THEY QUALIFY THEIR RFQ RESPONSE BY INSERTING THEIR OWN LANGUAGE OR FALSE CLAIMS IN THEIR RESPONSE. ANY EXCEPTIONS AND CLARIFICATIONS MUST BE PLACED IN THE “EXCEPTIONS/ CLARIFICATIONS” PAGE, NOT BURIED IN THE PROPOSAL ITSELF.”**



BIDDER INFORMATION AND ACCEPTANCE

1. The undersigned declares that all RFQ documents, including, without limitation, the RFQ, Addenda, and Exhibits, have been read and that the terms, conditions, certifications, and requirements are agreed to.
2. The undersigned is authorized to offer, and agrees to furnish, the articles and services specified in accordance with the RFQ documents.
3. The undersigned acknowledges acceptance of all addenda related to this RFQ.
4. The undersigned hereby certifies to the District that all representations, certifications, and statements made by the bidder, as set forth in this RFQ Response Packet and attachments, are true and correct and are made under penalty of perjury pursuant to the laws of California.
5. The undersigned acknowledges that the bidder is, and will be, in good standing in the State of California, with all the necessary licenses, permits, certifications, approvals, and authorizations necessary to perform all obligations in connection with this RFQ and associated RFQ documents.
6. It is the responsibility of each bidder to be familiar with all of the specifications, terms, and conditions and, if applicable, the site condition. By the submission of an RFQ response, the bidder certifies that if awarded a contract it will make no claim against the District based upon ignorance of conditions or misunderstanding of the specifications.
7. Patent indemnity: Contractors who do business with the District shall hold the District, its Directors, officers, agents, and employees, harmless from liability of any nature or kind, including cost and expenses, for infringement or use of any patent, copyright, or other proprietary right, secret process, patented or unpatented invention, article, or appliance furnished or used in connection with the contract or purchase order.
8. Insurance certificates are not required at the time of submission. However, by signing Exhibit A – RFQ Response Packet, the bidder agrees to meet the minimum insurance requirements stated in the RFQ. This documentation must be provided to the District prior to execution of an agreement by the District and shall include an insurance certificate which meets the minimum insurance requirements, as stated in the RFQ.
9. The undersigned acknowledges that RFQ responses, in whole or in part, are NOT to be marked confidential or proprietary. The District may refuse to consider any RFQ response or part thereof so marked. RFQ responses submitted in response to this RFQ may be subject to public disclosure. The District shall not be liable in any way for disclosure of any such records.
10. The undersigned bidder hereby submits this RFQ response and binds itself on award to the District under this RFQ to execute in accordance with such award a contract and to furnish the bond or bonds and insurance required by the RFQ. The RFQ, subsequent Addenda, bidder's Response Packet, and any attachments, shall constitute the Contract, and all provisions thereof are hereby accepted.
11. The undersigned acknowledges **ONE** of the following (please check only one box):

- ☐ Bidder is not an SBE and is ineligible for any bid preference; **OR**
- ☐ Bidder is an SBE or DVBE as described in the Contract Equity Program (CEP) and Equal Employment Opportunity (EEO) Guidelines, is requesting a 7% bid preference, and has completed the CEP and EEO forms at the hyperlink contained in the CEP and EEO section of this Exhibit A.

For additional information on SBE bid preference, please refer to the Contract Equity Program and Equal Employment Opportunity Guidelines at the above referenced hyperlink.

Official Name of Bidder (exactly as it appears on Bidder's corporate seal and invoice): _____

Street Address Line 1: _____

Street Address Line 2: _____

City: _____ State: _____ Zip Code: _____

Webpage: _____

Type of Entity / Organizational Structure (check one):

☐ Corporation

☐ Joint Venture

☐ Limited Liability Partnership

☐ Partnership

☐ Limited Liability Corporation

☐ Non-Profit / Church

☐ Other: _____

Jurisdiction of Organization Structure: _____

Date of Organization Structure: _____

Federal Tax Identification Number: _____

Department of Industrial Relations (DIR) Registration Number: _____

Primary Contact Information:

Name / Title: _____

Telephone Number: _____ Fax Number: _____

E-mail Address: _____

Street Address Line 1: _____

City: _____ State: _____ Zip Code: _____

SIGNATURE: _____

Name and Title of Signer (printed): _____

Dated this _____ day of _____ 20_____



BID FORM

Cost shall be submitted on this Bid Form as is. The prices quoted shall not include Sales Tax or Use Tax; said tax, wherever applicable, will be paid by the District to the contractor, if licensed to collect, or otherwise directly to the State.

No alterations or changes of any kind to the Bid Form(s) are permitted. RFQ responses that do not comply may be subject to rejection in total. The cost quoted below shall be the cost the District will pay for the term of any contract that is a result of this RFQ process.

Quantities listed herein are annual estimates based on past usage and are not to be construed as a commitment. No minimum or maximum is guaranteed or implied.

Air-Cooled Chiller for Power Generation Station

Item	Total Estimated Quantity	Description	Year 1 Unit Price Including Discount (If Any)
1	1 ea.	One (1) rotary screw air-cooled chiller, 130 nominal tons capacity, with ES2 coating system, skid mounted unit, factory assembled and tested, in accordance with SPECIFICATION 42 22 20 f.o.b. destination to 2020 Wake Avenue, Oakland, CA 94607	\$ _____

For informational use only:

Discount off Current Manufacturer's Published Price List (if Any) _____

Tax _____

Freight _____



REQUIRED DOCUMENTATION AND SUBMITTALS

All of the specific documentation listed below is required to be submitted with the Exhibit A – RFQ Response Packet. Bidders shall submit all documentation, in the order listed below, and clearly label each section of the RFQ response with the appropriate title (i.e. Table of Contents, Letter of Transmittal, Key Personnel, etc.).

1. **Description of the Proposed Equipment/System:** RFQ response shall include a description of the proposed equipment, as it will be finally configured during the term of the contract. The description shall specify how the proposed equipment will meet or exceed the requirements of the District and shall explain any advantages that this proposed equipment/system would have over other possible equipment. The description shall include any disadvantages or limitations that the District should be aware of in evaluating the RFQ response. Finally, the description shall describe all product warranties provided by bidder. See Specification Sections 42 22 00 and 01 33 00 for submittal requirements (Exhibit F).
2. **Evidence of Qualification Testing:** RFQ response provides evidence that the proposed equipment has successfully completed the qualification test standard requirements defined in this RFQ. Evidence shall include a statement from an Independent Testing Authority (ITA) that both the hardware elements and the software elements of the proposed equipment/system comply with the requirements of the qualification standard. If the equipment/system specified requires the addition of components or features not previously tested by the ITA, the District will determine, in its sole discretion, whether qualification testing of such components or features will be required prior to the award of a contract.
3. **Sustainability Statement:** Contractors shall submit a statement regarding any sustainable or environmental initiatives or practices that they or their suppliers engage in. This information can be in relation to the specific products procured under this RFQ or in relation to the manufacture, delivery, or office practices of your firm.

If applicable, please also provide any information you have available on the below:

- (a) Has your firm taken steps to enhance its ability to assess, track and address issues regarding Greenhouse Gas (GHG) Emissions in answer to recent legislations such as the [Buy Clean California Act](#)? If so, please attach any data you can on the embedded greenhouse gas emissions in the production and transport of the products and/or services which will be provided via this RFQ. If this is not available, please describe the approach you plan to take in order to gather and report this information in the future. For further information in this topic, please see: <http://www.ghgprotocol.org/scope-3-technical-calculation-guidance>

4. **References:**

- (a) Bidders must use the templates in the “References” section of this Exhibit A – RFQ Response Packet to provide references.
- (b) References should have similar scope, volume, and requirements to those outlined in these specifications, terms, and conditions.
 - Bidders must verify the contact information for all references provided is current and valid.
 - Bidders are strongly encouraged to notify all references that the District may be contacting them to obtain a reference.
- (c) The District may contact some or all of the references provided in order to determine Bidder’s performance record on work similar to that described in this RFQ. The District reserves the right to contact references other than those provided in the RFQ response.

5. **Exceptions, Clarifications, Amendments:**

- (a) The RFQ response shall include a separate section calling out all clarifications, exceptions, and amendments, if any, to the RFQ and associated RFQ documents, which shall be submitted with Bidder’s RFQ response using the template in the “Exceptions, Clarifications, Amendments” section of this Exhibit A – RFQ Response Packet.
- (b) **THE DISTRICT IS UNDER NO OBLIGATION TO ACCEPT ANY EXCEPTIONS, AND SUCH EXCEPTIONS MAY BE A BASIS FOR RFQ RESPONSE DISQUALIFICATION.**

6. **Contract Equity Program:**

- (a) Every bidder must fill out, sign, and submit the appropriate sections of the Contract Equity Program and Equal Employment Opportunity documents located at the hyperlink contained in the last page of this Exhibit A. Special attention should be given to completing Form P-25, "Contractor Employment Data and Certification". Any bidder needing assistance in completing these forms should contact the District's Contract Equity Office at (510) 287-0114 prior to submitting an RFQ response.



REFERENCES

RFQ No. 2603 - Air-Cooled Chiller for Power Generation Station

Bidder Name: _____

Bidder must provide a minimum of three (3) references.

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Services Provided / Date(s) of Service:	



EXCEPTIONS, CLARIFICATIONS, AMENDMENTS
RFQ No. 2603 - Air-Cooled Chiller for Power Generation Station

Bidder Name: _____

List below requests for clarifications, exceptions, and amendments, if any, to the RFQ and associated RFQ Documents, and submit with bidder's RFQ response. **The District is under no obligation to accept any exceptions and such exceptions may be a basis for RFQ response disqualification.**

Reference to:			Description
Page No.	Section	Item No.	
p. 23	D	1.c.	<i>Bidder takes exception to...</i>

*Print additional pages as necessary



CONTRACT EQUITY PROGRAM & EQUAL EMPLOYMENT OPPORTUNITY

The District's Board of Directors adopted the Contract Equity Program (CEP) to enhance equal opportunities for business owners of all races, ethnicities, and genders who are interested in doing business with the District. The program has contracting objectives, serving as the minimum level of expected contract participation for the three availability groups: white-men owned businesses, white-women owned businesses, and ethnic minority owned businesses. The contracting objectives apply to all contracts that are determined to have subcontracting opportunities, and to all contractors regardless of their race, gender, or ethnicity.

All Contractors and their subcontractors performing work for the District must be Equal Employment Opportunity (EEO) employers and shall be bound by all laws prohibiting discrimination in employment. There shall be no discrimination against any person, or group of persons, on account of race, color, religion, creed, national origin, ancestry, gender including gender identity or expression, age, marital or domestic partnership status, mental disability, physical disability (including HIV and AIDS), medical condition (including genetic characteristics or cancer), genetic information, or sexual orientation.

Contractor and its subcontractors shall abide by the requirements of 41 CFR §§ 60-1.4(a), 60-300.5(a) and 60-741.5(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities and prohibit discrimination against all individuals based on their race, color, religion, sex, sexual orientation, gender identity, or national origin in the performance of this contract. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, national origin, protected veteran status or disability.

All Contractors shall include the nondiscrimination provisions above in all subcontracts.

Please include the required completed forms with your bid.

Non-compliance with the Guidelines may deem a bid non-responsive, and therefore, ineligible for contract award. Your firm is responsible for:

- 1) Reading and understanding the CEP guidelines.
- 2) Filling out and submitting with your bid the appropriate forms.

The CEP guidelines and forms can also be downloaded from the District website at the following link:
<http://ebmud.com/business-center/contract-equity-program/>

If you have questions regarding the Contract Equity Program, please call (510) 287-0114.



EXHIBIT B INSURANCE REQUIREMENTS

CONTRACTOR/COMPANY NAME: _____

PROPOSER shall take out and maintain during the life of the Agreement all insurance required and PROPOSER shall not commence work until such insurance has been approved by DISTRICT. The proof of insurance shall be on forms provided by DISTRICT directly following these Insurance Requirements.

PROPOSERS are not required to submit completed insurance verification documents with their bid but will be required to submit them upon notification of award. By signing Exhibit A – RFP Response Packet, the PROPOSER agrees to meet the minimum insurance requirements stated in the RFP.

Provisions Applicable to All Required Insurance

- A. Prior to the beginning of and throughout the duration of Services, and for any additional period of time as specified below, CONTRACTOR shall, at its sole cost and expense, maintain insurance in conformance with the requirements set forth below.
- B. CONTRACTOR shall provide Verification of Insurance as required by this Agreement by providing the completed Verification of Insurance as requested below by signing and submitting Exhibit B (“Insurance Requirements”) to the DISTRICT. The Insurance Requirements may be signed by the insurance broker or the insurance broker’s agent (Insurance Broker/Agent) for the CONTRACTOR, or by an officer of the CONTRACTOR (Officer), or by the CONTRACTOR’s risk manager (Risk Manager). The Notice to Proceed shall not be issued, and CONTRACTOR shall not commence Services until a signed Verification of Insurance evidencing the specific coverages and limits required by this Agreement has been received by the DISTRICT.
- C. CONTRACTOR shall carry and maintain the minimum insurance requirements as defined in this Agreement. CONTRACTOR shall require any contractor/subcontractor to carry and maintain the minimum insurance required in this Agreement to the extent the insurance applies to the scope of the services to be performed by contractor/subcontractor.
- D. Receipt of a signed Verification of Insurance by the DISTRICT shall not relieve CONTRACTOR of any of the insurance requirements, nor decrease liability of CONTRACTOR.
- E. Insurance must be maintained, and an updated Verification of Insurance must be provided to the DISTRICT before the expiration of insurance by having the Insurance Broker/Agent, Officer, or Risk Manager update, sign and return the Insurance Requirements to the DISTRICT’s contract manager. The updated Insurance Requirements shall become a part of the Agreement but shall not require a change order to the Agreement. It is the CONTRACTOR’s sole responsibility to provide or to ensure that an updated Verification of Insurance is provided to the DISTRICT. The DISTRICT has no obligation to solicit, remind, prompt, request, seek, or otherwise obtain any updated Verification of Insurance, and any actual or alleged failure on the part of the DISTRICT to obtain any updated Verification of Insurance under this Agreement shall not in any way be construed to be a waiver of any right or remedy of the DISTRICT, in this or any regard.
- F. The insurance required hereunder may be obtained by a combination of primary, excess and/or umbrella insurance, and all coverage shall be at least as broad as the requirements listed in this Agreement.

- G. Any deductibles, self-insurance, or self-insured retentions (SIRs) applicable to the required insurance coverage must be declared to and accepted by the DISTRICT.
- H. At the option and request of the DISTRICT, CONTRACTOR shall provide documentation of its financial ability to pay the deductible, self-insurance, or SIR.
- I. CONTRACTOR is responsible for the payment of any deductibles or SIRs pertaining to the policies required under this Agreement. In the event CONTRACTOR is unable to pay the required SIR, CONTRACTOR agrees that such SIR may be satisfied, in whole or in part, by the DISTRICT as the additional insured at the DISTRICT's sole and absolute discretion, unless to do so would terminate or void the policy(ies).
- J. Unless otherwise accepted by the DISTRICT, all required insurance must be placed with insurers with a current A.M. Best's rating of no less than A- V.
- K. CONTRACTOR shall defend the DISTRICT and pay any damages as a result of failure to provide the waiver of subrogation from the insurance carrier required by this Agreement.
- L. For any coverage that is provided on a claims-made coverage form (which type of form is permitted only where specified), the retroactive date must be shown, must be before the date of this Agreement, and must be before the beginning of any Services related to this Agreement.
- M. For all claims-made policies the updated Verification of Insurance must be provided to the DISTRICT for at least three (3) years after expiration or termination of this Agreement.
- N. If claims-made coverage is canceled or is non-renewed and if the claims-made coverage is not replaced with another claims-made policy form with a retroactive date prior to the effective date of this Agreement and prior to the start of any Services related to this Agreement, CONTRACTOR must purchase an extended reporting period for a minimum of three (3) years after expiration or termination of the Agreement.
- O. In the event of a claim or suit, and upon request by the DISTRICT, CONTRACTOR agrees to provide a copy of the pertinent policy(ies) within 10 days of such request to the DISTRICT for review. Any actual or alleged failure on the part of the DISTRICT to request a copy of the pertinent policy(ies) shall not in any way be construed to be a waiver of any right or remedy of the DISTRICT, in this or any regard. Additionally, the DISTRICT may, at any time during CONTRACTOR's performance under this Agreement, request a copy of the Declarations pages and Schedule of Forms and Endorsements of any policy required to be maintained by CONTRACTOR hereunder, whether or not a suit or claim has been filed. Premium details may be redacted from any such documents requested.
- P. The defense and indemnification obligations of this Agreement are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained herein.
- Q. Where additional insured coverage is required, the additional insured coverage shall be primary and non-contributory, and will not seek contribution from the DISTRICT's insurance or self-insurance.
- R. CONTRACTOR agrees to provide immediate Notice to the DISTRICT of any loss or claim against CONTRACTOR arising out of, pertaining to, or in any way relating to this Agreement or to Services performed under this Agreement. The DISTRICT assumes no obligation or liability by such Notice but has the right (but not the duty) to monitor the handling of any such claim(s) if the claim(s) is likely to involve the DISTRICT.

- S. It is the obligation of the CONTRACTOR to ensure all contractors/subcontractors performing services under this Agreement maintain the necessary coverages and limits. CONTRACTOR shall ensure that all contractors/subcontractors agree to the same indemnity obligation that CONTRACTOR agrees to in this Agreement based on the nature and scope of services being performed by each contractor/subcontractor. CONTRACTOR shall require that each contractor/subcontractor include the DISTRICT, its directors, officers, and employees as additional insureds on its liability policy(ies) (excepting Professional Liability and Workers' Compensation) for all ongoing and completed operations with coverage as broad as required of CONTRACTOR under this Agreement. Failure or inability to secure fully adequate insurance shall in no way relieve the CONTRACTOR or all contractors/subcontractors of the responsibility for its own acts or the acts of any contractors/subcontractors or any employees or agents of either. All contractors/subcontractors are to waive subrogation against the DISTRICT on all policies. CONTRACTOR shall be responsible for maintaining records evidencing contractors'/subcontractors' compliance with the necessary insurance coverages and limits, and such records shall be made available to the DISTRICT within 10 days upon request.
- T. It is CONTRACTOR's responsibility to ensure its compliance with the insurance requirements. Any actual or alleged failure on the part of the DISTRICT to obtain proof of insurance required under this Agreement shall not in any way be construed to be a waiver of any right or remedy of the DISTRICT, in this or any regard.
- U. Notice of Cancellation/Non-Renewal/Material Reduction. The insurance requirements hereunder are mandatory, and the DISTRICT may, at its sole and absolute discretion, terminate the services provided by CONTRACTOR, should CONTRACTOR breach its obligations to maintain the required coverage and limits set forth in this Agreement. No coverage required hereunder shall be cancelled, non-renewed or materially reduced in coverage or limits without the DISTRICT being provided at least thirty (30) days prior written notice, other than cancellation for the non-payment of premiums, in which event the DISTRICT shall be provided ten (10) days prior written notice. Replacement of coverage with another policy or insurer, without any lapse in coverage or any reduction of the stated requirements does not require notice beyond submission to the DISTRICT of an updated Verification of Insurance which shall be met by having the Insurance Broker/ Agent, or Officer, or Risk Manager update, sign and return the Insurance Requirements.

I. Workers' Compensation and Employer's Liability Insurance Coverage

- A. Workers' Compensation insurance including Employer's Liability insurance with minimum limits as follows:
- | | |
|-------------|--|
| Coverage A. | Statutory Benefits Limits |
| Coverage B. | Employer's Liability of not less than: |
| | Bodily Injury by accident: \$1,000,000 each accident |
| | Bodily Injury by disease: \$1,000,000 each employee |
| | Bodily Injury by disease: \$1,000,000 policy limit |
- B. If there is an onsite exposure of injury to CONTRACTOR, and/or contractor/subcontractor's employees under the U.S. Longshore and Harbor Workers' Compensation Act, the Jones Act, or under laws, regulations or statutes applicable to maritime employees, coverage is required for such injuries or claims.
- C. If CONTRACTOR is exempt from carrying Workers' Compensation Insurance, CONTRACTOR must return the completed Verification of Insurance confirming that CONTRACTOR has no employees and is exempt from the State of California Workers' Compensation requirements.

- D. If CONTRACTOR is self-insured with respect to Workers' Compensation coverage, CONTRACTOR shall provide to the DISTRICT a Certificate of Consent to Self-Insure from the California Department of Industrial Relations. Such self-insurance shall meet the minimum limit requirements and shall waive subrogation rights in favor of the DISTRICT as stated below in section "E."
- E. Waiver of Subrogation. Workers' Compensation policies, including any applicable excess and umbrella insurance, must contain a waiver of subrogation endorsement providing that CONTRACTOR and each insurer waive any and all rights of recovery by subrogation, or otherwise, against the DISTRICT, its directors, board, and committee members, officers, officials, employees, agents, and volunteers. CONTRACTOR shall defend and pay any and all damages, fees, and costs, of any kind arising out of, pertaining to, or in any way relating to CONTRACTOR's failure to provide waiver of subrogation from the insurance carrier.

Verification of Workers' Compensation and Employer's Liability Insurance Coverage

☐ By checking the box and signing below, I hereby verify that the CONTRACTOR is exempt from the State of California's requirement to carry Workers' Compensation insurance.

As the CONTRACTOR's Insurance Broker/Agent, Officer, or Risk Manager, I hereby verify that I have reviewed and confirmed that the CONTRACTOR carries Workers' Compensation insurance as required by this Agreement, including the relevant provisions applicable to all required insurance.

Self-Insured Retention: Amount: \$ _____

Policy Limit: \$ _____

Policy Number: _____

Policy Period: from _____ to _____

Insurance Carrier Name: _____

Insurance Broker/Agent or Officer or Risk Manager - Print Name: _____

Insurance Broker/Agent or Officer or Risk Manager's Signature: _____

II. Commercial General Liability Insurance ("CGL") Coverage

- A. CONTRACTOR's insurance shall be primary, and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.
- B. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONTRACTOR.
- C. Minimum Requirements. CGL insurance with minimum per occurrence and aggregate limits as follows:

Bodily Injury and Property Damage \$2,000,000 per occurrence & aggregate

Personal Injury/Advertising Injury	\$2,000,000 per occurrence & aggregate
Products/Completed Operations	\$2,000,000 per occurrence & aggregate

- D. Coverage must be on an occurrence basis and be as broad as Insurance Services Office (ISO) form CG 00 01.
- E. Coverage for Products, and Completed Operations, and Ongoing Operations must be included in the insurance policies and shall not contain any “prior work” coverage limitation or exclusion applicable to any Services performed by CONTRACTOR and/or contractor/subcontractor under this Agreement.
- F. There will be no exclusion for explosions, collapse, or underground liability (XCU).
- G. Insurance policies and Additional Insured Endorsement(s) shall not exclude liability and damages to work arising out of, pertaining to, or in any way relating to services performed by contractor/subcontractor on CONTRACTOR’s behalf.
- H. Contractual liability coverage shall be included and shall not limit, by any modification or endorsement, coverage for liabilities assumed by CONTRACTOR under this Agreement as an “insured contract.”
- I. Waiver of Subrogation. The policy shall be endorsed to include a Waiver of Subrogation ensuring that the CONTRACTOR and its insurer(s) waive any rights of recovery by subrogation, or otherwise, against the DISTRICT, its directors, board, and committee members, officers, officials, agents, volunteers, and employees. CONTRACTOR shall defend and pay any and all damages, fees, and costs, of any kind, arising out of, pertaining to, or in any way resulting from CONTRACTOR’s failure to provide the waiver of subrogation from its insurance carrier(s).
- J. Independent Contractor’s Liability shall not limit coverage for liability and/or damages arising out of, pertaining to, or in any way resulting from Services provided under this Agreement.
- K. To the fullest extent permitted by law, the DISTRICT, its directors, board, and committee members, officers, officials, employees, agents, and volunteers must be covered as Additional Insureds on a primary and noncontributory basis on all underlying, excess and umbrella policies that shall be evidenced in each case by an endorsement. Coverage for the Additional Insureds must be as broad as ISO forms CG 20 10 (ongoing operations) and CG 20 37 (completed operations) for liability arising in whole, or in part, from work performed by or on behalf of CONTRACTOR, or in any way related to Services performed under this Agreement.
- L. A severability of interest provision must apply for all the Additional Insureds, ensuring that CONTRACTOR’s insurance shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the policies’ limit(s).

Verification of Commercial General Liability (CGL) Insurance Coverage

As the CONTRACTOR’S Insurance Broker/Agent, Officer, or Risk Manager, I hereby verify that I have reviewed and confirmed that the CONTRACTOR carries Commercial General Liability insurance, as required by this Agreement, including the relevant provisions applicable to all required insurance:

Self-Insured Retention: Amount: \$ _____

Policy Limit: \$ _____

Policy Number: _____

Policy Period: from _____ **to** _____

Insurance Carrier Name: _____

Insurance Broker/Agent or Officer or Risk Manager - Print Name: _____

Insurance Broker/Agent or Officer or Risk Manager's Signature: _____

III. Business Auto Liability Insurance Coverage

- A. CONTRACTOR's insurance shall be primary, and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.
- B. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONTRACTOR.
- C. Minimum Requirements. Auto insurance with minimum coverage and limits as follows:
 - a. Each Occurrence Limit (per accident) and in the Aggregate: 2,000,000
 - b. Bodily Injury and Property Damage: \$2,000,000
- D. Coverage must include either "owned, non-owned, and hired" autos or "any" automobile. This provision ensures the policy covers losses arising out of use of company-owned vehicles ("owned autos"), employee's personal autos ("non-owned autos" meaning not owned by company/insured) or autos that are rented or leased ("hired autos").
- E. If CONTRACTOR is transporting hazardous materials or contaminants, evidence of the Motor Carrier Act Endorsement-hazardous materials clean-up (MCS-90, or its equivalent) must be provided.
- F. If CONTRACTOR's Scope of Services under this Agreement exposes a potential pollution liability risk related to transport of potential pollutants, seepage, release, escape or discharge of any nature (threatened or actual) of pollutants into the environment arising out of, pertaining to, or in any way related to CONTRACTOR's and/or contractor's/subcontractor's performance under this Agreement, then Auto Liability Insurance policies must be endorsed to include Transportation Pollution Liability insurance. Alternatively, coverage may be provided under the CONTRACTOR's Pollution Liability Policies if such policy has no exclusions that would restrict coverage under this Agreement. Coverage shall also include leakage of fuel or other "pollutants" needed for the normal functioning of covered autos.
- G. To the fullest extent permitted by law, the DISTRICT, its directors, board, and committee members, officers, officials, employees, agents, and volunteers must be covered as Additional Insureds on a primary and noncontributory basis on all underlying and excess and umbrella policies.
- H. A severability of interest provision must apply for all the Additional Insureds, ensuring that

CONTRACTOR's insurance shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the insurer's limits of liability.

Verification of Business Auto Liability Insurance Coverage

As the CONTRACTOR'S Insurance Broker/Agent, Officer, or Risk Manager, I hereby verify that I have reviewed and confirmed that the CONTRACTOR carries Business Automobile Liability insurance, as required by this Agreement, including the relevant provisions applicable to all required insurance:

Self-Insured Retention: Amount: \$ _____

Policy Limit: \$ _____

Policy Number: _____

Policy Period: from _____ **to** _____

Insurance Carrier Name: _____

Insurance Broker/Agent or Officer or Risk Manager – Print Name: _____

Insurance Broker/Agent or Officer or Risk Manager's Signature: _____

EXHIBIT C

GENERAL REQUIREMENTS

Effective: June 9, 2021
Supersedes: September 1, 2020

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1. DEFINITIONS

The following terms shall be given the meaning shown, unless context requires otherwise, or a unique meaning is otherwise specified.

- a. **"Change Order"** A Change Order is a written instrument used for modifying the contract with regards to the scope of Work, contract sum, and/or Contract Time. An approved Change Order is a Change Order signed by the District. An executed Change Order is a Change Order signed by both the District and the Contractor.
- b. **"Contract"** means the agreement between the District and Contractor as memorialized in the Contract Documents.

- c. **“Business Entity”** means any individual, business, partnership, joint venture, corporation, sole proprietorship, or other private legal entity recognized by statute.
- d. **“Buyer”** means the District’s authorized contracting official.
- e. **“Contract Documents”** comprise the entire agreement between the District and the Contractor and can include the District’s contract form if used, any purchase order, RFP, RFQ or Contractor response packet, and any addenda, appendices and District approved changes or amendments. The Contract Documents are intended to be complementary and include all items necessary for the Contractor’s proper execution and completion of the Work. Any part of the Work not shown or mentioned in the Contract Documents that is reasonably implied or is necessary or usual for proper performance of the Work, shall be provided by the Contractor at its expense.
- f. **“Contractor”** means the Business Entity with whom the District enters into a contractual agreement. Contractor shall be synonymous with “supplier”, “vendor”, “consultant” or other similar term.
- g. **“Day”** unless otherwise specified, days are calendar days, measured from midnight to the next midnight.
- h. **“District”** means the East Bay Municipal Utility District, its employees acting within the scope of their authority, and its authorized representatives.
- i. **“Goods”** means off the shelf software and all types of tangible personal property, including but not limited to materials, supplies, and equipment.
- j. **“Project Manager”** shall be the District designated individual responsible for administering and interpreting the terms and conditions of the Contract Documents, for matters relating to the Contractor’s performance under the Contract with the District, and for liaison and coordination between the District and Contractor.
- k. **“Work”** means all labor, tasks, materials, supplies, and equipment required to properly fulfill the Contractor’s obligations as required in the Contract Documents.
- l. **“Work Day”** Unless otherwise specified, work day includes all days of the year except Saturdays, Sundays and District holidays.

2. BOND

- a. When required in the District’s bid or proposal solicitation documents, the Contractor to whom award is made shall furnish a good and approved faithful performance bond and/or payment bond within ten business days after receiving the forms for execution.
- b. The bonds shall be executed by a sufficient, admitted surety insurer (i.e.: as listed on website <https://www.cslb.ca.gov/OnlineServices/InsuranceSearch/INSRequest.aspx>) admitted to transact such business in California by the California Department of Insurance. After acceptance of the bond(s) by the District, a copy of the bond(s) will be returned to the Contractor.
- c. If, during the continuance of the Contract, any of the sureties, in the opinion of the District, are or become irresponsible, the District may require other or additional sureties, which the Contractor shall furnish to the satisfaction of the District within ten

days after notice. If the Contractor fails to provide satisfactory sureties within the ten-day period, the Contract may be terminated for cause under Article 18.

3. CONTRACTOR'S FINANCIAL OBLIGATION

The Contractor shall promptly make payments to all persons supplying labor and materials used in the execution of the contract.

4. SAMPLES OR SPECIMENS

The Contractor shall submit samples or prepare test specimens of such materials to be furnished or used in the work as the Project Manager may require.

5. MATERIAL AND WORKMANSHIP

- a. All goods and materials must be new and of the specified quality and equal to approved sample, if samples have been required. In the event any goods or materials furnished, or services provided by the Contractor in the performance of the Contract fail to conform to the requirements, or to the sample submitted by the Contractor, the District may reject the same, and it shall become the duty of the Contractor to reclaim and remove the item promptly or to correct the performance of services, without expense to the District, and immediately replace all such rejected items with others conforming to the Contract. All work shall be done and completed in a thorough, workmanlike manner, notwithstanding any omission from these specifications or the drawings, and it shall be the duty of the Contractor to call attention to apparent errors or omissions and request instructions before proceeding with the work. The Project Manager may, by appropriate instructions, correct errors and supply omissions, which instructions shall be binding upon the Contractor as though contained in the original Contract Documents.
- b. All materials furnished and all Work must be satisfactory to the Project Manager. Work, material, or machinery not in accordance with the Contract Documents, in the opinion of the Project Manager, shall be made to conform.

6. DEFECTIVE WORK

The Contractor shall replace at its own expense any part of the work that has been improperly executed, as determined by the Project Manager. If Contractor refuses or neglects to replace such defective work, it may be replaced by the District at the expense of the Contractor, and its sureties shall be liable therefor.

7. WARRANTY

Contractor expressly warrants that all goods furnished will conform strictly with the specifications and requirements contained herein and with all approved submittals, samples and/or models and information contained or referenced therein, all affirmations of fact or promises, and will be new, of merchantable quality, free from defects in materials and workmanship, including but not limited to leaks, breaks, penetrations, imperfections, corrosion, deterioration, or other kinds of product deficiencies. Contractor expressly warrants that all goods to be furnished will be fit and sufficient for the purpose(s) intended. Contractor expressly warrants that all goods shall be delivered free from any security interest, lien or encumbrance of any kind, and free from any claim of infringement, copyright or other intellectual property violation, or other violation of laws, statutes, regulations, ordinances, rules, treaties, import

restrictions, embargoes or other legal requirements. Contractor guarantees all products and services against faulty or inadequate design, manufacture, negligent or improper transport, handling, assembly, installation or testing, and further guaranties that there shall be strict compliance with all manufacturer guidelines, recommendations, and requirements, and that Contractor guaranties that it will conform to all requirements necessary to keep all manufacturer warranties and guarantees in full force and effect. These warranties and guarantees are inclusive of all parts, labor and equipment necessary to achieve strict conformance, and shall take precedence over any conflicting warranty or guarantee. These warranties and guarantees shall not be affected, limited, discharged or waived by any examination, inspection, delivery, acceptance, payment, course of dealing, course of performance, usage of trade, or termination for any reason and to any extent. In the absence of any conflicting language as to duration, which conflicting language will take precedence as being more specific, Contractor's aforesaid warranties and guarantees shall be in full force and effect for a period of one year from the date of acceptance by the District but shall continue in full force and effect following notice from District of any warranty or guarantee issue, until such issue has been fully resolved to the satisfaction of District.

8. NOT USED

9. SAFETY AND ACCIDENT PREVENTION

In performing work under the Contract on District premises, Contractor shall conform to any specific safety requirements contained in the Contract or as required by law or regulation. Contractor shall take any additional precautions as the District may reasonably require for safety and accident prevention purposes. Any violation of such rules and requirements, unless promptly corrected, shall be grounds for termination of this Contract or Contractor's right to precede in accordance with the default provisions of the Contract Documents.

10. CHARACTER OF WORKFORCE

The Contractor shall employ none but skilled competent qualified personnel to perform the Work and shall maintain discipline and order in the conduct of the Work at all times.

11. PREVAILING WAGES & DIR REGISTRATION

- a. Please see www.dir.ca.gov for further information regarding the below.
- b. All Contractors and Subcontractors of any tier bidding on or offering to perform work on a public works project shall first be registered with the State Department of Industrial Relations (DIR) pursuant to Section 1725.5 of the Labor Code. No bid will be accepted, nor any contract entered into without proof of the Contractor and Subcontractors' current registration with the DIR (LC § 1771.1).
- c. All public works projects awarded after January 1, 2015, are subject to compliance monitoring and enforcement by the DIR (LC § 1771.4) and all Contractors are required
- d. to post job site notices, "as prescribed by regulation" (LC § 1771.4).
- e. To the extent applicable, pursuant to Section 1773 of the Labor Code, the District has obtained from the Director of Industrial Relations of the State of California, the general prevailing rates of per diem wages and the general prevailing rates for holiday and overtime work in the locality in which the Work is to be performed, for each craft, classification, or type of worker needed to execute the contract. Pursuant to Section

1773.2 of the Labor Code, a copy of the prevailing wage rates is on file with the District and available for inspection by any interested party at www.dir.ca.gov.

- f. The holidays upon which such rates shall be paid shall be all holidays recognized in the collective bargaining agreement applicable to the particular craft, classification, or type of worker employed on the Work.
- g. The Contractor shall post a copy of the general prevailing rate of per diem wages at the jobsite pursuant to Section 1773.2 of the Labor Code.
- h. Pursuant to Section 1774 of the Labor Code, the Contractor and any of its Subcontractors shall not pay less than the specified prevailing rate of wages to all workers employed in the execution of the contract.
- i. As set forth with more specificity in Section 1773.1 of the Labor Code, "per diem" wages include employer payments for health and welfare, pension, vacation, travel, subsistence and, in certain instances, apprenticeship or other training programs, and shall be paid at the rate and in the amount spelled out in the pertinent prevailing wage determinations issued by the Director of Industrial Relations.
- j. The Contractor shall, as a penalty to the State or the District, forfeit not more than the maximum set forth in Section 1775 of the Labor Code for each calendar day, or portion thereof, for each worker paid less than the prevailing rates for the work or craft in which the worker is employed under the contract by the Contractor or by any Subcontractor under him. The difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which such worker was paid less than the stipulated prevailing wage rate shall be paid to such worker by the Contractor.
- k. The specified wage rates are minimum rates only and the District will not consider and shall not be liable for any claims for additional compensation made by the Contractor because of its payment of any wage rate in excess of the general prevailing rates. All disputes in regard to the payment of wages in excess of those specified herein shall be adjusted by the Contractor at its own expense.
- l. General prevailing wage determinations have expiration dates with either a single
- m. asterisk or a double asterisk. Pursuant to California Code of Regulations, Title 8, Section 16204, the single asterisk means that the general prevailing wage determination shall be in effect for the specified contract duration. The double asterisk means that the predetermined wage modification shall be paid after the expiration date. No adjustment in the Contract Sum will be made for the Contractor's payment of these predetermined wage modifications.

12. PAYROLL RECORDS & ELECTRONIC SUBMISSION

If prevailing wages apply, Contractor and each Subcontractor, as appropriate, shall comply with the following:

- a. Contractor and each Subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed in connection with the

Work. The payroll records shall be certified and shall be available for inspection in accordance with the provisions of Section 1776 of the Labor Code. Certified payroll records shall be on the forms provided by the DIR or contain the same information required on the Department's form.

- b. The Contractor shall submit for each week in which any contract Work is performed a copy of all payroll records to the Project Manager. The Contractor shall be responsible for submission of copies of payroll records of all Subcontractors.
- c. The Contractor or Subcontractor shall certify the payroll records as shown on the DIR form. In addition, the records shall be accompanied by a statement signed by the Contractor or Subcontractor certifying that the classifications truly reflect the Work performed and that the wage rates are not less than those required to be paid.
- d. For public works projects awarded on or after April 1, 2015, or that are still ongoing after April 1, 2016, no matter when awarded, each Contractor and Subcontractor shall furnish the certified payroll related records as more specifically described above and in Labor Code section 1776 directly to the Labor Commissioner (see LC § 1771.4). These records shall be provided to the Labor Commissioner at least monthly or more frequently if required by the terms of the Contract. For exception on projects covered by collective bargaining agreements like a PLA, please see Labor Code section 1771.4.
- e. In the event of noncompliance with the requirements of Section 1776 of the Labor Code, the Contractor shall have 10 days in which to comply subsequent to receipt of written notice specifying in what respects such Contractor must comply with said Section. Should noncompliance still be evident after such 10-day period, the Contractor shall, as a penalty to the State or the District, forfeit the amount set forth in Section 1776 of the Labor Code for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, such penalties shall be withheld from progress payments then due.
- f. The Contractor and every Subcontractor shall post at the workplace and comply with all required wage related workplace postings. Copies of the required postings may be downloaded or ordered electronically from the Department of Industrial Relations website at <http://www.dir.ca.gov/wpnodb.html>.

13. HOURS OF LABOR

Pursuant to the provisions of Sections 1810, et seq. of the Labor Code and any amendments thereof:

- a. Eight hours of labor constitutes a legal day's Work under the contract.
- b. The time of service of any worker employed upon the work shall be limited and restricted to eight hours during any one calendar day, and forty hours during any one calendar week except as provided in Article 13.iv below.
- c. The Contractor shall, as a penalty to the State or the District, forfeit the amount set forth in Section 1813 of the Labor Code for each worker employed in the execution of the contract by the Contractor or by any Subcontractor for each calendar day during which such worker is required or permitted to work more than eight hours in any

calendar day and forty hours in any one calendar week in violation of this Article and the provisions of Labor Code, Sections 1810, et seq.

- d. Work performed by employees of the Contractor in excess of eight hours per day, and forty hours during any one calendar week, shall be permitted upon compensation for all hours worked in excess of eight hours per day at not less than one and one-half times the basic rate of pay.
- e. The Contractor and every Subcontractor shall keep an accurate record showing the name of and the actual hours worked each calendar day and each calendar week by each worker employed by him in connection with the Work; the record shall be kept open at all reasonable hours to the inspection of the District and to the Division of Labor Standards Enforcement of the State of California.

14. EMPLOYMENT OF APPRENTICES

- a. In the performance of the contract, the Contractor and any Subcontractor shall comply with the provisions concerning the employment of apprentices in Section 1777.5 of the Labor Code and any amendments thereof.
- b. In the event the Contractor or any Subcontractor willfully fails to comply with the aforesaid section, such Contractor or Subcontractor shall be subject to the penalties for noncompliance in Labor Code, Section 1777.7.

15. CHANGES

- a. Changes in the Work can only be made in writing signed by an authorized employee of the District. If the change causes an increase or decrease in the contract sum, or a change in the time for performance under the Contract, an adjustment may be made as determined by the Project Manager.
- b. The District reserves the right to make changes in the design of materials, equipment, or machinery, to make alterations or additions to or deviations or subtractions from the Contract and any specifications and drawings, to increase or decrease the required quantity of any item or portion of the Work or to omit any item or portion of the Work, as may be deemed by the Project Manager to be necessary or advisable and to order such extra work as may be determined by the Project Manager to be required for the proper execution and completion of the whole Work contemplated. Any such changes will be ordered in writing by the Project Manager. The determination of the Project Manager on all questions relating to changes, including extra work, shall be conclusive and binding.
- c. Prior to issuing an amendment or change to the Contract, the Project Manager may request that the Contractor submit a proposal covering the changes. Within 10 business days of receiving the request, the Contractor shall submit its proposal to the Project Manager of all costs associated with the proposed amendment or change and any request for an extension of Contract time. Contractor's proposal shall include detailed estimates with cost breakdowns, including labor, material, equipment, overhead, and profit. Labor shall be broken down into hours and rate per hour. If applicable, the proposal shall include a breakdown for off-site labor (including factory labor, engineering, etc.). The Contractor's proposal shall include an analysis of schedule impact when the Contractor is requesting an adjustment in contract time. The

Contractor shall be responsible for any delay associated with its failure to submit its change proposal within the time specified. If the Project Manager decides not to issue an amendment or change after requesting a proposal from the Contractor, the Contractor will be notified in writing. The Contractor is not entitled to reimbursement for Change Order preparation costs if the Contractor's proposal is not accepted by the Project Manager.

- d. If the Contractor agrees with the terms and conditions of the approved Change Order, the Contractor shall indicate its acceptance by signing the original copy and returning it to the Project Manager within 10 Work Days after receipt or with reasonable promptness and in such sequence as to not delay the Work or activities of the District or of separate contractors, whichever is sooner. If notice of any change is required to be given to a surety by the provisions of any bond, the Contractor shall provide notice and the amount of each applicable bond shall be adjusted separately. Payment in accordance with the terms and conditions set forth in the executed Change Order shall constitute full compensation for all Work included in the Change Order and the District will be released from any and all claims for direct, indirect, and impact expenses and additional time impact resulting from the Work. If the Contractor disagrees with the terms and conditions of the approved Change Order, the Contractor shall indicate specific areas of disagreement and return the approved Change Order to the Project Manager with a detailed written dispute. No payment will be made on the disputed work until the approved Change Order is returned to the Project Manager. However, whether or not the Contractor agrees with the terms and conditions of an approved Change Order, the Contractor shall immediately revise its sequence of operations as required to facilitate timely completion of the changed work and shall proceed with the revised work sequence.
- e. The Project Manager may, after having received a written cost quotation from the Contractor, order the Contractor, in writing, to proceed with the work prior to issuance of an approved Change Order through a change directive. The change directive will authorize the Contractor to proceed with the work subject to the cost quotation submitted by the Contractor. Within five days following receipt of the change directive, the Contractor shall submit a detailed change proposal documenting the amount of compensation. The Project Manager will review the change proposal and, at its option, will either issue an approved Change Order for the work or direct the Contractor to perform the work through Force Account. Until the method of compensation is determined, and the approved Change Order is received, the Contractor shall keep full and complete time and material records of the cost of the ordered work and shall permit the Project Manager to have access to such records. An approved Change Order shall supersede any previously issued written change directive covering the same Work.

16. EFFECT OF EXTENSIONS OF TIME

The granting, or acceptance, of extensions of time to complete the Work or furnish the labor, supplies, materials or equipment, or any one of the aforementioned, will not operate as a release of Contractor or the surety on Contractor's faithful performance bond.

17. DELAYS

- a. The Contractor shall take reasonable precautions to foresee and prevent delays to the Work. When the Contractor foresees a delay event, and upon the occurrence of a delay

event, the Contractor shall immediately notify the Project Manager of the probability or the actual occurrence of a delay, and its cause. With respect to all delays (compensable, excusable or inexcusable), the Contractor shall reschedule the Work and revise its operations, to the extent possible, to mitigate the effects of the delay. Within 15 days from the beginning of a delay the Contractor shall provide the Project Manager with a detailed written description of the delay, its cause, its impact and the Contractor's mitigation plans. Failure to provide the notification required above waives the Contractor's right to any additional time or compensation resulting from the delay for whatever cause. The Project Manager will investigate the facts and ascertain the extent of the delay, and the Project Manager's findings thereon shall be final and conclusive, except in the case of gross error. An extension of time must be approved by the Project Manager to be effective, but an extension of time, whether with or without consent of the sureties, shall not release the sureties from their obligations, which shall remain in full force until the discharge of the contract.

- b. For inexcusable delays (delays caused by circumstances within the Contractor's control, the control of its subcontractors or supplies of any tier, or within the scope of the Contractor's contract responsibilities) the Contractor shall not be entitled to an extension of time or additional compensation for any loss, cost, damage, expense or liability resulting directly or indirectly from the inexcusable delay.
- c. For excusable delays (delays to completion of the Work within the time limits set forth in the Contract Documents directly caused by events beyond the control of both the Contractor and the District, which delay is not concurrent with an inexcusable delay and which could not have been avoided by the Contractor through reasonable mitigation measures the Project Manager will grant the Contractor an extension of time in an amount equal to the period of Excusable Delay based on the analysis of schedule impact and delay analysis diagram, which shall be the Contractor's sole and exclusive remedy for such delay. Excusable Delays shall include labor strikes, adverse weather, and Acts of God.
- d. For compensable delays (delays to completion of the Work within the time limits set forth in the Contract Documents that could not be avoided by Contractor mitigation, caused directly and solely by the District or by causes within the exclusive control of the
- e. District, and which were not concurrent with any other type of delay) the Project
- f. Manager will grant the Contractor an extension of the time to perform under the Contract and compensation in an amount that represents the Contractor's actual direct costs incurred as a direct result of the compensable delay. The Contractor may recover its direct costs only and may not recover (and waives) all other types of indirect, consequential, special and incidental damages.
- g. For concurrent delays (two or more independent causes of delay directly preventing the Contractor from completing the Work within the time limits set forth in the Contract Documents where the delays occur at the same time during all or a portion of the delay period being considered, and where each of the delays would have caused delay to the Contractor even in the absence of any of the other delays, and none of the delays could have been avoided by Contractor mitigations) the following rules apply:

- i. One or more of the concurrent delays are excusable or compensable, then the period of concurrent delay will be treated as an excusable delay; and
- ii. All of the concurrent delays are inexcusable, then the period of concurrent delay will be inexcusable.

18. TERMINATION

a. Termination by the District for Cause:

- i. District may terminate the Contractor's right to proceed under the Contract, in whole or in part, for cause at any time after the occurrence of any of the following events, each of which constitutes a default:
 - 1. The Contractor becomes insolvent or files for relief under the bankruptcy laws of the United States.
 - 2. The Contractor makes a general assignment for the benefit of its creditors or fails to pay its debts as the same become due.
 - 3. A receiver is appointed to take charge of the Contractor's property.
 - 4. The Contractor fails to supply skilled supervisory personnel, an adequate number of properly skilled workers, proper materials, or necessary equipment to prosecute the Work in accordance with the Contract Documents.
 - 5. The Contractor fails to make progress so as to endanger performance of the Work within the contractually required time.
 - 6. The Contractor disregards legal requirements of agencies having jurisdiction over the Work, the Contractor, or the District.
 - 7. The Contractor fails to provide the District with a written plan to cure a District identified default within five business days after the District's request for a plan to cure; the District does not accept the Contractor's plan for curing its default; or the Contractor does not fully carry out an accepted plan to cure.
 - 8. The Contractor abandons the Work. Abandonment is conclusively presumed when the District requests a written plan to cure a default and the Contractor does not submit the plan within five business days of the District's request.
 - 9. The Contractor materially fails to meet its obligations in accordance with the Contract Documents.
 - 10. The Contractor is in default of any other material obligation under the Contract Documents.
- ii. If any of the above events occur, the District may, in its discretion, require that the Contractor submit a written plan to cure its default, which plan must be provided to the District within 5 business days of the request and must include a realistic, executable plan for curing the noted defaults.

- iii. Upon any of the occurrences referred to in Article 18.a.i. above, the District may, at its election and by notice to the Contractor, terminate the Contract in whole or in part; accept the assignment of any or all of the subcontracts; and then complete the Work by any method the District may deem expedient. If requested by the District, the Contractor shall remove any part or all of the Contractor's materials, supplies, equipment, tools, and machinery from the site of the Work within seven days of such request; and, if the Contractor fails to do so, the District may remove or store, and after 90 days sell, any of the same at the Contractor's expense.
- iv. No termination or action taken by the District after termination shall prejudice any other rights or remedies of the District provided by law or by the Contract Documents.
- v. Conversion: If, after termination for other than convenience, it is determined that the Contractor was not in default or material breach, or that the default or material breach was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for convenience pursuant to Article 18.b. below.

b. Termination by the District for Convenience:

- i. The District may, at its option, and for its convenience, terminate the Contract at any time by giving written notice to the Contractor specifying the effective date of termination. Upon such termination, the Contractor agrees to comply with the notice and further agrees to waive any claims for damages, including loss of anticipated profits, on account of the termination; and, as the sole right and remedy of the Contractor, the District shall pay the Contractor as set forth below.
- ii. Upon receipt of a notice of termination for convenience, the Contractor shall, unless the notice directs otherwise, do the following:
 - 1. Immediately discontinue its performance of the Contract to the extent specified in the notice.
 - 2. Place no further orders or subcontracts for materials, equipment, services, or facilities, except as may be necessary for completion of a portion of the Work that is not discontinued or that is necessary for an orderly cessation of the Work.
 - 3. Promptly cancel, on the most favorable terms reasonably possible, all subcontracts to the extent they relate to the performance of the discontinued portion of the Work.
 - 4. Thereafter, do only such Work as may be necessary to preserve and protect Work already in progress and to protect materials, plants, and equipment in transit to or on the site of performance.
- iii. Upon such termination for convenience, the District will pay to the Contractor the sum of the following:

1. The amount of the contract sum allocable to the portion of the Work properly performed by the Contractor as of the effective date of termination, less sums previously paid to the Contractor.
 2. Previously unpaid costs of any items delivered to the project site that were already fabricated for subsequent incorporation into the Work.
 3. Any proven losses with respect to materials and equipment directly resulting from the termination.
 4. Reasonable demobilization costs.
- iv. The above reimbursement is the sole and exclusive remedy to which the Contractor is entitled in the event the contract is terminated for convenience; and the Contractor expressly waives any other claims, damages, demands, compensation or recovery related to this contract or project. The Contractor agrees to sign a general release incorporating this waiver.
- c. Effect of Termination: Upon termination, the obligations of the Contract shall continue as to portions of the Work already performed and, subject to the Contractor's obligations under Article 18.b.ii, as to bona fide obligations assumed by the Contractor prior to the date of termination.
- d. Force Majeure: If the contract is suspended or terminated by the District because Contractor's performance is prevented or delayed by an event including an irresistible, superhuman cause, or by the act of public enemies of the State of California or of the United States ("Force Majeure"), the Contractor will be paid for Work performed prior to the Force Majeure event at either (i) the unit prices named in the Contract; or (ii) in the event no unit prices are named, a sum equal to the percentage of the total contract amount that matches the percentage of the total contract Work performed prior to the Force Majeure event.

19. DAMAGES

All losses or damages to material or equipment to be furnished pursuant to the Contract Documents occurring prior to receipt and final acceptance of the Work shall be sustained by the Contractor. The Contractor shall sustain all losses arising from unforeseen obstructions or difficulties, either natural or artificial, encountered in the prosecution of the Work, or from any action of the elements prior to final acceptance of the work, or from an act or omission on the part of the Contractor not authorized by the Contract Documents.

20. ORDER OF PRECEDENCE

- a. In the case of conflicts, errors, or discrepancies in any of the Contract Documents, the order of precedence is as follows. Within the same order of precedence, specific requirements shall take precedence over general requirements.
- i. Approved Change Orders.
 - ii. Addenda.
 - iii. RFQ or RFP.
 - iv. Referenced Standard Specifications and Drawings.
 - v. Contractor's Response Packet.

- b. With reference to drawings:
 - i. Numerical dimensions govern over scaled dimensions.
 - ii. Detailed drawings govern over general drawings.
 - iii. Addenda/Change Order drawings govern over contract drawings.
 - iv. Contract drawings govern over standard drawings.
 - v. Notes apply only to the drawing where the notes appear, unless classified as “typical” or intended to apply elsewhere in which case they apply to all drawings where the conditions or circumstance noted occurs.
 - vi. Typical details apply to all drawings unless a specific different detail is shown.

21. INDEMNIFICATION

Contractor expressly agrees to defend, indemnify, and hold harmless DISTRICT and its Directors, officers, agents and employees from and against any and all loss, liability, expense, claims, suits, and damages, including attorneys’ fees, arising out of or resulting from Contractor's, its associates’, employees’, subconsultants’, or other agents’ negligent acts, errors or omissions, or willful misconduct, in the operation and/or performance under this Agreement.

22. PROHIBITION OF ASSIGNMENT

The Contractor shall not assign, transfer, or otherwise dispose of any of its rights, duties or obligations under this Contract. This prohibition does not apply to the District. The District retains the right to assign this Contract in whole or in part at any time upon reasonable terms.

23. NEWS RELEASES

The Contractor, its employees, subcontractors, and agents shall not refer to the District, or use any logos, images, or photographs of the District for any commercial purpose, including, but not limited to, advertising, promotion, or public relations, without the District's prior written consent. Such written consent shall not be required for the inclusion of the District's name on a customer list.

24. SEVERABILITY

Should any part of the Contract be declared by a final decision by a court or tribunal of competent jurisdiction to be unconstitutional, invalid or beyond the authority of either party to enter into or carry out, such decision shall not affect the validity of the remainder of the Contract, which shall continue in full force and effect, provided that the remainder of the Contract can be interpreted to give effect to the intentions of the parties.

25. COVENANT AGAINST GRATUITIES

The Contractor warrants that no gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by the Contractor, or any agent or representative of the Contractor, to any officer or employee of the District with a view toward securing the Contract or securing favorable treatment with respect to any determinations concerning the performance of the Contract. For breach or violation of this warranty, the District shall have the right to terminate the Contract, either in whole or in part, and any loss or damage sustained by the District in procuring on the open market any items which Contractor agreed to supply shall be borne and paid for by the Contractor. The rights and remedies of the District provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or in equity.

26. RIGHTS AND REMEDIES OF THE DISTRICT

The rights and remedies of the District provided herein shall not be exclusive and are in addition to any other rights and remedies provided by law or under the Contract.

27. WAIVER OF RIGHTS

Any action or inaction by the District or the failure of the District on any occasion, to enforce any right or provision of the Contract, shall not be construed to be a waiver by the District of its rights and shall not prevent the District from enforcing such provision or right on any future occasion. Rights and remedies are cumulative and are in addition to any other rights or remedies that the District may have at law or in equity.

28. CONFIDENTIALITY

Contractor agrees to maintain in confidence and not disclose to any person or entity, without the District's prior written consent, any trade secret or confidential information, knowledge or data relating to the products, process, or operation of the District. Contractor further agrees to maintain in confidence and not to disclose to any person or entity, any data, information, technology, or material developed or obtained by Contractor during the term of the Contract. The covenants contained in this paragraph shall survive the termination of this Contract for whatever cause.



EXHIBIT D IRAN CONTRACTING ACT CERTIFICATION

Pursuant to Public Contract Code (PCC) § 2204, an Iran Contracting Act Certification is required for solicitations of goods or services of \$1,000,000 or more.

To submit a bid or proposal to East Bay Municipal Utility District (District), you must complete **ONLY ONE** of the following two paragraphs. To complete paragraph 1, check the corresponding box **and** complete the certification for paragraph 1. To complete paragraph 2, check the corresponding box and attach a copy of the written permission from the District.

- ☐ 1. We are not on the current list of persons engaged in investment activities in Iran created by the California Department of General Services ("DGS") pursuant to PCC § 2203(b), and we are not a financial institution extending twenty million dollars (\$20,000,000) or more in credit to another person, for 45 days or more, if that other person will use the credit to provide goods or services in the energy sector in Iran and is identified on the current list of persons engaged in investment activities in Iran created by DGS.

CERTIFICATION FOR PARAGRAPH 1:

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY, that I am duly authorized to legally bind the BIDDER/bidder to the clause in paragraph 1. This certification is made under the laws of the State of California.

Firm: _____

By: _____ Date: _____
(Signature of Bidder)

Title: _____

Signed at: _____ County, State of: _____

OR

- ☐ 2. We have received written permission from the District to submit a bid or proposal pursuant to PCC § 2203(c) or (d). *A copy of the written permission from the District is included with our bid or proposal.*

EXHIBIT E
SPECIFICATIONS

RFQ No. 2603 - Air-Cooled Chiller for Power Generation Station

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. The requirements of this section apply to all submittals in the Contract Documents.
2. Submit samples, drawings, and data for the Engineer's approval which demonstrate fully that the construction, and the materials and equipment to be furnished will comply with the provisions and intent of this Specification. All submittals shall be written in Standard American English and all numerical data, whether in drawings, test reports, engineering calculations, manufacturer's literature, or maintenance manuals, shall be in United States Customary System (USCS) measuring units (foot, pound, gallons, etc). If original design work was completed in metric units, their equivalent USCS dimension and unit shall be indicated. All submittals, in printed or electronic format, shall be original quality and completely legible. Any obfuscation or loss of clarity of original which may result in ambiguous interpretation is not acceptable.
3. This Section outlines in general the items that the Contractor must prepare or assemble for submittal during the progress of the work. There is no attempt herein to state in detail all of the procedures and requirements for each submittal.
4. The Contractor shall anticipate resubmitting submittals for major pieces of equipment and for control systems.
5. Requirements in this section are in addition to any specific requirements for submittals specified in other divisions and sections of these Contract Documents.

1.2 SUBMITTALS

A. General

1. Submittals shall include the following information:
 - a. A copy of the applicable section(s), with addendum updates included as appropriate, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements.
 - b. A check mark shall denote full compliance with a paragraph as a whole. If deviations from the specifications are indicated, and therefore requested by the Contractor, each deviation shall be underlined and denoted by a number

in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons for requesting the deviation. The Engineer is the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance on the part of the Contractor with the specifications.

2. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.
3. Any deviation from the contract documents not specifically requested and clearly identified, although accepted through oversight, may be rejected at any stage of the Work. The Contractor shall, at its own expense, reconstruct all work affected by the later rejection of a contract deviation that was not specifically called out and explained for review and acceptance by the District as detailed above.
4. The Contractor shall indicate on the submittal transmittal form if and how the submittal deviates from the contract requirements.
5. Accuracy, coordination, and completeness of submittals shall be the sole responsibility of the Contractor, including responsibility to back check comments, corrections, and modifications from the Engineer's review before fabrication.

B. Technical Submittals

1. No equipment or material for which listings, drawings, or descriptive material is required shall be fabricated, purchased, or installed until the Engineer has reviewed and accepted such lists, final shop drawings, or other descriptive material. Installation of such equipment or material without accepted submittals will be considered defective work.
2. Shop drawings, layout diagrams, catalog cuts and data, test reports, and information in sufficient detail to show complete compliance with all specified requirements shall be furnished to the Engineer.

PART 2 - PRODUCTS

2.1 SHOP DRAWINGS

- A. Shop Drawing Requirements: Shop drawings referred to herein shall include shop drawings, catalog cuts and information schematic diagrams, and other submittals for both shop and field-fabricated items.
- B. General:
 1. Shop drawings shall be accurate, distinct, and complete, and shall contain all required information, including satisfactory identification of items, units, and assemblies in relation to the Specifications.

2. When the shop drawings have been reviewed by the Engineer, the submittals will be returned to the Contractor. If major changes or corrections are necessary, the shop drawing will be rejected and returned to the Contractor with the need for such changes or corrections indicated. The Contractor shall correct and resubmit rejected shop drawings in the same manner and quantity as specified for the original submittal. If changes are made by the Contractor (in addition to those requested by the Engineer) on the resubmitted shop drawings, such changes shall be clearly explained in a transmittal letter accompanying the resubmitted shop drawings.
3. The review of such shop drawings and catalog cuts by the Engineer shall not relieve the Contractor from responsibility for correctness of dimensions, fabrication details, coordination with other work, and space requirements, or for deviations from the Contract Drawings or Specifications, unless the Contractor has called attention to such deviations in writing by a letter accompanying the shop drawings and the Engineer approves the change or deviation in writing at the time of submission; nor shall review by the Engineer relieve the Contractor from the responsibility for errors in the shop drawings.

C. Structural, Material, and Equipment:

1. For equipment which requires electrical service, submit detailed information to show power supply requirements, MCC and control panel, elevations, wiring diagrams, control and protection schematics, shop test data, operation and maintenance procedures, outline drawings, and manufacturer's recommendation of the interface/interlock among the equipment.
2. For mechanical equipment submit all data pertinent to the installation and maintenance of the equipment including shop drawings, anchorage requirements, manufacturer's recommended installation procedure, detailed installation drawings, test data and curves, operation and maintenance manuals, and other details necessary.
3. For shop drawings or equipment drawings, including dimensions, size and location of connections to other work, and weight of equipment.
4. Installation or placing drawings for equipment, drives, and bases
5. Supporting calculations for equipment and associated supports, or hangers required or specified to be designed by equipment manufacturers, including seismic restraint information and details.

D. Electrical:

1. Wiring and control diagrams of systems and equipment. Local control panel details.
2. List of special motor features being provided (i.e., space heaters, altitude corrections, thermal protectors, mounting arrangement, etc.)
3. Complete motor rating for all motors, including motor no-load, starting, and full-load current at rated voltage; full-load speed and full-load current at 110 percent voltage; motor service factor; motor efficiency and power factor at 1/2, 3/4, and full-load at rated voltage; recommended maximum kVAR of power factor correction capacitors when capacitors are switched with motor.

E. Instrumentation and Control:

1. The submittals shall include satisfactory identification of items, units, and assemblies in relation to the Specification section number, and the system or equipment identification or tag number, the Process and Instrumentation Diagram (P&ID), or as provided in applicable Specification section.

F. Submittals required for foreign-manufactured items:

1. In addition to the submittal requirements stated above, suppliers of foreign-manufactured items shall submit the names and addresses of companies within the United States that maintain technical service representatives and a complete inventory of spare parts and accessories for each foreign-made item proposed for incorporation into the work. Failure to provide the foregoing capabilities shall be just cause for rejection of the foreign-manufactured items.

G. Final shop drawings to be submitted to District:

1. Complete sets of reproducible (full size), hardcopy, final shop drawings shall be submitted to the District, at the Engineer's discretion, before, or at the time of delivery of equipment onto the site.

2.2 COLORS

- A. Unless the precise color and pattern are specified elsewhere, submit accurate color charts and pattern charts to the Engineer for review and selection whenever a choice of color or pattern is available in a specified product. Label each chart naming the source, the proposed location of use on the project, and the project name.

2.3 SUBSTITUTIONS

A. Engineer's approval required:

1. The contract is based on the materials, equipment, and methods described in the Contract Documents. Any Contractor proposed substitutions are subject to the Engineer's approval.
2. The Engineer will consider proposals for substitution of materials, equipment, and methods only when such proposals are accompanied by full and complete technical data, and all other information required by the Engineer to evaluate the proposed substitution.
3. Where substitutions are proposed for consideration, Contractor shall submit a written request for the substitution and shall show that it is equal to the specified item. The proposed substitution shall be identified separately and included with the required submittal for the item.

2.4 OPERATION AND MAINTENANCE (O&M) MANUALS:

- A. The provisions of this article are considered minimal requirements and do not supersede any requirements in individual sections of this specification or technical specifications.
- B. All equipment manufacturers shall be made aware of these requirements and all associated costs shall be included in the costs for furnishing the equipment or system.
- C. All equipment shall be serviced in accordance with the manufacturer's recommendations prior to operation. A service record shall be maintained on each item of equipment and shall be delivered to the Engineer prior to final acceptance of the project.
- B. When O&M manuals are required to be submitted covering items included in this work, prepare all such manuals in approximately 8-1/2" x 11" format in durable, three ring plastic binders. Each manual shall be identical and include at a minimum information identified on the O&M Manual Review Checklist (See Article 3.6). In addition, furnish the following:
 1. Binder Cover: Identification on, or readable through, the front cover stating the District's specification (project) number and title, District facility or facilities where the equipment will be installed, specification section number, and the system or equipment described in the manual.
 2. Binder Spine Label: Include the system or equipment name as shown on the binder cover along with the specification section number.
 3. Title page including applicable equipment tag numbers and equipment manufacturer's name, address, telephone number, and submittal date. In addition,

provide name, address and telephone number of the local manufacturer's representative.

4. Table of contents organized and referenced to manual section dividers.
5. Complete instructions regarding storage, handling, installation, operation, servicing, and maintenance of all equipment involved.
6. Comprehensive replacement parts list, with complete nomenclature of all replaceable parts, their part numbers, current cost, and name and address of nearest vendor of parts
7. Detailed description of handling, replacement, and disposal of all fluids and replacement parts
8. Copies of Safety Data Sheets (SDS) as required.
9. Copies of all guarantees and warranties issued including the start and end dates for the warranty period or conditions for the initial start date and the duration.
10. Copies of calculations or reports appropriately prepared including sketches, given or known information with the source of the data, equations with each variable defined and applicable units, cross-references, code/standard references, annotations and footnotes.
11. All field and factory test data
12. Engineering calculations or reports pertinent to the content of the O&M manual. See Article 2.5 Engineering Calculations or Reports.
13. Provide a separate section with tab divider for documents developed in the field after the O&M manual has been accepted. These documents include, but not limited to the following: manufacturer's certificate of proper installation, field test results, etc.

D. Materials shall be word-processed.

E. Operating and Testing Procedures, and Diagrams : All manufacturers' standard procedures shall be customized or rewritten as necessary to accurately describe the system as it is installed and operated for the project. All diagrams illustrating the system shall be customized to show installed conditions, and shall include District device tag numbers whenever available.

F. The manual shall be complete in all respects for all equipment, controls, accessories, and associated appurtenances.

G. Each copy of the manual shall be assembled in one or more binders, each with title page, typed table of contents, and heavy section dividers with numbered plastic index tabs. Each manual shall be divided into sections paralleling the equipment

specifications. Binders shall be three-ring, hard-back type. All data shall be punched for binding and composition and printing shall be arranged so that punching does not obliterate any data. The project title, Division designation, and manual title printed thereon shall be as furnished by the Engineer.

- H. Where more than one binder is required, they shall be labeled "Vol. 1", "Vol. 2", and so on. The table of contents for the entire set, identified by volume number, shall appear in each binder. Submit manual organization and format to the Engineer for approval prior to manual preparation.
- I. O&M Manual Review Checklist:
 - 1. The Contractor shall fill out a minimum of one O&M Manual Review Checklist form per submittal (See Article 3.6) and include a copy in each submitted manual.
 - 2. Each submittal requiring review checklists shall comply with the following:
 - a. The checklist shall indicate that the O&M Manual as submitted complies in all respects to the contract requirements. Any O&M Manual submitted without a completed checklist will be returned without review.
 - b. All portions of the form shall be completed prior to submittal, or the submittal may be returned unreviewed. Submittals may also be returned unreviewed if the O&M Manual Review Checklist form contains multiple error and/or omissions.
 - c. Each page of the submittal shall include a unique and sequential page number. The page numbers shall be located in the same general location on each page.
 - d. Page numbering may include "point numbers" (10.1, 10.2, etc.) to facilitate inserting pages without renumbering an entire submittal. However, all pages in the submittal shall be in numerical order.
 - e. The review checklists shall be completed in its entirety with accurate page number references for each checklist item. Submittals with inaccurate review checklists may be returned without review for correction.
 - f. The review checklist shall be inserted at the beginning of the submittal.
- J. O&M Manual Review Process:
 - 1. Preliminary O&M Manuals: Submit preliminary O&M manuals as searchable Portable Document Format (PDF). The District will return the submittals to the Contractor along with comments identifying necessary corrections or additions to the manuals. The District reserves the right to keep possession of all O&M manuals, and have the Contractor arrange to correct the manuals to comply with the reviewer comments.

- a. The preliminary review copies shall be complete in every way including format and content.
 - b. Preliminary O&M manuals shall be submitted and accepted prior to the delivery of the respective equipment or system.
2. Final O&M Manuals:
- a. The manuals shall not be considered final until the submittal has received a review status of “No Exceptions Taken”.
 - 1) Submit the Final O&M Manuals per the requirements of this Specification Section.
 - 2) Submit requested number of Final O&M Manual hard copies as shown in Table 1 at the end of this section.
 - 3) Final O&M manuals shall be submitted and accepted prior to the Operational Completion (or Ready for Service) milestone.

K. Electronic Files:

1. After the District has accepted each O&M Manual, an electronic version shall be supplied in addition to the required number of hard copies.
2. Electronic files shall be created in both searchable Portable Document Format (PDF) compatible with Adobe Acrobat version XI and Word format compatible with Microsoft Word 2010 or later. The security features (e.g. password protection) of all submitted files shall be disabled so that the District can perform future editing without restriction. Custom-developed drawings included in the O&M manuals (i.e. loop diagrams, system interconnection diagrams, etc.) shall also be submitted electronically in both PDF and the native CAD file format for future editing of the drawings by the Engineer. For CAD files, the associated PDF files shall be saved such that all CAD layering is preserved in the PDF file.
3. An index shall be provided as a separate text file with the name “index” and shall include the file name and detailed description of each individual file. All electronic files shall be on a CD, DVD, or other electronic means.
4. Electronic versions shall match the hard copy page for page with blank pages deleted. Electronic files shall be converted to PDF directly rather than using optical scanning. For any document not already in electronic format, the documents shall be scanned using optical character recognition to provide searching capability in the document.

L. Manufacturers' certificates of proper installation:

1. The Contractor shall submit manufacturers' certificates of proper installation for items of equipment as specified under Section 01 75 17, Field Testing and Startup.

M. Maintenance Summary Forms:

1. General

- a. In addition to the O&M Manuals, the Contractor shall provide Maintenance Summary Forms as described below.
- b. The term "Maintenance Operation" as used in the Maintenance Summary is understood to mean any routine operation, and all typical, routine, or preventive maintenance required to ensure the satisfactory performance and longevity of the equipment. Examples of some typical Maintenance Operations are lubrication, belt tensioning, adjustment of pump packing glands, routine adjustments, etc.

2. Maintenance Summary Forms

- a. Individual Maintenance Summary Forms for each equipment item shall be compiled following the outline provided and submitted for review by the Engineer. The manufacturer's standard form will not be acceptable as a substitute for the Maintenance Summary Form.
- b. Furnish a completed Maintenance Summary Form (see Article 3.7 for typical format) as part of the O&M Manual. Include all typical, routine, or preventive maintenance required to ensure satisfactory performance during warranty period and longevity of the equipment. Manufacturer's representative shall sign and date the form certifying accuracy of the information.
- c. Briefly summarize each maintenance activity on the form. Specific references to more detailed maintenance information located elsewhere in the O&M manual may be placed in the "Comments" column. However, simply referencing other sections in the O&M manual without a brief description of the maintenance activity is not acceptable.
- d. Information on the form shall be word-processed, or typewritten.
- e. The Maintenance Summary Form may take as many pages as required. However, the order and format shown must be adhered to. Only 8-1/2-inch by 11-inch paper will be accepted. However, the order and format shall be in accordance with the supplied form. The Maintenance Summary Forms will be provided in electronic format (MS Word) upon request.

2.5 ENGINEERING CALCULATIONS OR REPORTS

- A. Engineering calculations/reports required by this specification shall be based on well-established engineering theories and principles. Each calculation/report shall be a complete and independent package.
- B. The Contractor (or Manufacturer) shall provide the signing Engineer all necessary reference drawings and data required for completion of the calculations.
- C. The calculations/reports shall be comprehensive for each structure or item, in that all calculations/reports are contained within the individual structure or item's calculation/report document (i.e., no calculation/report references to other calculation documents).
- D. Presentation format shall be similar to that described in the Operations and Maintenance Manuals section above. As a minimum, all calculations/reports shall be bound in an appropriately labeled binder, and contain the following elements:
 - 1. Facility title, including substructure number, equipment description, applicable equipment tag number(s), and applicable specification section.
 - 2. Table of Contents
 - 3. Introduction, including description of structure or item, purpose of calculation/report, design assumptions with justification, software utilized for the analysis including the version, and codes/standards used.
 - 4. A list of references used to provide the bases for assumptions, equations, or data used in the calculation/report.
 - 5. Calculations or reports appropriately prepared, including sketches and reference drawings, given or known information with the source of the data, equations with each variable defined and applicable units, cross-references, code/standard references, annotations and footnotes.
 - 6. When spreadsheets are used, provide referenced equations and the formulas used in the calculations.
 - 7. Results shall be clearly identified. Summary tables shall be used for large amounts of data (especially if a software application is used).
 - 8. Final design details, ready for transmittal to design drawings or shop drawings.
 - 9. Seal or signature of Professional Engineer registered in the State of California, as appropriate, of the individual(s) who prepared the calculations/reports.
 - 10. Appendices, including input and output files from computer design, and photocopies of catalog sheets for any special material or equipment (e.g.,

manufacturer sheet for equipment, ICBO reports for anchors, etc.), and checker markups.

- E. When any part of the calculation/report has been prepared by computer software, a copy of the input and output files shall be included as part of the final design calculation
- F. Shop drawings shall not be submitted until all design calculations/reports have been appropriately reviewed, checked and signed. The checker markups and comments shall also be included in an appendix to each calculation.

2.6 ELECTRONIC SUBMITTALS

- A. Provide electronic submittals in searchable PDF (compatible with Adobe Acrobat version XI). All portions of the electronic submittals shall be legible and shall be in full color identical to the original material. Provide manufacturer's literature in original electronic file, if available.
- B. All portions of the electronic submittals shall be provided with text searching capabilities whenever possible. For any document not already in electronic format, the documents shall be scanned using optical character recognition to provide text searching capability in the document.

2.7 CERTIFICATES OF COMPLIANCE:

- A. A Certificate of Compliance shall be furnished for materials specified to a recognized standard or code prior to the use of any such materials in the work. The Engineer may permit the use of certain materials or assemblies prior to sampling and testing if accompanied by a Certificate of Compliance. The certificate shall be signed by the manufacturer of the material or the manufacturer of assembled materials and shall state that the materials involved comply in all respects with the requirements of the Specifications. A Certificate of Compliance shall be furnished with each lot of material delivered to the work and the lot so certified shall be clearly identified in the certificate.

PART 3 - EXECUTION

3.1 COORDINATION OF SUBMITTALS

- A. General:
 - 1. Prior to submittal for Engineer's review, use all means necessary to fully coordinate all material, including the following procedures:
 - a. Determine and verify all field dimensions and conditions, space requirements, coordination with other equipment, materials, catalog numbers, and similar data.
 - b. Clearly indicate all deviations from the Contract Documents.

B. Resubmittals:

1. The Contractor shall include a Comment and Response sheet with each resubmittal. The Comment and Response sheet shall be the first item after the submittal transmittal form. The Comment and Response sheet shall include each review comment (word for word) from the previous submittal cycle, followed by the Contractor's response clarifying how the comment has been addressed in the resubmittal. All responses shall at a minimum have a general description of what new information in the resubmittal addresses the review comment; and where in the resubmittal this new information can be located (tab number, page number, etc).
2. Resubmittals that do not comply with the requirements above will be returned to the Contractor without review.

3.2 TIMING OF SUBMITTALS

A. General:

1. Make all submittals far enough in advance of scheduled dates of installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittal, and for placing orders and securing delivery.
2. In scheduling, unless otherwise noted, allow at least twenty (20) work days for the Engineer's review. No time extension will be allowed for the Contract due to time loss in the review process.
3. Shop drawings shall be submitted in sufficient time to allow the Engineer not less than twenty (20) working days for examining the shop drawings except for designs for turnkey items for which thirty (30) working days will be allowed, and substitutions for which (40) working days will be allowed.
4. The required time for District review shall not be a cause for delay in contract completion nor a reason for an extension of contract time. If the Contractor is required by the District to resubmit data, then neither the time required for the Contractor to prepare and resubmit such data, nor the required time for District review, shall be a cause for delay in contract completion or for an extension of contract time. Responsibility for time required for preparing and submitting required data shall be assigned solely to the Contractor.

3.3 REVIEW BY ENGINEER

- A. Acceptance of each submittal by the Engineer will be general only and shall not be construed as:
1. Permitting any departures from the contract requirements.
 2. Relieving the Contractor of the responsibility for any errors and omissions in details, dimensions, or of other nature that may exist.

3. Approving departures from additional details or instructions previously furnished by the Engineer.
- B. Submittals (excluding manuals and as built drawings) will be returned to the Contractor marked "No Exceptions Taken", "Make Corrections Noted", "Revise and Resubmit", "Acknowledged Receipt", or "Rejected", except that in some cases, all copies of a submittal may be returned to the Contractor marked "Returned Without Review".
1. "No Exceptions Taken" indicates that item covered by the submittal may proceed provided it complies with requirements of the specifications. Final acceptance will depend upon that compliance. Does not constitute approval or deletion of specified or required items not shown in the partial submittal.
 2. "Make Corrections Noted" indicates that item covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the specifications. Final acceptance will depend on that compliance.
 3. "Revise and Resubmit" indicates that the Contractor shall not proceed with any phase of the item covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations and requirements of the specifications.
 4. "Acknowledged Receipt" indicates that the item is required to be submitted to the Engineer primarily for information or record purposes, and is not subject to Engineer's review.
 5. "Returned Without Review" indicates that the submittal was not reviewed by the Engineer due to the submittal being incomplete, illegible, inadequate, or otherwise failing to conform to the requirements of the specification. Contractor shall prepare a new submittal for this item.
 6. "Rejected" indicates that the submittal proposes an action of which the Engineer does not approve, makes an assertion with which the Engineer disagrees, appears to show intent to violate the terms of the Contract, or is otherwise objectionable to the Engineer and is returned to the Contractor with prejudice. Submitted material does not conform to Specifications in major respect, i.e.: wrong item, wrong size, model, capacity, or material.
- C. Resubmit revised drawings or data as indicated unless otherwise specified.
- D. Work requiring the Engineer's review and acceptance shall not begin until the submittals for that work have been returned as "No Exceptions Taken" or "Make Corrections Noted".

3.4 CHANGES TO ACCEPTED SUBMITTALS

- A. A resubmittal is required for any proposed change to a submittal that has been marked "No Exceptions Taken" or "Make Corrections Noted". Changes which require resubmittal include, but are not limited to, drawing revisions, changes in materials and equipment, changes to installation procedures and test data. All resubmittals shall include an explanation of the necessity for the change.
- B. Minor corrections to an accepted submittal may be accomplished by submitting a "Corrected Copy".
- C. After a submittal has been reviewed and accepted, no changes or substitutions in that submittal will be allowed without the Engineer's approval. If allowed, the Contractor will be responsible for the additional costs for engineering, administrative, clerical or other work required for additional review.

3.5 O&M MANUAL SUMMARY LIST

- A. Table 1 is a summary of equipment/systems that require O&M manuals. Additional O&M manuals might be required when specified elsewhere.

Table 1: O&M Manual Summary (Additional O&M manuals might be required in other Sections)		Number of Hard Copy(ies) to Print
Section	System / Equipment, or Facility	
42 22 20	Air-Cooled Chiller	3

3.6 O&M MANUAL REVIEW CHECK LIST

- A. See attached O&M Manual Review Checklist following this Section.

3.7 MAINTENANCE SUMMARY FORM

- A. See attached Maintenance Summary Form following this Section.

END OF SECTION

O&M MANUAL REVIEW CHECKLIST
(Manufacturer's Representative to complete one form per submittal)

SPEC. SECTION TITLE & NO:	
MFR Name, Address, Phone:	
Local Rep Name, Address, Phone:	

GENERAL FORMAT (See Section 01 33 00 for additional details)			
DESCRIPTION	PROVIDED?		COMMENTS
	YES	NO	
Specified copies provided			
Binder cover clearly labeled			
Spine Label			
System/Equipment type clearly identified			
District facility or facilities name(s) identified			
Specification number & title shown			
Title page provided			
Equipment tag numbers correctly shown			
Manufacturer's name, address, phone number provided			
Local Representative's name, address, phone number provided			
Table of contents provided			
Heavy section dividers w/ numbered or lettered plastic tabs provided			
Pages punched for 3-ring binder			
Info larger than 8-1/2 x 11 folded showing title block			
Original quality copies provided			

TECHNICAL CONTENT (See Section 01 33 00 for details)				
DESCRIPTION	LOCATION IN O&M			COMMENTS
	TAB#	PAGES	N/A	
Equipment Descriptions				
• Equipment names, model numbers & tag numbers				
• Equipment & major component functions				
• Drawings, diagrams & illustrations				
• Equipment Specification				
• Bill of materials				
• Legend, Abbreviation, and Acronym List				
Performance Information				
• Nameplate data				
• Performance test data/curves				

TECHNICAL CONTENT (See Section 01 33 00 for details)				
DESCRIPTION	LOCATION IN O&M			COMMENTS
	TAB#	PAGES	N/A	
Installation Instructions				
• Installation procedures & drawings				
• Equipment tolerances				
• Adjustment procedures				
Operating Instructions				
• Startup procedures				
• Normal & routine operations				
• Control functions				
• Alarms description and settings				
• Shutdown procedures				
• Emergency operations				
Electrical Information				
• Nameplate data				
• Relay, control, alarm contact settings				
• Motor test data				
Electrical Drawings				
• Single-line diagrams, three-line diagrams				
• Interconnection wiring diagram				
• Schematic and elementary diagrams				
• Panel layout drawings				
Instrumentation & Control				
• Control diagrams				
• Panel layout drawings				
• Instrument data sheets (specification forms)				
• Calibration Procedures				
• Final settings for adjustable control devices				
• Block diagrams and riser diagrams				
• Loop diagrams				
• Pneumatic/Hydraulic piping drawings				
• Hard copy printouts of control programs				
• Field calibration data sheets				
• Programming software (licensed to EBMUD) with user manuals				
Shipping and Storage Instructions				
Testing				
• Factory Test Report (procedures and results)				
• Field Test Procedures				
• Manufacturer's Certificate of Proper Installation (where specified)				
• Field Test Results				
Troubleshooting guide				

TECHNICAL CONTENT (See Section 01 33 00 for details)				
DESCRIPTION	LOCATION IN O&M			COMMENTS
	TAB#	PAGES	N/A	
Safety				
• Safety procedures/Lockout discussion				
• CAUTION, WARNING, DANGER text				
• Material Safety Data Sheets (MSDS)				
• Special safety equipment				
Preventive Maintenance				
Maintenance Summary Forms				
Lubrication Information				
• Location of lube points & frequency				
• Recommended type & grade, state specific MFR				
• Recommended viscosity & temperature range				
Overhaul Instructions				
• Detailed assembly drawings w/OEM part numbers				
• Tear down/rebuild instructions				
Spare Parts for Equipment & Components				
• Predicted life of parts subject to wear or aging				
• Recommended spare parts list w/ part numbers				
• Complete instructions for obtaining parts				
• Long-term storage requirements				
• Special tools				
Long-term Shutdown/Lay-up Instructions				
Warranty/Guarantee				

TYPICAL MAINTENANCE SUMMARY FORM
(Use as many pages as necessary. MS Word file available upon request)

1. Equipment Name: _____

2. Manufacturer: _____

3. Identification Numbers:

Tag: _____

Model: _____

Serial: _____

4. Nameplate Data (HP, voltage, speed, flow rate, head, etc.): _____

5. Manufacturer's Local Representative:

Name: _____

Telephone: _____

Address: _____

6. LUBRICANT LIST

<u>Reference Symbol</u> List symbols used in Item 8 below	<u>Lubricant Description</u> List equivalent lubricants: brand name(s), type, grade, viscosity, etc.

7. SPARE PARTS (Recommendation spare parts with part numbers; if any.)

8. Equipment Replacement Cost [\$] _____

9. MAINTENANCE REQUIREMENTS

<u>Maintenance Task</u> Briefly list each required preventive maintenance activity	<u>Frequency</u> List required frequency of each operation (daily, weekly, monthly, annual, etc)	<u>Task Duration</u> Time needed to complete each task (with units: hours, days, weeks, etc)	<u>Lubricant</u> Refer by symbol to lubricant list (Item 6)	<u>Task Details Location</u> List O&M Manual Tab and page number which provides additional details on the maintenance activity

I, _____ certify that the information on this form is an accurate and complete summary of all typical, routine, and preventive maintenance tasks required to ensure satisfactory performance during warranty period and the overall longevity of the equipment or systems.

(Manufacturer's Representatives Signature) (Date)

05/13/10

SECTION 01 75 17

FIELD TESTING AND STARTUP

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section covers general equipment and system testing and startup requirements, services of the manufacturer's representatives and special coordinating services required of the Contractor. Specific testing and tracking procedures and requirements found in the Technical Specifications shall also apply.
- B. The Contractor shall inform all subcontractors and manufacturers of the requirements herein and include the required services in the costs for the work specified in these Contract Documents. Where a minimum amount of time is stated in the Technical Specifications for manufacturers' services, any additional time required to perform the specified services shall be provided at no additional cost to the District.
- C. Equipment testing shall be satisfactorily completed prior to commencing plant startup associated with the particular equipment item or equipment package. The equipment shall not be considered ready for testing until the following conditions are satisfied:
 - 1. Manufacturer's certification of equipment installation has been accepted by the Engineer.
 - 2. Related Technical Submittals, O&M Manual and Final Shop Drawings have been accepted by the Engineer.
 - 3. Operator training services have been furnished by the Contractor (must be completed prior to operational testing only).
 - 4. Testing procedures have been submitted in writing and accepted by the Engineer in accordance with Section 01 33 00, Submittal Procedures. All testing procedures and results shall be submitted in writing.

1.2 DEFINITIONS

- A. Commissioning: The process of testing the installation for compliance with contract requirements and demonstrating, through documented verification, that the project has successfully met the contractual requirements and the Project is ready for Operational Start-up.
- B. Functional Test: The field testing required to determine if installed equipment or system will operate in a satisfactory manner and as specified. The Functional Test is a point-by-point test to confirm that all components associated with the equipment or system is operating properly. Functional testing is not intended to measure efficiency and performance.

- C. Manufacturer's Certificate of Proper Installation: The form is submitted to the Engineer prior to Functional Testing to confirm that the equipment/system is installed in conformance with the Contract Documents. The form is provided in Appendix A.
- D. Operational Startup Test: A test of all systems operating together to demonstrate satisfactory performance of the facility as a whole for a continuous period.
- E. Performance Test: The field testing required to demonstrate the individual equipment or system meets all of the specified performance requirements.
- F. Startup: The process of performing startup testing of the facility, which includes functional test, performance test, and startup/operational test.
- G. Test Procedures: Test procedures shall include testing methods, acceptance criteria, procedures, and test data forms for functional, performance, and startup tests.

1.3 SUBMITTALS

- A. Submit in accordance with Specification Section 01 33 00:
 - 1. Written test procedures with proposed checklists for each item of equipment to be tested and acceptance criteria indicating an acceptable test result. Separate procedures shall be provided for functional, performance, and operational testing.
 - 2. A discussion of any coordination required with District staff and/or any system or equipment outage requirements.
- B. Furnish names and telephone numbers of manufacturer's and vendor's current technical service representatives for use by the Engineer.
- C. Test Reports:
 - 1. Test Reports shall be submitted for complete systems; which is typically by specification section. Submitting partial test reports is not acceptable. Test submittals shall include the Specification Section number and Equipment Name in the title.
 - 2. Upon completion of testing for each equipment item or system, the Contractor shall submit typewritten or word processed test reports and forms for completed testing. Submit test results with signed statement by manufacturer's representative that results meet specification requirements and manufacturer standards.

1.4 MANUFACTURERS' SERVICES

- A. A manufacturer's authorized representative shall perform all services when manufacturer's services are specified in the technical sections. The authorized representative shall be factory trained and experienced in the technical applications, installation, operation, and maintenance of the equipment, subsystem, or system. Additional qualifications may be specified elsewhere.

- B. Manufacturer's representatives shall be subject to acceptance by the Engineer. No substitute representatives will be allowed without prior written approval by the Engineer.

1.5 TEST PROCEDURES

- A. The manufacturer's representative shall compose test procedures and Field Functional Test Data Forms for each required Functional and Performance test and for all equipment specified in the individual equipment specifications.
- B. Coordinate with the Engineer to determine the operating requirements of adjacent or related systems that may be required to complete the Startup Test.
- C. All test procedures shall be comprehensive, neatly organized, and word-processed. Test procedures shall include the following:
 - 1. Detailed test methods including sample calculations as required.
 - 2. Test setup procedures including details of all necessary adjustments, balancing, required equipment isolations or configurations, testing equipment, and testing instruments.
 - 3. Step-by-step testing procedures (number each step). Specifically identify each test instrument (including tag numbers) used during testing.
 - 4. Acceptance Criteria: For each test phase, specifically indicate what is considered an acceptable test result.
 - 5. Data Forms: Include test name, equipment (with tag numbers as applicable) or system name, specification section and paragraph number, test instrument tag numbers, test date, space for testing personnel names, test data names and units, reference equations for all calculated values, and signature lines for manufacturer's representative, Contractor, and District witness.
 - 6. Test Procedures: Testing procedures and manufacturer representative's resumes shall be approved by the Engineer prior to performing any tests.

1.6 FACTORY TESTING:

- A. The District reserves the right to witness manufacturer's factory testing.
- B. Written factory test results shall be submitted to the Engineer at least ten (10) days prior to shipment. Equipment requiring factory tests shall not be delivered to the job site until the Contractor submits acceptable certified test results to the Engineer.

1.7 FUNCTIONAL TESTING:

- A. All items of mechanical and electrical equipment shall be functionally tested by the Contractor after installation for proper operation.

- B. The functional test of each piece of mechanical equipment shall continue for not less than eight (8) continuous hours without interruption.
- C. The functional test shall include a demonstration of the proper performance of all alarms, local and remote controls (including DCS), instrumentation, equipment functions, and all other electrical, mechanical and piping systems.
- D. All parts shall operate satisfactorily in all respects, under continuous full load, and in accordance with the specified requirements, for the full duration of the eight (8) hour uninterrupted test period.
- E. Functional tests shall not proceed until the Engineer has received, reviewed and approved the items listed below. The Contractor shall ensure that copies of these materials are on-site during testing.
 - 1. Interconnection diagrams.
 - 2. Manufacturer's Certificate of Proper Installation.
 - 3. Approved equipment or system technical submittal.
 - 4. Approved draft O&M Manuals with all factory test results and certificates excluding field functional testing and as-builts.
 - 5. All factory test reports.
 - 6. Functional Test Procedures and Field Functional Test Data Forms.
- F. Functional tests include:
 - 1. Installation Inspection: Check for proper rotation, adjustment, alignment, mechanical and electrical connections, wire labeling, proper lubrication, speed, vibration, sound level, and any other conditions which may damage or impair functioning. Initial equipment and system adjustment and calibrations shall be performed in the presence of and with the assistance of the manufacturer's representative.
 - 2. Operation Check: Check for the proper operation of all system components.
 - 3. Controls Check: Demonstrate proper function of all local and remote controls, instrumentation, and other equipment functions.
 - 4. Alarms Check: Simulate alarm conditions and verify the proper operation of each alarm at the specified set point. Simulations shall be by means of direct element stimulation whenever possible, or by other means when direct element stimulation is not practical as determined by the Engineer.
 - 5. Run Check: Each system or equipment item shall be operated continuously for 8 hour, minimum, to verify satisfactory operation. Additional operating time may

be required as specified in the individual technical specifications, or as recommended by the manufacturer.

6. The individual technical specifications or the manufacturer may specify additional functional test requirements for each component or system.
7. If any part of a unit shows evidence of unsatisfactory or improper operation during the eight-hour test period, or the test period specified by equipment technical specifications, correction or repairs shall be made, and the full test operation, as specified herein, shall be repeated after all parts operate satisfactorily.

1.8 PERFORMANCE TESTING:

- A. Performance tests shall not proceed until the Functional Test has been successfully completed.
- B. Performance testing shall demonstrate that the equipment meets all performance requirements specified; see technical specification sections.
- C. Where performance testing is required by the Technical Specifications, the testing shall be supervised by the manufacturer's representative. These services shall continue until such times as the applicable equipment or system has been successfully tested for performance and has been accepted by the Engineer for operational testing.

1.9 OPERATIONAL STARTUP TEST:

- A. The facilities startup test shall not proceed until all of the following have been completed:
 1. All other required tests have been completed and accepted by the Engineer. At the Engineer's discretion, selected performance tests may be conducted during the Startup Test period.
 2. Upon successful completion of operator training and the functional and performance testing, the Contractor shall start up the plant facilities and test the equipment operation and performance by conducting a seven (7) day, continuous operational test of the completed facilities as an operational process unit to demonstrate to the Engineer's satisfaction that all equipment and systems required by these specifications will operate in the manner in which they are intended to perform.
- B. Upon successful completion of operational testing, all equipment installation, testing, and maintenance records, shall be submitted to the Engineer. Said records shall be bound separately for each piece of equipment or system and shall be collected by type of record.
- C. The District will provide Contractor-trained operating personnel for the duration of the Startup Test. The District's operating personnel shall be monitored by the Contractor

and/or the manufacturer's representatives to ensure each system is being operated as intended.

- D. The District will determine facility operating parameters such as digester gas flow rates, and which systems or equipment will be operated at any given time. All systems and equipment will be operated within their normal operating ranges.
- E. All defects in operation, materials, or workmanship that appear during the Startup Test shall be immediately corrected by the Contractor. In case of a system interruption, the Contractor shall repeat the Operational Startup Test of the affected systems and any other system directly related to the operation of the affected system. The Startup Test shall not be accepted as complete until all systems have successfully operated together to the satisfaction of the Engineer for a continuous seven (7) day period. All costs for corrective work and retesting shall be borne by the Contractor.
- F. System interruptions include the following:
 - 1. Malfunction or deficiency that results in a shut down or partial shutdown of any system
 - 2. Malfunction or deficiency that results in system or equipment performance that is less than specified
- G. The Contractor shall maintain the qualified staff or vendor representatives (either onsite or on-call) to be able to respond immediately (24-hours per day) to system or equipment related questions and to correct deficiencies. The Contractor shall provide a list of qualified staff or vendor representatives to perform troubleshooting services during the Operational Startup period. On call staff shall report to the site within 2 hours of being informed of a deficiency. All costs for corrective work and retesting shall be borne by the Contractor.
- H. The Engineer will maintain a log of equipment or system deficiencies along with the date and time when the Contractor was notified of the deficiency and the date and time when the Contractor notifies the Engineer that the deficiency has been corrected. All corrected deficiencies must be inspected and approved by the Engineer.
- I. The Contractor shall maintain a log of equipment or system deficiencies along with a description of the required repairs necessary to correct the problem. The Contractor shall furnish up-to-date copies of this log to the Engineer upon request.
- J. If the Operational Startup Test is interrupted through no fault of the Contractor, the test may resume at the earliest mutually agreeable time at no additional cost to the District.
- K. No unit process or part thereof shall be placed in service until it has successfully completed operational testing.

PART 2 - NOT USED

PART 3 - EXECUTION

3.1 GENERAL

- A. The Contractor or its qualified equipment manufacturer representative shall perform all functional and performance testing of installed equipment unless otherwise specified.
- B. The Contractor shall complete all testing in accordance with the District approved test procedures.
- C. The Contractor, at a minimum, shall maintain and provide to the District, the records detailed in Section 01 75 17, Article 3.3.
- D. In addition to the tests specified in the individual technical specifications, the Contractor shall perform additional tests as required by the Engineer to demonstrate to the Engineer's satisfaction that all equipment and systems required by the specifications will operate as intended.
- E. If the testing of any equipment may affect the operation of existing District facilities, the testing shall be done under direct supervision of the Engineer. The Contractor shall comply with directions given by the Engineer.
- F. Table 1 is a summary of equipment/systems that require functional, and performance tests. Additional testing may be required when specified elsewhere.

Table 1: Testing Summary (Additional tests may be required in other specification sections.)			
Specification Section	System / Equipment Name	Functional Test Required	Performance Test Required
42 22 20	Air-Cooled Chiller	X	X
All equipment/systems required by these specifications shall be included in the Startup Test.			

3.2 SERVICES DURING CONSTRUCTION

- A. General:
 - 1. The Contractor shall provide the services of competent and experienced technical representatives of the manufacturers of all equipment and systems furnished under the contract, for as many days as may be necessary for assembly, installation and testing assistance. In each case, the Contractor shall arrange to have the

manufacturer's representative revisit the job site as often as necessary until testing and startup problems have been resolved to the satisfaction of the Engineer. This requirement applies to manufacturers of all equipment furnished, whether or not specifically set forth in the Technical Specifications. The Contractor shall maintain a service record on each item of equipment and shall deliver these service records to the Engineer prior to acceptance of operational testing.

B. Certificate of Proper Installation:

1. Equipment shall not be considered ready for functional testing until after the following certifications have been submitted and accepted by the Engineer.
 - a. The Contractor shall require that each manufacturer's representative furnish to the Engineer a written and signed report addressed to the District certifying that the equipment has been properly installed, adjusted, lubricated, is in accurate alignment, is free from any undue stress imposed by connecting piping or anchor bolts, has been operated satisfactorily under full-load conditions and is ready for full-time operation. For pumps, compressors, blowers, engines, motors, and other rotating or reciprocating equipment, the report shall certify that the equipment operates within the manufacturer's allowable limits for vibration. The report shall also certify that all controls, protective devices, instrumentation, and control panels furnished as part of the manufacturer's equipment package are properly installed and calibrated; and that the control logic for equipment startup, shutdown, sequencing, interlocks, and emergency shutdown has been tested and is properly operating. The Contractor shall also sign said certification. The Contractor shall submit "Manufacturer's Certification of Proper Installation" on the District form, provided at the end of this Section.

3.3 RECORD KEEPING

A. The Contractor shall maintain as a minimum, the following records:

1. Equipment manufacturer's shop drawings
2. Daily logs indicating all equipment testing and startup activities and activities of all manufacturer's representatives.
3. Log and time sheets of all manufacturers' representatives performing services on the jobsite
4. Updated equipment testing and startup schedules
5. Records of all tests, calibrations, inspections, adjustments, services and corrective actions taken.
6. Copies of all test data collected at the end of each day of testing.

7. Adequate manufacturer's instruction file so that the information will be readily available during equipment testing and startup.
8. Prior to startup, provide the Engineer with a record of all test data and the work completed.

3.4 FIELD QUALITY CONTROL

The general work procedures listed below outline the work to be performed by the Contractor. Additional procedures applicable to specific equipment items are specified elsewhere.

A. General

1. Operate the equipment and check for excessive vibration, abnormal operating noises, overheating and lubricant leakage, etc., and test any safety shutdown/alarm devices for proper operation, and make any operating tests required by the Engineer. The adjustments required for proper operation shall be made prior to operational testing.
2. Prior to startup, all safety equipment shall be installed.
3. All safety hazards, e.g., exposed drive shafts or rotating equipment members, exposed electrical circuitry, open electrical junction boxes and panels, improperly supported piping and conduits, missing safety devices, etc., shall be corrected prior to supplier training of the District's personnel.
4. Prior to startup, install all warning and safety signs, labels, and devices.
5. Test all tanks and internals, as required to demonstrate conformance to the Contract Documents. Dispose of test media in a manner that is acceptable to and approved by the District and the applicable regulatory agencies.

3.5 ADJUSTING AND CLEANING

A. Mechanical equipment:

1. In accordance with the manufacturer's recommendations, chemically clean lube oil, seal oil, and cooling systems. Dispose of waste and cleaning media in a manner that is acceptable to and approved by the District and applicable regulatory agencies.
2. In accordance with the manufacturer's recommendations, charge the lube oil, seal oil, and cooling systems with flushing media and circulate for cleaning purposes. Dispose of any flushing media in a manner that is acceptable to and approved by the District and applicable regulatory agencies.
3. Charge the lube oil systems, seal oil systems, and cooling systems with the amount and type of operating oil or coolant recommended by the manufacturer.

B. Removal of rust preventives:

1. Prior to equipment testing, remove all rust preventives and oils used to protect the equipment during the construction period whenever these protective materials will be detrimental to operation or equipment maintenance.

C. Lubricants:

1. Flush systems and install the initial charge of all lubricants. Dispose of flushing oil in accordance with applicable regulations.
2. The Contractor shall lubricate the equipment in accordance with the manufacturer's recommendations until the equipment is accepted by the District.

D. Rotation, alignment, and vibration:

1. Prior to equipment testing, check rotating machinery for correct direction of rotation and for freedom of moving parts before connecting the driver.
2. Prior to equipment testing, perform the cold alignment and hot alignment to the manufacturer's tolerances.
3. Prior to equipment testing, test equipment vibration and correct any vibration in excess of the manufacturer's recommendation.

E. Pressure/vacuum safety relief devices:

1. Prior to equipment testing, test and adjust all safety devices as recommended by the equipment manufacturer.
2. Prior to plant startup, provide the Engineer with a list of all field or factory equipment settings.

F. Flushing and chemical/mechanical cleaning:

1. Prior to equipment operation, conduct all flushing, blowing, and chemical/mechanical cleaning operations without using the permanently installed equipment.
2. Provide any special media needed for flushing and/or cleaning purposes.
3. Dispose of all media in a manner that is acceptable to and approved by the District and the applicable regulatory agencies.
4. All systems shall be free of trash and construction debris before initiating startup.

G. Purging/inerting:

1. Prior to startup, purge and/or passivate the facilities as specified.

2. Install purge/inerting connections in accordance with the manufacturer's recommendations.
3. Provide purge or inerting materials and conduct the necessary operations as recommended by the equipment manufacturer.

H. Drying out:

1. Prior to startup, dry out the facilities as specified or recommended by the equipment manufacturer to prevent contamination of catalysts, operating materials, and/or product
2. Dry out systems, protective coatings, refractories, and linings as specified or recommended by the equipment manufacturers.

END OF SECTION

MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

This is to certify that the equipment supplied by (MANUFACTURER'S NAME) and described as Air-Cooled Chiller has been installed in accordance with manufacturer's recommendations. The equipment was inspected by an authorized manufacturer's representative on (DATE) and has been serviced with the proper initial lubricants and is free from any undue stress imposed by piping or supports. Applicable safety equipment has been properly installed and proper electrical and mechanical connections have been made. Proper adjustments have been made and the equipment and or system is ready for operation. All reports have been submitted to the District and the equipment and or system is certified for field testing and startup in accordance with RFQ 2603 Air-Cooled Chiller for Power Generation Station, Section 01 75 17 Field Testing and Startup.

Authorized Manufacturer's Representative

Contractor's Representative

Title

Date

Title

Date

MANUFACTURER'S CERTIFICATE OF FUNCTIONAL TESTING ASSISTANCE

Functional testing, including checks for proper rotation, alignment, speed, excessive vibration, and noisy operation has been performed. The equipment has been operated under full-load conditions and is ready for full-time operation. Controls, protective devices, instrumentation, and control panels are properly installed and calibrated. The control logic for startup, shutdown, sequencing, interlocks, etc. has been tested and is properly operating. This testing, including initial equipment and system adjustment and calibrations, was performed in the presence of the manufacturer's representative on (DATE).

Authorized Manufacturer's Representative

Title

Date

TRAINING MATERIAL REVIEW CHECKLIST

Lesson Title: _____

Project: _____

Contractor: _____

Date: _____ Reviewed by: _____

YES NO

- | | | | |
|-------|-------|-----|---|
| _____ | _____ | 1. | Are learning objectives identified for the lesson material? |
| _____ | _____ | 2. | Are the objectives/lesson plan contents sequenced properly? |
| _____ | _____ | 3. | Do the learning objectives describe skills and knowledge appropriate for the position? |
| _____ | _____ | 4. | Do the lesson plan contents support the learning objectives? |
| _____ | _____ | 5. | Do the lesson plans include adequate teaching and evaluation methods? |
| _____ | _____ | 6. | Do the lesson contents include industry events, facility events, or other experience-related items? |
| _____ | _____ | 7. | Are learning activities included which involve the trainees and enable learning? |
| _____ | _____ | 8. | Do the references and texts sufficiently support the lesson material? |
| _____ | _____ | 9. | Do the lesson plans incorporate the use of audio-visual materials? |
| _____ | _____ | 10. | Is the use of handouts and other trainee materials consistent with the objectives, usable and complete? |
| _____ | _____ | 11. | Are the lesson materials current? |

Lesson Materials Approved _____

Revise Lesson Materials and Resubmit _____

Comments: _____

INSTRUCTOR QUALIFICATION CHECKLIST

Date: _____

Project: _____

Contractor: _____

Instructor: _____

Documents Provided for Assessing Instructor Qualification: (Resume, Certificates, Letters of Reference, etc.)

YES NO

- | | | | |
|-------|-------|----|---|
| _____ | _____ | 1. | Instructor has necessary educational, experiential and technical qualifications to present subject matter. |
| _____ | _____ | 2. | Instructor has necessary knowledge of instructional methods, strategies and objectives as well as skills to conduct training. |

SECTION 42 22 20
AIR-COOLED CHILLER

PART 1 - GENERAL

1.1 SUMMARY

A. Work Includes:

1. Furnish a packaged rotary screw air-cooled chiller, skid mounted unit, factory assembled and tested, complete in accordance with this specification.
 - a. Equipment Number: W-28-DG-CHU-001
2. Transport and deliver the chiller unit to 2020 Wake Avenue, Oakland, CA 94607.

B. Related Sections:

1. 01 33 00 – Submittal Procedures.
2. 01 75 17 – Field Testing and Startup.

1.2 REFERENCES

A. Air-Conditioning, Heating, and Refrigeration Institute:

1. Standard 370, Sound Performance Rating of Large Air-Cooled Outdoor Refrigerating and Air-Conditioning Equipment.
2. Standard 550/590, Performance Rating of Water-Chilling and Heat Pump Water-Heating Packages Using the Vapor Compression Cycle.

B. American Society for Testing and Materials (ASTM):

1. B117, Standard Practice for Operating Salt Spray (Fog) Apparatus.
2. D3359, Standard Test Methods for Rating Adhesion by Tape Test.

C. Underwriters Laboratories.

D. American Society of Mechanical Engineers (ASME):

1. Boiler and Pressure Vessel Code.

1.3 PROJECT CONDITIONS

- A. Equipment will be installed in Oakland, California, at elevation approximately 10 feet above sea level. Equipment will be installed outdoors at a municipal sewage treatment plant and must be suitable for extended exposure to seacoast fog; hydrogen sulfide in air, rain; sun; and ambient temperatures ranging from 30°F to 105°F.

1.4 QUALITY ASSURANCE

- A. Factory Testing: Factory tests shall be performed according to the Supplier's standard test procedures. Certified test results shall be provided as product data. Testing shall contain, at a minimum, the following:
 - 1. Static tests of all control and protective circuits.
 - 2. Not less than five (5) days of operation of the system at the Supplier's factory with ambient air as the testing fluid.
- B. Field Testing: Provide manufacturer's services for start-up and training of District staff.

1.5 SUBMITTALS

- A. Submit shop drawings and product data in accordance with Section 01 30 00.
- B. Submittals shall include the following:
 - 1. Dimensioned plan and elevation view Drawings, including motor starter cabinet, required clearances and location of all field connections.
 - 2. Summary of all auxiliary utility requirements such as: electricity, water, controls, etc. Summary shall indicate quality and quantity of each required utility.
 - 3. Single line schematic drawings of the power and auxiliary utility field hookup requirements, indicating all items, which are furnished.
 - 4. Schematic diagram of control system indicating points for field interface/connection. Diagram shall fully delineate field and factory wiring.
 - 5. Manufacturer's computer selection printout of the performance of chiller. Computer selection shall indicate, as a minimum, the following:
 - a. Input data used for selection.
 - b. Model number of the unit.
 - c. Net refrigeration capacity.

- d. Power consumption in KW.
 - e. Evaporator passes.
 - f. Evaporator fouling factor.
 - g. Evaporator entering and leaving water temperatures.
 - h. Condenser fan selection, air flow requirement, and KW.
 - i. Evaporator water flow in gpm, and pressure drop in feet water.
 - j. Hydronic pump flow and head capacity.
 - k. Hydronic system surge tank capacity and configuration.
 - l. Rated load amp draw.
 - m. Outline specification indicating materials and other pertinent information.
 - n. Shipping and operating weights.
 - o. Noise levels produced by equipment at full and part loads.
 - p. Variable Frequency Drive.
 - q. Harmonic Filters.
 - r. Coating system.
- 6. Submit chiller startup, factory testing, and performance certification at integrated part load and application part load in accordance with latest edition of AHRI 550.
 - 7. Operation and Maintenance Manuals.
 - 8. Warranty certificate.

1.6 WARRANTY

- A. Supplied unit(s) shall be provided with a parts and labor two year warranty, minimum. Additionally provide a five-year extended warranty for the compressors.
- B. Third-party applied ES² coating system shall provide a five-year warranty.

1.7 MANUFACTURER'S FIELD SERVICES

- A. The Manufacturer's field representative shall be present at the project site for the minimum person-days listed, travel time excluded, and provide the listed service. Field visits are not contiguous and are based on installation and testing timing. Assume, at least, two separate field visits, including all necessary travel and lodging. Field representative shall have at least 5 years of experience in installation, start-up

and testing of systems of similar scope and capacity.

Person-Days	Manufacturer's Service
1	Installation assistance and certification.
2	Functional testing and Start-up.
2	Classroom and site training (Operations and Maintenance).

PART 2 - PRODUCTS

2.1 GENERAL

- A. The air-cooled chiller shall be factory packaged complete with screw compressors, factory-mounted condensers, evaporator, refrigerant system, hydronic pumps, buffer tanks, electrical, variable frequency drive, harmonic filters and controls.
- B. The air-cooled chiller provides cooling for digester gas via a gas/water heat exchanger. The digester gas temperature or flow rate through the gas conditioning does not control the chiller. However, any reduction in gas flow, gas temperature, or moisture content of the gas, this will reduce the temperature differential through the heat exchanger and, therefore, the load on the chiller.
- C. The air-cooled chiller shall be similar in overall dimensions of 88" W x 290" L to fit the existing installation location.
- D. Performance:
 - 1. 130 nominal tons, AHRI certified in accordance with Standard 550/590.
 - 2. Full Load: 8.9 EER (Btu/W-h)
 - 3. IPLV.I-P: 15.8 EER (Btu/W-h)
 - 4. NPLV.I-P: 13.1 EER (Btu/W-h)
 - 5. Evaporator Leaving Temperature: 35°F
 - 6. Evaporator Entering Temperature: 45°F
- E. The air-cooled chiller shall be designed for continuous operation in the ambient conditions specified.
- F. The unit shall be factory run-tested prior to shipment. Capacity, current draw and control operation shall be monitored and recorded. Provide a copy of run-test log. The unit shall be shipped with a full operating charge of refrigerant and oil.

G. Refrigerant: HFC-410A or HFC-454B.

H. Manufacturers:

1. Trane, Model RTAF130
2. Daikin Applied,
3. Quantech,
4. Carrier,
5. Or equal.

2.2 CONSTRUCTION AND FINISH

- A. Unit shall be constructed of a minimum 10 gauge welded steel frame with a 14 and 12 gauge aluminum panel construction.
- B. Unit shall be aftermarket corrosion coated to the maximum extent for additional corrosion resistance of all components. The aftermarket coating shall be a water-based synthetic polymer coating with ES² pigment spray-applied with no material bridging between fins. The spray coating process will ensure a uniform dry film thickness of 15-30 µm (0.6-1.2 mils) and meet 5B rating crosshatch adhesion per ASTM D3359. Corrosion durability will be confirmed through testing to no less than 10,000 hours salt spray resistance per C5-I and DIN 53167 (ASTM B117) using aluminum test coupons.
1. Local applicator: Gorilla Coatings Corp., San Leandro, CA, 510-228-1100
 2. Provide all coordination with applicator for receipt of equipment, inspection, coating, and delivery to the District.

2.3 EVAPORATOR

- A. The evaporator shall have independent dual refrigerant circuits, shell-and-tube design with seamless copper tubes roller-expanded into tube sheets. Evaporator shall be shell and tube type designed, tested and stamped in accordance with ASME code for a refrigerant side minimum working pressure of 225 psig. Waterside working pressure shall be minimum 150 psig. Insulation shall be 3/4-inch polyvinyl chloride with a maximum K value of 0.26 with vapor seal. A water drain connection, bulb wells for the temperature controller and low temperature cutout, and flare connections on water inlet and outlet for pressure drop measurements shall be provided.
- B. The evaporator shall also be equipped with electric heaters along the shell under the insulation to protect against cooler freeze up. Evaporator heaters shall be factory

installed and shall protect unit down to -20 F. Contractor shall wire separate power to energize heat tape and protect cooler while chiller is disconnected from the main power.

- C. Provide ability to remove evaporator tubes from either end of the heat exchanger.
- D. Water connections shall be grooved or flanged pipe. Evaporator shall have only one entering and one leaving connection. If manufacturer provides 2 separate evaporators, contractor shall provide manifold and pressure gauges to ensure equal flow is provided to each evaporator.
- E. Proof of flow shall be provided by the equipment manufacturer, mechanically installed and electrically wired, at the chiller factory.
- F. Chiller shall be designed for primary variable evaporator flow configuration.
- G. Supply and return chilled water connections shall be 4-inch flanged.

2.4 CONDENSER

- A. Air-cooled condenser coils shall have configured coated aluminum fins mechanically bonded to seamless copper tubing. Condenser shall include integral sub-cooling circuit. All condensers shall be factory air under water leak-tested at 425 psig air pressure.
- B. Condenser fans shall be direct drive vertical discharge. Very Low Sound Fans shall be dynamically and statically balanced, direct drive, corrosion resistant glass fiber reinforced composite blades molded into a very low noise fan blade. All condenser fans shall have integrated drives with variable speed permanent magnet motors to provide variable speed for optimized efficiency and lower part load sound.
- C. Chiller shall be able to start and operate in ambient conditions down to 32°F (0°C) and up to 105°F (40.6°C).
- D. Provide a complete, flexible epoxy dip and bake coating of condenser coils. Coil with coating shall be able to handle 6000-hour salt spray test. All coil surfaces shall be coated with epoxy material giving uniform coverage (0.6 - 1.2 mils), without bridging between fins. Any coating showing bridging will degrade performance and be deemed unacceptable. Coatings not covering any part of the fin and/or parts of condenser frame will be unacceptable. Baked phenolic coatings are unacceptable because of their brittle nature. The heat transfer decrease due to the coating shall be less than 1% so that design capacity and efficiency are maintained. Baked phenolic coatings are also unacceptable due to performance losses of up to 5%. If baked phenolic is allowed, unit provided must account for performance degradation. Coating shall be able to withstand corrosive environments in the pH range of 3-12. Coating shall be flexible so that bare surfaces will not form. The coating shall be

able to handle temperatures ranging from -50 to 150F without degrading. UV protection shall be applied on surface of coating to prevent degradation from sunlight.

2.5 COMPRESSOR AND MOTOR

- A. Semi-hermetic direct drive helical rotary screw compressors with capacity control via variable speed drive, automatic reversible oil pump, oil separator and magnetic plugs, oil level sight glass; removable discharge heads and handhole covers; suction and discharge service valves; and spring vibration isolators.
- B. The VFD rated two-pole hermetic squirrel cage motors shall be suitable for voltage fluctuations ± 10 percent of nameplate voltage. One solid-state sensor embedded in each motor winding protects against excessive winding temperatures. Provide direct-drive compressor motor that is suction gas cooled with robust construction and system design protection. Compressor starter shall be a variable speed drive to provide a soft start. Provide compressor heater to evaporate refrigerant returning to compressor during shut down. Energize heater when compressor is not operating.
- C. Provide 5-year extended warranty for compressor, VFD, and motor.

2.6 MOTORS

- A. High efficiency squirrel cage induction type, across-the-line starting duty except where otherwise noted, NEMA design "B" with low slip, low starting current, and normal starting torque. Motor efficiency shall be measured per IEEE Test Procedure 112, Method B. Provide regreaseable ball bearings and automatic reset thermal overload protection. 1800 RPM unless otherwise noted.
- B. Manufacturers: Reliance Electric Co. Model XE, Baldor Super E, Square D, or equal, premium efficiency motor.
- C. Enclosures: TEFC.
- D. Insulation: Class H or F, for continuous full load duty at 40 degree C ambient, and labeled for inverter duty.
- E. Service Factor: 1.15 minimum.
- F. Nominal Minimum Efficiencies per IEEE 112B: Based on 480v/3-phase.

2.7 REFRIGERANT CIRCUIT

- A. All units shall have 2 refrigeration circuits to provide redundancy, each with one or two (manifolded) compressor(s) on each circuit.

- B. Each circuit shall have hot gas muffler, high side pressure relief valve, liquid line solenoid valve, suction and discharge gauges with manual shutoff valve, discharge and oil line, check valves, compressor discharge, service valves, filter drier, liquid line sight glass, thermal expansion valves and insulated suction lines.

2.8 CAPACITY MODULATION

- A. Capacity control in response to leaving chilled water temperature. Provide capacity modulation that includes linear unloading to maintain close leaving water temperature control. Unit shall be capable of operation down to 10% of nominal capacity.

2.9 CHILLED WATER SYSTEM

- A. Chiller contains a complete hydronic package integral to the chiller. The hydronic package consists of dual 100% capacity pumps, balancing valves, check valves, isolation valves on each pump, a 300 gallon buffer tank system, and air separator.
- B. Pumps shall provide constant chilled water flow of 260 GPM at 50 ft TDH. Pump motors shall be 7.5 HP, 1800 RPM, TEFC.
- C. Manufacturers: Bell and Gossett, PACO, or equal.
- D. Chilled water shall be closed loop, with an ethylene glycol/water solution.
- E. All piping is black steel, with grooved or flanged end connections, as required.
- F. The buffer tank system consists of three 24" diameter tanks connected with a manifold to add approximately 300 gallons to the system. This buffer capacity allows the chiller to maintain a tighter temperature tolerance.
- G. Piping and buffer tank insulation shall be 3/4-inch polyvinyl chloride with a maximum K value of 0.26 with vapor seal
- H. Thermometers and Gauges:
 - 1. Pressure Gauges: Ashcroft Type 1379, Trerice, Weksler AA14, Barton, Foxboro, or equal, with stainless steel movement, phosphor bronze tube, die cast aluminum case with threaded ring, bottom connection, specified gauge cock and 4-1/2" diameter dial. Range 0-100 PSI unless otherwise noted.
 - 2. Thermometers: Ashcroft 50EI-60E-040, Trerice, Weksler Type AF, Omega, Lawler, or equal, dial thermometers, complete with hermetically sealed aluminum case, 5" dished dial, stainless steel stem with stainless steel thread connections. 4" stem, and extension well. Thermometers must be capable of rotating the dial 360 deg and rotating the stem 180 deg and must have an

accuracy of 1% at mid-range and 2% at scale ends. Range 0 deg to 150 deg F for chilled water and 20-240 deg F for heating hot water piping.

3. Water Flow Switches: McDonnell-Miller F57-4, ITT, or equal, rated at 100 psi at 300 deg F, 2 separate SPDT switches, and with paddle size and cut as recommended by the manufacturer.
- I. Expansion Tank: Armstrong, Amtrol/Extrol, Bell and Gossett, or equal, pressurized diaphragm type expansion tanks, pre-charged as shown on the Drawings and ASME stamped and certified for working pressure of 175 PSIG at 240 deg F. Provide charging valve, relief valve connection, and system connection.

2.10 ELECTRICAL

- A. A NEMA 4X weathertight control panel shall have starter and refrigeration controls in separate sections. Starter section shall have internal access door, main unit power connection terminal block, and customer connection junction box provided with knockouts for remote interlocks. Starter sections shall also contain power controls for compressor starters, terminal block for control power function, terminal strip, pump down control relay, reset relay, non-recycling compressor overload relay, cold weather (30 degrees F and below) operation controls, molded case fused disconnect switch, and controls transformer. Provide compressor sequence start control. No two compressors shall start simultaneously.
- B. Chiller shall be provided with a factory installed; UL listed (for outdoor use) harmonic attenuation filter. The filter shall be unit mounted, and line voltage Total Demand Distortion (TDD) shall not exceed 5%. Conform to IEEE-519 for line voltage harmonics, Harmonic Filtration Power Systems - the guideline relates to the entire system, not specifically to any one load or product. It establishes requirements at the point of common coupling (PCC) where the building connects to the utility system.
- C. System power supply shall be 480V, 3 phase, 60 Hz.

2.11 VARIABLE FREQUENCY DRIVE

- A. The water chiller shall be furnished with a variable speed drive (VSD) to minimize maintenance and maximize cooling efficiency. The VSD shall be factory mounted on the chiller and shipped completely factory assembled, wired and tested.
- B. The VSD will be specifically designed to interface with the chiller controls and allow for the operating ranges and specific characteristics of the chiller. The VSD control logic shall optimize chiller efficiency by coordinating compressor motor speed to maintain the chilled water setpoint.

- C. The VSD efficiency shall be 95% or better at full speed and full load. Fundamental displacement power factor shall be a minimum of 0.95.
- D. The VSD shall be solid state, microprocessor based pulse-width modulated (PWM) design. The VSD shall be voltage and current regulated. Output power devices shall be IGBT transistors.
- E. Power semi-conductor and capacitor cooling shall be from a liquid cooled heatsink.
- F. The VSD shall have thin film capacitors.
- G. The VSDs shall each be furnished in a UL 1995 rated metal enclosure having as minimum a short circuit withstand rating of 65,000 amps. It will include three phase input lugs plus a grounding lug for electrical connections, output motor connection via factory installed bus bars and all components properly segregated and completely enclosed in a single metal enclosure. Enclosure shall include a padlock-able, door-mounted circuit breaker with shunt trip and AIC rating of 65,000 amps. The entire chiller package shall be UL/CUL listed.

2.12 CONTROLS

- A. The chiller shall be provided with a factory mounted Product Integrated Controller (PIC). The PIC shall be a solid-state microprocessor based controller used to control all safety and operating functions of the chiller. The PIC shall be factory installed as an integral part of the chiller, wired to the unit at the time of manufacture.
- B. All application software shall be factory supplied, pretested and preconfigured. All standard control algorithms shall operate independently of an on-line host computer or any other networked controller. Control algorithms shall be provided for the following:
 - 1. Compressor capacity control.
 - 2. Compressor staging and lead/lag alternating control.
 - 3. Variable evaporator flow control.
 - 4. Electronic expansion valve control.
 - 5. Head pressure control.
 - 6. Condensing fan staging, modulation speed control.
 - 7. Pulldown control.
- C. The chiller controller shall be capable of operating in a stand-alone mode with remote start/stop commands via two-wire dry contact.

- D. The chiller controller shall include a Hand-Off-Auto switch to allow local override control. Local control mode shall permit programming, diagnostics, troubleshooting and operation of a field test program.
- E. The chiller shall be provided with a local interface device (LID). The LID shall have a keypad with special function keys and an alpha-numeric display for English language descriptors of conditions, status and alarms. The LID shall display the following information:
 - 1. Alarm history.
 - 2. Operating modes and setpoints.
 - 3. Water and refrigerant temperatures.
 - 4. Refrigerant pressures.
 - 5. EXV valve position.
 - 6. Compressor status.
 - 7. Configuration parameters.
 - 8. Diagnostic field test results.
 - 9. Maintenance history information, which shall indicate:
- F. Display of history statistics including the number of starts per hour for the last 24 hours; total starts per hour; runtime in hours; last start and stop time; service maintenance alarm limit in hours and service maintenance elapsed time in hours.
- G. The chiller controller shall be capable of providing local alarm indication for out of limit conditions, status, and thermistor or sensor failure. All alarms shall be displayed at the Local Interface Device, and shall be with a 2-wire interlock from the chiller alarm circuit.
- H. The microprocessor shall have an onboard diagnostic test program. When the test function is initiated, the local alarm light shall turn on and the operator shall have the capability of testing the following as a minimum:
 - 1. LID display check.
 - 2. Operation of remote alarms.
 - 3. Operation of condenser fans.
 - 4. Operation of the expansion valves.

- 5. Operation of compressors and unloaders.
- I. Factory mounted water flow switch for flow proving.
- J. The control panel shall contain an alternating relay that will balance hydronic pump run time and an interconnection to switch from one pump to another in the event of a pump failure.

2.13 ACOUSTICAL PROVISION

- A. Provide factory sound attenuation package, including mufflers for compressors and condenser fans, insulation for suction and discharge lines, speed reduction for condenser fans, flexible connections at compressors and sound boxes for compressors, etc. to reduce operating sound levels.
- B. Full load chiller operation shall not exceed 72 dBA sound pressure at 30 feet in accordance with AHRI 370.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Coordinate with District staff to install in accordance with manufacturer's instructions.
- B. Provide Manufacturer's Certification of Installation.

3.2 FIELD TESTING AND START-UP SERVICE

- A. Include the services of a factory-trained representative who shall perform the field testing and startup services. See Specification Section 01 75 17 for additional requirements.
- B. Test the refrigeration system under pressure for leaks, evacuation, and dehydration of system using high vacuum pump as recommended by the water chiller manufacturer. Recharge chiller with refrigerant as required.
- C. Pumps: Check for correct rotation, adequate horsepower, proper lubrication, shaft alignment, and leaks at mechanical seals.
- D. Coils: Prove flow to all coils and remove air from hydronic systems.
- E. Perform all tests in the presence of the District's representative.
- F. Check and verify the correctness of the controls and electric wiring of the compressor and auxiliaries.

3.3 OPERATION AND MAINTENANCE MANUALS

- A. Provide Operation and Maintenance Manuals in accordance with Specification Section 01 33 00.

3.4 TRAINING

- A. Provide two sessions of four-hours each of instructions to the maintenance personnel in the operation and service of the chiller. See Specification Section 01 75 17 and Article 1.8 for requirements.

END OF SECTION