EAST BAY MUNICIPAL UTILITY DISTRICT

REQUEST FOR QUOTATION (RFQ) No. 1706
for
0.5 MGD ELECTRIC TEMPORARY PUMP PACKAGE FOR UNIVERSITY PUMPING PLANT PROJECT

For complete information regarding this project, see RFQ posted at http://www.ebmud.com/business-opportunities or contact the EBMUD representative listed below. Thank you for your interest!

Contact Person: John W. Grimes, Buyer II
Phone Number: (510) 287-0316
E-mail Address: john.grimes@ebmud.com

Please note that prospective bidders are responsible for reviewing http://ebmud.com/business, during the RFQ process, for any published addenda regarding this RFQ.

RESPONSE DUE
by
1:30 p.m.
on
April 5, 2017
at
EBMUD, Purchasing Division
375 Eleventh St., First Floor
Oakland, CA 94607

375 Eleventh Street, Oakland, CA 94607
Website: ebmud.com

EAST BAY MUNICIPAL UTILITY DISTRICT

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I. STATEMENT OF WORK

A. SCOPE

It is the intent of these specifications, terms, and conditions to describe requirement to furnish and deliver f.o.b. to the District's Upper San Leandro Water Treatment Plant, 700 Greenly Dr. Oakland, CA 94605, as follows:

Provide one 0.5 MGD electric motor driven centrifugal pump package with acoustic enclosures complete including factory tests, as specified herein. The pump package will be used to convey potable water. District forces will install the pump package.

East Bay Municipal Utility District (District) intends to award a contract to the lowest cost bidder(s) 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 design and manufacture of equipment of comparable size, type, and rating for at least five (5) years.

   b. Bidder shall possess all permits, licenses, and professional credentials necessary to supply product and perform services as specified under this RFQ.

C. SPECIFIC REQUIREMENTS

I. SCHEDULE

The District anticipates the following schedule for the project

- Contract Award – **May 8, 2017**
- All design submittals identified below engineer approved – **August 31st, 2017.**
  - Article 1.3 (Items B1 through B11) in Section 33 12 23.20
- Design submittals are considered finalized after the District has reviewed and approved them. Contractor should allow the District twenty (20) working days to review submittals. Contractor should anticipate at least two (2) District review periods before submittals are approved.
- Equipment delivery to the District and acceptance – Deliver by **February 28, 2018.** Equipment will only be accepted by the District if delivered along with the engineer approved submittals including but not limited to:
  - Article 1.3 (Items B12 and B13) in Section 33 12 23.20:

- Along with a signed inspection statement from the District's equipment installer indicating that the equipment has passed all the delivery inspection tests administered by the District installer witnessed by both the Equipment Contractor and a District Engineer. Please note that the District's equipment installer will not accept delivery of equipment if damaged in transit.

II. LIQUIDATED DAMAGES

i. Should the Contractor fail to complete all or any portion of the Work within the specified time thereof or within such extra time as may be allowed for delays by formal extensions granted by the District, deductions will be made from the Contractor's earnings for the time that the Work remains incomplete beyond the specified completion time. Liquidated damages will be apportioned such that the Contractor will be responsible for all delays not otherwise properly subject to time extensions.

ii. Liquidated damages cover only certain damages and are limited to the cost of administration, overhead, and general loss of use of the facility by the District as a result of a delay, and does not cover any other type of damages set forth in next paragraph iii. It being impracticable or extremely difficult to fix the actual amount of damage for the above-referenced categories of damages, the parties agree that the amounts set forth in this Contract as liquidated damages will be deducted from any money due the Contractor under the contract. Should the amount of the damages exceed the amount due the Contractor, the Contractor and its sureties shall be liable for the excess.

iii. Liquidated damages shall not be deemed to include within their scope additional damages or administrative costs arising from defective work, lost revenues, interest expenses, cost of completion of the Work, cost of substitute facilities, claims and fines of regulatory agencies, damages suffered by others or other forms of liability claimed against the District as a result of delay (e.g., delay or delay-related claims of other contractors, Subcontractors or tenants), and defense cost thereof. The Contractor shall be fully responsible for the actual amount of any such damages it causes, in addition to the liquidated damages otherwise due the District.

iv. The deductions for liquidated damages shall be

- **$800/day from February 28, 2018 that the equipment is not delivered and accepted by the District as outlined in above section "I. SCHEDULE."**

III. PAYMENT TERMS

Payment will be made to the contractor sixty (60) days following proper invoicing according to the following schedule:

a) Ten (10) percent upon approval of design submittals as outlined in above section "I. SCHEDULE."
b) Ten (10) percent upon successful witnessed factory testing of the equipment;
c) Fifty (50) percent upon delivery of equipment and acceptance by the District,
d) Fifteen (15) percent upon successful testing after installation and
e) Fifteen (15) percent upon receipt and District acceptance of all delivery submittals as outlined in above section "I. SCHEDULE."

All products shall be in new and unused condition and shall be of the most current and up to date model.

Materials in Contact with Drinking Water.

1. All materials, equipment, or products that will be in contact with drinking water (potable water) shall be tested and certified as meeting the specifications of NSF/ANSI 61 Standard in accordance with California Code of Regulations, Title 22, Section 64591. Examples include, but are not limited to, valves, pumps, flow meters, protective materials (coatings, linings, liners), joining and sealing materials, pipes, tanks, pipe fittings, filters, cleaning chemicals, and lubricants.

2. All materials, equipment, or products that will be in contact with drinking water (potable water) shall be tested and certified as "lead-free" per California Health and Safety Code Section 116875 and NSF 61 Annex G or NSF 372.

3. All chemicals that will be in contact with drinking water shall be certified by NSF to NSF/ANSI Standard 60.

4. For materials:

    a. Documentation which demonstrates current NSF/ANSI Standard 61 certification shall be submitted by the bidder in their bid package.

b. If awarded, contractor is responsible for informing the District within 5 days, if and when their certification lapses or expires. Failure to inform the District within the allotted time will be sufficient grounds for immediate termination of the contract.

D. 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.

E. 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	February 22, 2017
Approved Product Substitution Request Deadline	March 8, 2017
Addendum to Announce Pre-Approved Equivalents (if necessary)	March 17, 2017
Response Due	April 5, 2017 by 1:30 p.m.
Anticipated Contract Start Date	May 8, 2017

Note: All dates are subject to change.

Bidders are responsible for reviewing http://ebmud.com/business 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 PO or contract that may be awarded as a result of this RFQ.

5. Award of contract. The right is reserved 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 technical defects, 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.

Proposals for "pre-approved or equal" substitutions requested during the bidding period shall be furnished in writing to:

Purchasing Division, John W. Grimes (MS#102)
ofc (510) 287-0316, john.grimes@ebmud.com
East Bay Municipal Utility District
P. O. Box 24055
Oakland, CA 94623-1055

Proposals shall be accompanied by complete technical and descriptive data necessary to determine equality of the material, product, thing, or service. Samples shall be provided when requested. The burden of proof as to availability, comparative quality, suitability, and performance of the proposed substitution shall be upon the bidder. The bidder will not be reimbursed for any work and costs necessary for making the substitution workable. Proposals will be evaluated and deemed accepted, rejected, or incomplete by the District; the District will be the sole judge as to such matters. **If the substitution is accepted, bidders will be notified by addenda.**

RFQ responses based on equivalent products must use Exhibit A "Exceptions, Clarification and Amendments" to:

a. 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 as proof that the proposed alternate will be equal to or better than the product named in this RFQ

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. PROTESTS

Protests must be in writing and must be received no later than seven (7) business days after the District issues the Notice of Intent to Award, which is sent to all entities who submitted a bid package. 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 protestor. If a firm is representing the protestor, they shall include their contact information in addition to that of the protesting firm.

Protests must be mailed or hand delivered to the Manager of Purchasing, East Bay Municipal Utility District, 375 Eleventh Street, Oakland, CA 94607 or P.O. Box 24055, Oakland, California 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 day 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 working days from the date of receipt of the requesting organization's determination on the protest.

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. Individual order price quotations shall be provided upon request per project and shall include, but not be limited to, an identifying (quotation) number, date, requestor name and phone number, ship to location, itemization of products and/or services with complete description (including model numbers, fabric and finish grade, description, color, etc.) and price per item, and a summary of total cost for product, services, shipping, and tax.

3. POs and payments for products and/or services will be issued only in the name of Contractor.

4. Any and all change orders shall be in writing and agreed upon, in advance, by Contractor and the District.

F. TERM

1. The term of the contract, which may be awarded pursuant to this RFQ, will be six (6) months.

2. 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.

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

G. WARRANTY

1. The Contractor warrants all materials and equipment provided under this contract for a period of two years from the date of equipment acceptance by the District installer.

2. If the District notifies the Contractor, within two years from the date of equipment delivery and acceptance by the District installer, that any portion of the equipment fails to fulfill any of the requirements of the Contract Documents, the Contractor shall repair or replace the defective, non-conforming or otherwise unsatisfactory equipment, without delay or further cost to the District. With regard to any defective equipment repaired or replaced by the Contractor, the one year warranty will be measured from the date of the latest repair or replacement.

3. Should the Contractor fail to act promptly in accordance with this requirement, or should the exigencies of the case require repairs or replacements to be made before the Contractor can be notified or can respond to the notification, the District may, at its option, make the necessary repairs or replacements, or perform the necessary Work, and the Contractor shall pay to the District the actual cost of such repairs.

4. If the equipment has repeatedly malfunctioned, is unreliable, requires excessive maintenance, or if repair of the equipment will not result in equipment that is equivalent to that required by the Contract Documents (both in functionality and useful life), the Contractor shall replace, rather than repair, the equipment under the warranty

5. The Contractor is responsible for all costs incidental to making good on all of its obligations under the warranty and the contract.

H. INVOICING

1. Payment will be made to the contractor sixty (60) days following receipt of a correct invoice and upon complete satisfactory receipt of product and/or performance of services as follows:

    a) Ten (10) percent upon approval of design submittals as outlined in Section 1.9;
    b) Ten (10) percent upon successful witnessed factory testing of the equipment;
    c) Fifty (50) percent upon delivery of equipment and acceptance by the District,
    d) Fifteen (15) percent upon successful testing after installation and
    e) Fifteen (15) percent upon receipt and District acceptance of all delivery submittals as outlined in Section 1.9.

2. The District shall notify Contractor of any invoice adjustments required.

3. Invoices shall contain, at a minimum, District PO 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.

I. LIQUIDATED DAMAGES

1. A deduction for liquidated damages of $800 per day will be assessed for not meeting performance requirements as prescribed in this RFQ after February 28, 2018 and equipment is not delivered and accepted by the District as outlined in Section 1.9.

2. It being impracticable or extremely difficult to fix the actual damage, the amount set forth above is hereby agreed upon as liquidated damages and will be deducted from any money due under the agreement arising from this RFQ.

3. In the event performance and/or deliverables have been deemed unsatisfactory, the District reserves the right to withhold future payments until the performance and/or deliverables are deemed satisfactory.

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 only to be contacted for the purposes specified below.

TECHNICAL SPECIFICATIONS:
Attn: Robert Davis, Associate Mechanical Engineer
EBMUD- Design Div./Engineering Dept.
E-Mail: robert.davis@ebmud.com
PHONE: (510) 287-2192

CONTRACT EQUITY PROGRAM:
Attn: Contract Equity Office
PHONE: (510) 287-0114

AFTER AWARD:
Attn: Robert Davis, Associate Mechanical Engineer
EBMUD- Design Div./Engineering Dept.
E-Mail: robert.davis@ebmud.com
PHONE: (510) 287-2192

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. RFQ responses will be received only at the address shown below, must be SEALED, and must be received at the District Purchasing Division by 1:30 p.m. on the due date specified in the Calendar of Events. Any RFQ response received after that time or date, or at a place other than the stated address cannot be considered and will be returned to the bidder unopened.

   All RFQ responses must be received and time stamped at the stated address by the time designated. The Purchasing Division's 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:

   Andrew Akelman, Manager of Purchasing
   East Bay Municipal Utility District
   0.5 MGD Electric Temporary Pump Package for University Pumping Plant Project
   RFQ No. 1706
   EBMUD–Purchasing Division
   P.O. Box 24055
   Oakland, CA 94623

   Hand Delivered or delivered by courier or package delivery service:

   Andrew Akelman, Manager of Purchasing
   East Bay Municipal Utility District
   0.5 MGD Electric Temporary Pump Package for University Pumping Plant Project
   RFQ No. 1706
   EBMUD–Purchasing Division
   P.O. Box 24055
   Oakland, CA 94623

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. 1706 – 0.5 MGD ELECTRIC PUMP PACKAGE FOR UNIVERSITY PUMPING PLANT PROJECT

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, AND ONE (1) COPY, CONTAINING THE FOLLOWING, IN THEIR ENTIRETY:**
  - **EXHIBIT A – RFQ RESPONSE PACKET, INCLUDING CONTRACT EQUITY PROGRAM FORMS AND ALL ADDITIONAL REQUIRED DOCUMENTATION AS DESCRIBED IN EXHIBIT A - "REQUIRED DOCUMENTATION AND SUBMITTALS"**
  - **EXHIBIT D – SPECIFICATIONS SECTION 33 12 23.20 – ELECTRIC TEMPORARY PUMP PACKAGE'S REFERENCED SUBMITTAL APPENDICES**

- **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 <u>ANY</u> CLARIFICATIONS AND/OR AMENDMENTS, OR TAKING EXCEPTION TO ANY PART OF THIS RFQ, THESE <u>MUST</u> 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.**

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 of RFQ No. 1706.

3. The undersigned acknowledges acceptance of all addenda related to this RFQ. List Addenda for this RFQ on the lines below:

Addendum #	Date

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 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.

10. 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 5% bid preference, and has completed the Contract Equity Program and Equal Employment Opportunity forms at the hyperlink contained in the Contract Equity Program and Equal Opportunity section of this Exhibit A.

*If no box is checked, it will be assumed that the bidder is ineligible for bid preference and none will be given. 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_____

BIDDING SHEET

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.

Item	Quantity	Description	Total Price
1	1 lot	0.5 MGD electric motor-driven centrifugal pump package with acoustic enclosures, complete, including factory tests, as specified herein.	**$_____**

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/system, as it will be finally configured during the term of the contract. The description shall specify how the proposed equipment/system 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/systems. 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.

2. **Implementation Plan and Schedule**: The RFQ response shall include an implementation plan and schedule. The plan for implementing the proposed equipment/system and services shall include an Acceptance Test Plan. In addition, the plan shall include a detailed schedule indicating how the bidder will ensure adherence to the timetables for the final equipment/system and/or services.

3. **Evidence of Qualification Testing**: RFQ response provides evidence that the proposed equipment/system 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.

4. **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 which relate to the provision of these products.

5. **Evidence of current NSF 60 and/or 61 certification**

6. **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.

7. **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.**

8. **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. 1706 – 0.5 MGD ELECTRIC TEMPORARY PUMP PACKAGE FOR UNIVERSITY PUMPING PLANT PROJECT

Bidder Name: ________________________________

Bidder must provide a minimum of three 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:	

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. 1706 – 0.5 MGD ELECTRIC TEMPORARY PUMP PACKAGE FOR UNIVERSITY PUMPING PLANT PROJECT

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.**	***Bidder takes exception to…***

*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 be found at the following direct link:
   Contract Equity Program Guidelines and 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

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 award.

The following are the minimum insurance limits, required by the District, to be held by the Contractor performing on this RFQ:

INDEMNIFICATION AND INSURANCE

A. Indemnification

CONTRACTOR expressly agrees to defend, indemnify, and hold harmless the 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', subcontractors', or other agents' negligent acts, errors or omissions, or willful misconduct, in the operation and/or performance under this Agreement.

B. Insurance Requirements

CONTRACTOR shall take out and maintain during the life of the Agreement all the insurance required in this section, and if requested shall submit certificates for review and approval by the District. The Notice to Proceed shall not be issued, and CONTRACTOR shall not commence work until such insurance has been approved by the District. The certificates shall be on forms approved by the District. Acceptance of the certificates shall not relieve CONTRACTOR of any of the insurance requirements, nor decrease the liability of CONTRACTOR. The District reserves the right to require CONTRACTOR to provide insurance policies for review by the District.

C. Workers Compensation Insurance

CONTRACTOR shall take out and maintain during the life of the Agreement Workers Compensation Insurance for all of its employees on the project. In lieu of evidence of Workers Compensation Insurance, the District will accept a Self-Insured Certificate from the State of California. CONTRACTOR shall require any subcontractor to provide it with evidence of Workers Compensation Insurance.

D. Commercial General Liability Insurance

CONTRACTOR shall take out and maintain during the life of the Agreement Automobile and General Liability Insurance that provides protection from claims which may arise from

operations or performance under this Agreement. If CONTRACTOR elects to self-insure (self-fund) any liability exposure during the contract period above $50,000, CONTRACTOR is required to notify the District immediately. Any request to self-insure must first be approved by the District before the changed terms are accepted. CONTRACTOR shall require any subcontractor to provide evidence of liability insurance coverages.

The amounts of insurance shall be not less than the following:

$2,000,000/Occurrence, Bodily Injury, Property Damage -- Automobile.
$2,000,000/Occurrence, Bodily Injury, Property Damage -- General Liability.

The following coverages or endorsements must be included in the policy(ies)*:*

1. The District, its Directors, officers, and employees are Additional Insureds in the policy(ies) as to the work being performed under the contract.

2. The coverage is *Primary and non-contributory* to any other applicable insurance carried by the District.

3. The policy(ies) covers *contractual liability*.

4. The policy(ies) is written on an *occurrence* basis.

5. The policy(ies) covers the District's Property in Consultant's care, custody, and control.

6. The policy(ies) covers *personal injury* (libel, slander, and wrongful entry and eviction) liability.

7. The policy(ies) covers *products and completed operations.*

8. The policy(ies) covers the use of *owned, non-owned* and hired automobiles.

9. The policy(ies) will not be canceled nor the above coverages/endorsements reduced without 30 days written notice to East Bay Municipal Utility District at the address above.

GENERAL REQUIREMENTS

CONTENTS

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 http://interactive.web.insurance.ca.gov/webuser/idb_co_list$.startup) 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 OF TITLE

Contractor shall warrant to the District, its successors and assigns, that the title to the materials, supplies or equipment covered by the Contract, when delivered to the District or to its successors or assigns, is free from all liens and encumbrances.

8. WARRANTY OF FITNESS

Contractor hereby warrants that all materials furnished shall meet the requirements and conditions of the Contract Documents; shall be fit for the purposes intended and fulfill its design functions; be free of all patent and latent defects in design, materials and workmanship; and perform satisfactorily. It is understood and agreed that by acceptance of this warranty and the acceptance of the materials or supplies to be manufactured or assembled pursuant to these specifications, the District does not waive any warranty either expressed or implied in Sections 2312 to 2317, inclusive, of the Commercial Code of the State of California or any products liability of the Contractor as determined by any applicable decision of a court of the State of California or of the United States.

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 performing 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 post job site notices, "as prescribed by regulation" (LC § 1771.4).

d. 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.

e. 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.

f. 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.

g. 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.

h. 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.

i. 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.

j. 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.

k. General prevailing wage determinations have expiration dates with either a single 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

a. The 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 Engineer. 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 with in 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).

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 District, and which were not concurrent with any other type of delay) the Project 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.

e. 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. <u>Termination by the District for Cause</u>:

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/RESPONSIBILITY

a. Contractor shall indemnify, keep and save harmless the District and each of its directors, officers, agents and employees against any and all suits, claims or actions arising out of any of the following:

i. Any injury to persons or property that may occur, or that may be alleged to have occurred, arising from the performance or implementation of this Contract; or

ii. Any allegation that materials or services developed, provided or used for this Contract infringe or violate any copyright, trademark, patent, trade secret, or any other intellectual-property or proprietary right of any third party.

b. Contractor further agrees to defend any and all such actions, suits or claims and pay all charges of attorneys and all other costs and expenses of defenses as they are incurred. If any judgment is rendered, or settlement reached, against the District or any of the other agencies or individuals enumerated above in any such action, Contractor shall, at its expense, satisfy and discharge the same.

c. This indemnification shall survive termination or expiration of the Contract.

22. PROHIBITION OF ASSIGNMENT

The Contractor shall not assign, transfer, or otherwise dispose of any of its rights, duties or obligations under this Contract.

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. TRANSFER OF INTEREST

Contractor shall not assign, transfer or otherwise substitute its interest in the Contract or any of the contract obligations without prior written consent from the District.

25. 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.

26. 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.

27. 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.

28. 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.

29. 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.

BEGINNING OF TECHNICAL SPECIFICATIONS

RFQ NO. 1706 - EXHIBIT D

SPECIFICATION SECTION 33 12 23.20

ELECTRIC TEMPORARY PUMP PACKAGE

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Furnish one 0.5 MGD electric motor driven centrifugal pump package with acoustic enclosure complete including factory tests, as specified herein. The pump package will be used to convey potable water.

1.2 TEMPORARY PUMP MANUFACTURER:

A. The manufacturer of the temporary pump package shall have been regularly engaged in the design and manufacture of equipment of comparable size, type, and rating for a period of at least five years prior to this contract.

1.3 SUBMITTALS

A. The bidder shall furnish with the Bid:

1. General catalog information describing equipment to be furnished, including preliminary outline dimensions and published pump performance curves.

2. A statement of how the temporary pump will comply with the NSF International/American National Standard Institute (NSF/ANSI)-61 requirement discussed in paragraph 2.4.

3. A completed Temporary Pump Data Sheet (see blank data sheet in appendix A-1).

4. Predicted pump performance curves at rated speed (RPM): Total Dynamic Head, Brake Horsepower (BHP), Pump Efficiency, Net Positive Suction Head Required (NPSHR), and minimum and maximum allowable flow rates for continuous operation.

5. Motor nameplate data in accordance to NEMA Standard MG 1-1.70 and 31.5 in addition include efficiency, service factor, designed duty, insulation class, and temperature rise by resistance.

6. Thrust of pump at rated condition and thrust rating of motor.

B. The Vendor shall submit the following technical submittals after award of contract.

1. Delivery Schedule: The Vendor shall submit a delivery schedule, within ten (10) working days after receipt of the District's purchase order. The schedule

shall assume that the District will need 20 working days to review each submittal. The schedule shall indicate the dates for submittal of the following milestones:

a. First submittals of Drawings, Specifications, and Certifications

b. Resubmittals addressing reviewers comments on the first submittals

c. Initiation of Manufacturing

d. Factory Testing (District Witnessed)

e. Delivery

2. Test data for efficiency for similar motors in accordance with the latest revision of IEEE Standard 112, Test Method B using segregated loss determination as specified in NEMA Standard MG 1-12.59.

3. Shop drawings and wiring diagrams (i.e., elementary and interconnection diagrams) showing power and control components.

4. NSF-61 certification for all products that will be in contact with potable water in accordance with paragraph 2.4. This includes NSF-61 certification for the epoxy lining used in the pump and pipe spools.

5. Certified engineering data and performance characteristics for the pumps (see paragraph 2.2.A.1)

6. Dimensioned drawings of the temporary pump showing the pumps, electrical and control equipment, fans and acoustic enclosure.

7. Check valve information including: catalog cut sheets and shop leakage test results (see paragraph 2.2.A.5).

8. Instrument information including catalog cut sheets.

9. The Contractor shall submit detailed factory test procedures to the Engineer for review. Tests shall not begin until the Engineer has approved the test procedures.

10. Draft Operations and Maintenance Manual

11. Final Operations and Maintenance Manual

1.4 OPERATIONS AND MAINTENANCE (O&M) MANUAL:

A. Five (5) copies of the operations and maintenance (O&M) manual shall be delivered to the Project Engineer. The manual shall be complete in all respects for all equipment, accessories, and associated appurtenances, and shall include manufacturer's assembly, installation, startup, operations, and maintenance

instructions. This material shall be written in a clear, concise, easily understood manner to assist in training personnel. The complete O&M manual shall also be provided in a searchable Adobe Acrobat (pdf) format.

B. The manual shall consist of clean, legible, reproducible manufacturer's information prepared by the manufacturer exclusively for the equipment furnished under this contract. Pages containing information for two or more models or equipment shall either have all irrelevant information crossed out or shall be marked up to indicate the information pertaining to the equipment furnished under this contract.

C. 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 tabs. Each manual shall be divided into sections as appropriate for the materials included. 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.

D. Each O&M manual shall include the following as a minimum:

1. A cover sheet which includes the following:

    a. Vendor name

    b. Equipment name(s) and equipment number(s)

    c. Equipment manufacturer's name, address, telephone and fax numbers

    d. Manufacturer's local representative's name, address, telephone and fax numbers

2. A table of contents.

3. A complete listing of nameplate data for the pump, motor, and any other piece of equipment constituting the equipment system or subsystem

4. Certified pump test data and performance curves.

5. Instructions for preparing the equipment for installation and startup, including all changes in lubrication

6. The procedures to be used for all modes of operation shall be detailed, including any precautions for personal safety or for prevention of damage to the equipment. This requirement includes initial startup, normal operation, emergency operation, shutdown, and restarting. Required operating checks, calibration, field performance tests and measurements shall also be described. Include a discussion of what the equipment is supposed to do, the controls and alarms provided and how they function together, and how operational stability is ensured.

7. A listing of recommended preventive maintenance measures and their frequencies in tabular form

8. A troubleshooting chart containing symptoms, probable cause(s), and remedies

9. A lubrication schedule including lubricant SAE grade and type, temperature range of lubricants, and recommended frequency of required lubrication with a listing of points to be lubricated. The lubrication schedule shall include equivalent major brand lubricants.

10. Operating routines and lubrication schedules for periods when the equipment is not in use or in storage.

11. A complete parts list with a parts assembly drawing (preferably exploded view) along with the names, addresses, and telephone numbers of the nearest spare parts suppliers. A list of spare parts recommended to be kept in stock shall be included, along with the name, address, and telephone number of the nearest parts supplier and estimated lead time for ordering these spare parts.

12. Instructions with easily understood schematics or diagrams for disassembling and assembling the equipment for overhaul or repair

13. A copy of all factory test results

14. Reproducible prints of the record drawings, including wiring diagrams and schematics. Electronic copies of all drawings shall be submitted in Microstation CAD or AutoCAD format.

15. A tabular listing of proper settings for all pressure relief valves, pressure switches, and other equipment protection devices.

16. A list of all electrical relay settings and control and alarm contact settings.

17. A list of all Maintenance Summary Forms for all equipment that requires routine maintenance (pumps, motors, VFD’s, instruments etc).

E. One draft copy of the complete O&M manual shall be delivered to the Engineer after the Engineer's approval of shop drawings. After reviewing the draft, the Engineer will return the draft with review comments. The Vendor shall revise the manual as required and submit five (5) corrected copies of the final manual. Final O&M manuals shall be submitted prior to equipment delivery.

F. O&M Manual Review Checklist

1. The manufacturer’s representative shall fill out one O&M Manual Review Checklist form per submittal (See Appendix A-2) and include a copy in each submitted manual. Clearly identify the location in the O&M Manual for each element in the Technical Content section (O&M tab number and page

number). If the content is in multiple locations or on multiple pages, identify each location in the space provided or in the Comments column on the form.

2. 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 Checklist form contains multiple error and/or omissions.

G. Maintenance Summary Forms

1. Furnish completed Maintenance Summary Forms (see Appendix A-3 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.

2. 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.

3. Information on the form shall be word-processed, or typewritten.

4. Maintenance Summary Forms shall be on 8-1/2 inch by 11-inch paper and may be as many pages as required to completely summarize the required maintenance. However, the order and format must be in accordance with the supplied form. The Maintenance Summary Forms will be provided in electronic format (MS Word) upon request.

1.5 ELECTRONIC SUBMITTALS

A. Provide electronic submittals created using Adobe Acrobat Version XI pro. All portions of the electronic submittals shall be completely legible and shall be in full color identical to the original material.

B. The Vendor shall merge multiple files into a single electronic file.

C. For larger submittals containing multiple volumes, the Vendor shall submit one electronic file for each hardcopy volume and each electronic submittal file name shall include the corresponding hard copy volume number.

D. Upon acceptance of the electronic submittal (noted as Approved, Accepted, Approved As Noted, or Acknowledged Receipt), the Vendor shall then submit three (3) hardcopy sets of the submittal. The hardcopies shall be edited with highlighting, addressing/incorporating District review comments. A revised electronic file shall accompany the hardcopy submission, and shall match the hard copy submittal page for page including cover transmittal forms, title pages, and blank pages. All portions of the electronic submittals shall be completely legible and shall be in full color identical to the hard copy submittal.

E. The Vendor is solely responsible for verifying that the hardcopy submittal and accompanying electronic submittal are identical and address/incorporate prior District review comments.

F. 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.

G. Electronic files shall be submitted to the Engineer in the following manner:

1. For files 10 MB or less, one copy via email, with the subject line matching the file name.

2. For files more than 10 MB, provide on CD or DVD.

1.6 MANUFACTURER FIELD SERVICES

A. Manufacturer's Representative: the Vendor shall furnish the services of a factory trained field representative designated by the equipment/ system manufacturer, who shall be present at the project site to provide the services listed below. The manufacturer's representative shall have superior knowledge of all aspects of the equipment/ system being furnished in this section. The manufacturer through their field representative shall advise the District of the proper procedures for each of the services listed.

B. Field Testing: As described in paragraph 3.2.B.

C. Training Services: the manufacturer's representative shall be present at the site and classroom designated by the Engineer, for the minimum number of days listed below. See EXHIBIT F – SECTION 01 79 00 – Demonstration and Training for additional details.

Minimum Total Time (Person-Days*)	Manufacturer's Service
As-Required	Field testing and startup
2	Training of District personnel: Two separate but identical deliveries of a 4-hour mechanical maintenance (pump skid) and electrical control elements (VFDs) training session (delivered on different days). See Section 01 79 00 for additional demonstration and training requirements.
* The person-days shown or total days for each service listed. One person-day is	

equivalent to eight hours. The person-days shown are the minimum days required for each service, and travel time to and from the site and/or classroom is not included.

PART 2 - PRODUCTS

2.1 TEMPORARY PUMP ASSEMBLY

A. The temporary pump assembly shall include a vertical multi-stage centrifugal pump(s), electric motor(s), skid, and acoustic enclosure as specified below.

B. Mechanical Design Requirements

1. Site Climate Conditions

Summer (0.5%)	97° F DB 68° F WB
Winter	21° F
Mean Daily Range:	30° F

2. Water Quality

Water Quality			
Parameter	Unit	Min	Max
pH	pH units	8.5	9.2
Temperature	Deg F	40	70
Turbidity	NTU	0.02	0.13
Total Dissolved Solids	mg/L	45	230
Alkalinity, bicarbonate as $CaCO_3$	mg/L	18	120
Alkalinity, carbonate as $CaCO_3$	mg/L	1.2	6.6
Hardness as $CaCO_3$	ppm	12	140
Chloramine as CL_2		<0.05	3.3

C. Layout

1. The temporary pump assembly shall be configured similar to the sketch as shown on drawing 10572-G-001.

2.2 PUMP SKID

A. The pump package shall be a Grundfos MPC BoosterpaQ including:

1. Three Grundfos CRN-45-3-2 pumps with stainless steel base and head.

2. 6” ANSI Class 150 AISI 316 Stainless Steel schedule 10S suction and discharge manifolds.

3. AISI 304 stainless steel base frame.

4. Each pump shall have suction and discharge isolation valves. These valves shall be stainless steel 3” lug style ANSI class 150 butterfly valves.

5. Each pump shall have a stainless steel discharge check valve.

6. The pump package will be used as a booster unit to pump potable water at 65 °F. Suction pressure at the inlet flange will vary from minus 5 psig to 150 psig. The discharge pressure will be as high as 232 psig.

7. The pump skid shall be ANSI/NSF-61 certified as discussed in section 2.4.

2.3 FLANGED PIPE SPOOLS

A. Stainless steel, schedule 40S, flanged pipe spools shall be furnished and installed on the pump package suction and discharge headers. Connection size shall be 6 inch, and flange face shall project approximately 6 inches beyond the acoustic enclosure.

B. Spools shall have stainless steel class 150 flanges.

C. Non-asbestos fiber gaskets conforming to AWWA C207 shall be used for all flanged connections.

D. Install washers under both bolt heads and nuts.

E. Flange bolting hardware (nuts, bolts, washers, etc.) shall be stainless steel.

2.4 ANSI / NSF -61 CERTIFICATION

A. All components in contact with potable water in the skid-mounted, electric motor driven pump shall meet the requirements of ANSI/NSF Standard 61 and California Health and Safety Code Section 116875 (see http://www.leginfo.ca.gov/cgi-bin/displaycode?section=hsc&group=116001-117000&file=116875-116880).

B. The ANSI/NSF-61 requirement shall be met by one or more of the following methods:

1. Certification to ANSI/NSF-61 by an organization approved by ANSI (such as NSF, UL, CSA and IAPMO).

2. Products manufactured from materials that are certified to NSF-61. For instance, steel or iron that is lined with an NSF-61 certified epoxy is acceptable.

3. Components made from materials listed in NSF 61, Annex C including 304 and 316 stainless steel are acceptable.

C. California Health and Safety Code Section 116875 requires that products have a wetted area with weighted average lead content of less than 0.25%. This Requirement shall be met by one or more of the following methods:

1. Certification to ANSI/NSF-61, Annex G by an organization approved by ANSI (such as NSF, UL, CSA and IAPMO).

2. Use of components that are known to not contain lead such as NSF-61 certified epoxy coatings and stainless steel.

3. If a component (such as a pump) contains a small amount of leaded material (such as brass or bronze), the Vendor shall submit a weighted average lead calculation (as described in ANSI/NSF Annex G) to the District.

D. Small components such as pressure gauges, transmitters and instrument piping are exempt from this ANSI / NSF-61 requirement.

2.5 MATERIALS

A. The following materials requirements apply to all components on the temporary pump skid including pumps, valves, instruments and piping.

B. Service Conditions and Operation: Treated water service. Components covered by this Specification will be subjected to water that promotes galvanic corrosion. Materials and coatings shall be suitable for soft water (less than 50 ppm total dissolved solids) with pH from 7.0 to 9.5 and maximum total chlorine residual of 2.5 ppm (in chloramine form). The presence of chloramines in the water shall not have any effect on the manufacturer's warranty.

C. All wetted elastomers (rubbers) in the packaged pumping system shall be either EPDM or viton. SBR (Buna-N) rubber is not acceptable.

D. All uncoated, wetted metal components in the temporary pump shall be 304 or 316 stainless steel.

E. No wetted components in the temporary pump may be made from a plastic or polymer material.

2.6 PRESSURE RATING

A. All components on the suction side of the pump including pipe spools, instruments and all other components exposed to the suction side water pressure shall be rated for a minimum of 150 psig.

B. All components on the discharge side of the pump including pipe spools, instruments and all other components exposed to the discharge side water pressure shall be rated for a minimum of 232 psig.

2.7 INSTRUMENTS

A. The pump shall be equipped with the following instruments:

1. Magnetic Flow Meter

    a. 6” diameter full port

    b. +/- 0.5% accuracy

    c. Polyurethane or Viton liner

    d. HART protocol

    e. IP67 or IP68 flow tube and transmitter housing

    f. Rated 50 deg C minimum

    g. Magmeter shall be able to take full vacuum pressure (-14.7 psig) without damage to the lining.

    h. Magmeter shall be installed on the suction side of the pump skid a minimum of 12” from the nearest pump suction line.

    i. Acceptable products: Rosemount 8700 series or Endress Hauser W400 series.

2. Pressure gauges

    a. Liquid Filled

    b. Suction side, 0-200 psig range

    c. Discharge side: 0-300 psig range

    d. Accuracy of +/- 2.5% of range.

    e. Diameter: minimum of 2.5”

    f. Shall be capable of a pressure of 30% above the maximum span without requiring recalibration.

3. Pressure transducers

    a. Installed on suction and discharge side of the temporary pump

    b. Range of 0-300 psig

    c. Accuracy of +/- 1.0% of full scale.

    d. 4-20 mA output

e. Rated 50 deg C minimum

f. Acceptable product: NoShok Series 100

2.8 FRAME AND ENCLOSURE

A. Base Frame

1. All equipment including the pump skid, instruments, control panels and auxiliary equipment shall be mounted on a steel base frame. The steel base frame shall be capable of being lifted with a fork lift or with lifting eyes (with a crane) without removing any of the equipment and without sustaining damage to any of the equipment.

2. The steel base frame shall be hot-dipped galvanized after fabrication.

B. Enclosure

1. A weatherproof and pad-lockable enclosure shall be provided over all equipment and the base frame.

2. Maximum overall dimensions shall 6 ft wide x 9 ft long x 6 ft high. The 6 ft height shall be measured from the base of the skid to the top of the enclosure.

3. The noise emitted from the enclosure shall not exceed 65 dBA, measured at a distance of 3 feet (free field) from any side of the enclosure, with two of the three pumps running at 100% speed and all doors closed.

4. The enclosure shall have hinged, pad lockable doors for access to operating controls, panels and maintenance locations.

5. Paint exterior of enclosure with standard manufacturer’s finish suitable for outdoor installation. Paint color shall be white.

6. Exposed fastening hardware for the enclosure (nuts, bolts, washers, screws etc.) shall be stainless steel.

7. The temporary pump skid shall include a control panel.

a. The control panel must be rated NEMA 4 prior to modifications for required ventilation louvers.

b. The control panel shall be sealed from the pump compartment(s).

c. The enclosure shall have a separate pad-lockable door to access the control panel.

8. The roof shall have lifting eyes at each corner, rated for removal of the enclosure.

9. Enclosure shall include a forced air circulation with inlet/out vents to the inside of the enclosure.

    a. Motor Controller Compartment (MCC) Ventilation:

        1) The Motor controller compartment shall include a 350 scfm (minimum) supply fan to draw inlet air from air from the outside.

        2) The supply fan shall be sufficiently quiet and the supply and exhaust shall have sufficient noise attenuation to enable the temporary pump package to meet the overall noise requirements.

        3) The MCC shall exhaust air from the top of the cabinet to the outside.

        4) The intake and exhaust shall have ducting to the outside of the enclosure. Air shall not be drawn from or exhausted to the main pump compartment.

    b. Main Pump Compartment Ventilation

        1) The main pump compartment shall include a 600 scfm (minimum) supply fan to provide outside air to cool the enclosure. The fan shall be controlled by a thermostat. Sufficient exhaust vents shall be provided. The fans and vents shall have sufficient noise absorbing materials to keep the overall sound level below the limit specified above.

        2) The supply fan shall be sufficiently quiet and the supply and exhaust shall have sufficient noise attenuation to enable the temporary pump package to meet the overall noise requirements.

        3) Main pump compartment shall achieve good cross flow ventilation.

        4) Provide heaters for the motors when they are not running.

C. Intrusion Switches

1. Each door on the enclosure shall be fitted with an intrusion switch. The switches shall be wired in series.

2. Floor mounted contact, extra heavy duty, miniature, low profile design.

3. Manufactured from aluminum bar stock for corrosion resistance and harsh environments.

4. Reed switch assembly fully encased in a polyurethane potting material to prevent damage due to moisture and humidity.

5. Single-pole, double-throw (SPDT)

6. Maximum voltage: 30 VDC.

7. Operating temperature: -40 to 150 degrees F.

8. Nominal response time: 1.0 milliseconds.

9. Three-foot long stainless steel armored cable.

10. Gap size: ¾-inch to 2-1/2 inches.

11. Mounting hardware included.

12. UL listed.

13. Acceptable manufacturers:

    a. Sentrol Model 2207AH.

    b. Or equal as approved by the Engineer.

2.9 ELECTRICAL SYSTEM AND EQUIPMENT

A. The pump controller and variable frequency drives (VFD) shall be housed in the Motor Controller Compartment (MCC) that shall be installed inside the temporary pump enclosure as shown on drawing 10572-G-001.

1. The MCC panel shall include external thermostat with an adjustable range from 32 DegF to 140 DegF.

2. Acceptable products (Thermostat): Hoffman Temperature Control Switch. Hoffman catalog No. ATEMNC, or equal as approved by the Engineer.

B. Ratings

1. The overall short circuit shall withstand and interrupt current rating of the equipment and devices shall be 65 kAIC. Main and feeder circuit protective devices shall be fully rated for the specified short circuit duty. Systems employing series connected ratings for main and feeder devices shall not be used. Motor starter units shall be tested and UL labeled for the specified short circuit duty in combination with the motor branch circuit protective device.

2. All equipment and devices shall be designed for continuous operation at rated current in a 50 degree C ambient temperature.

3. The motor controller panel shall be mounted in a NEMA 3R enclosure with cooling fan. The entire control panel shall be UL 508 listed as an assembly. The control panel shall include circuit breakers for the main disconnect, each pump, and the control circuits.

C. Power Distribution

1. Provide and install a 150A trip in a 150A frame, thermal-magnetic circuit breakers with adjustable instantaneous for all 480V circuits. Provide an additional 80A trip. Fuses are not acceptable. Main breaker and unit breakers shall be coordinated.

2. Provide adjustable instantaneous for all circuit breakers 100A and larger.

3. Acceptable manufacturers

   a. Circuit breakers with less than 100 Ampere trip rating:

      1) General Electric, Spectra Series RMS SELA.

      2) Eaton, HFD.

      3) Or equal as approved by the Engineer.

   b. Circuit breakers with trip settings between 100 and 400 Amperes.

      1) General Electric, Spectra Series RMS SELA or SGLA.

      2) Eaton, HKD.

      3) Or equal as approved by the Engineer.

4. Provide a mini power center and a 20A GFCI convenience receptacle inside the VFD and motor controller compartment.

5. Provide E-Stop pushbuttons inside both VFD compartment and pump compartment. The E-Stop must be hardwired to the VFDs and the motor to disconnect the power in case of emergency even when the VFDs are in manual.

6. Provide disconnect switch for each motor inside the pump compartment.

D. Service Entrance Connection Box (See drawing 10572-G-002)

1. Rating of the connection box shall be NEMA 4

2. Box shall be mounted on the side of the soundproof enclosure.

3. Box shall have one 3” penetration through bottom of the box for service entrance conduit.

4. Box shall have one 3” penetration for feeder conduit to main pump control panel.

5. Inside box mount ground and power distribution terminal blocks.

a. Terminal blocks shall be rated as follows:

1) 600Vac/dc (UL 1953)

2) 310 amps, 3-pole

3) 350kcmil - #6 AWG Cu, 2 terminals per phase on insulated standoffs

4) 200kA Short-circuit current rating

E. Grounding System

1. Equipment grounding conductor sizing

a. Include a Type 11 insulated copper ground wire in every power conduit that supplies power to motors. The ground cable shall be the same size as the power cable up to size 2 AWG. After 2 AWG, the ground may be reduced to half the size of the power cable as long as 2 AWG is the smallest size selected when the ground cable is smaller than the power cable.

2. Conduit grounding bushings

a. Insulated, 150 degree Celsius, malleable iron type with a solderless set-screw lug.

b. Acceptable manufacturers:

1) Appleton.

2) Hubbell Electrical Products (Raco).

3) Or equal as approved by the Engineer.

3. Accessible connections to equipment, connections to structural steel, connections to reinforcing steel

a. Make mechanical connections to equipment, structural steel, and other accessible connections using one or two hole compression copper lugs as required for the cable size specified.

b. Make mechanical connections to reinforcing steel using UL 467 listed irreversible crimp compression copper connectors with the “run” and “tap” sizes as required for the reinforcing steel and cable size, respectively, specified. Connectors shall be factory prefilled with moisture inhibiting compound.

c. Acceptable manufacturers:

1) Harger.

2) Burndy.

3) Or equal as approved by the Engineer.

4. Electrical joint inhibitor compound

a. Used for all bolted grounding connections as a moisture and oxidizing seal.

b. Acceptable manufacturers:

1) Sanchem Inc., NO-OX-ID (A-Special Electrical Grade).

2) Or equal as approved by the Engineer.

5. Grounding of the pipe systems shall be provided per the requirements of NEC and as shown on the drawings.

6. Metal conduits stubbed into power distribution equipment, control panels, or other enclosure shall be terminated with insulated grounding bushings and bonded to the enclosure's ground bus. Size the bonding wire in accordance with the NEC, except that a minimum No. 12 AWG shall be used.

7. All equipment enclosures, motor and transformer frames, conduits systems, cable armor, exposed structural steel and all other equipment and materials required by the NEC to be grounded, shall be grounded and bonded in accordance with the NEC.

8. Care shall be taken to ensure good ground continuity, in particular between the conduit system and equipment frames and enclosures. Where necessary, jumper wires shall be installed.

9. Liquid tight flexible metal conduit shall have bonding jumpers. Bonding jumpers shall be external, run parallel (not spiraled) and fastened with plastic tie wraps.

10. Install equipment grounding conductors with all feeders and branch circuits. Each circuit shall have a dedicated equipment grounding conductor from source to load without splicing or "tee tapping" (e.g., three different receptacle circuits in a common home-run conduit back to a lighting panelboard shall have three separate equipment grounding conductors back to the lighting panelboard).

11. Ground all grounding type receptacles to the outlet boxes with a No. 12 Type 11 (XHHW) green conductor connected to the ground terminal of the receptacle and fastened to the outlet box by means of a grounding screw.

12. Single-point ground instrumentation cable shields at the signal ground bus at the control panel end of the circuit.

13. Seal exposed connections between different metals with electrical joint inhibitor compound. Clean and coat all buried connections with electrical joint inhibitor compound before backfilling.

14. Unless approved by Engineer, provide continuous, unspliced equipment grounding conductors.

F. Conductors

1. Provide cables as specified under the type number in this section (Type 1, Type 2, etc.).

2. Type 11 (Power and control cables 600 Volts and less):

a. Unless otherwise indicated, provide stranded copper conductors with size as indicated on the drawings.

b. Provide the following types of insulation:

c. Type XHHW-2 insulation for conductors No.14 and larger having cross linked polyethylene insulation rated at 90 degrees C in wet and dry locations.

d. Insulation shall be self-lubricating for sizes #8 AWG and larger.

e. Single conductor control wiring shall be No.14 AWG and shall have insulation type XHHW-2.

f. Acceptable Manufactures:

1) Southwire, SIMpull Type XHHW-2.

2) Cerrowire, SLiPWire XHHW-2.

3) Or equal as approved by the Engineer.

3. Type 28 (VFD Cable 600V and Less)

a. For installation between VFD and motor.

b. Three stranded XLPE insulated circuit conductors with one full sized insulated PVC ground.

c. Jacket shall be oil resistant PVC type.

d. 100 percent overall shield and 85 percent braid coverage.

e. Provide cable that is UL listed and conforms to the requirements of UL 1277 Type TC per CEC Article 336.

f. Acceptable Manufactures:

1) Belden No. 29507.

2) Or equal as approved by the Engineer.

4. Multi-Conductor Power, Control, and Instrumentation Cable 600 Volts and Less:

a. Provide cable that is UL listed and conforms to the requirements of UL 1277 and CEC Article 340, or UL listed Power Limited Circuit Cable that conforms to the requirements of Article 725 of the National Electrical Code. Provide cables permanently and legibly marked with the manufacturer's name, the nominal voltage, the type of cable, and the UL label (or submit evidence of UL listing).

1) Type 10 (600-Volt, Twisted, Shielded Pair Instrumentation Cable):

a) General: Type TC, single pair instrumentation cable designed for noise rejection for process control, computer, or data log applications. Suitable for installation in conduit, wireway, or other approved raceways. Minimum cable temperature rating shall be 90 degrees C dry locations, 75 degrees C wet locations.

b) Individual Conductors: No.18 AWG stranded bare annealed copper, Class B, 7-strand concentric per ASTM B8, size as indicated on the drawings; 7-strand tinned copper drain wire.

c) Insulation and Jacket: Each conductor 15-mil nominal PVC and 4-mil nylon insulation. Pair conductors pigmented black and red. Jacket flame-retardant and sunlight- and oil-resistant PVC with 45 mil nominal thickness. Aluminum/polyester shield overlapped to provide 100 percent coverage.

d) Acceptable Manufacturers:

i) Belden No. 9341 (pairs); Belden No. 1121A (triads).

ii) Okonite Okoseal-N Type P-OS

iii) Or equal as approved by the Engineer.

2) Type 14 (600-Volt Multi-twisted Shielded Pairs with a Common Overall Shield Instrumentation Cable):

a) General: Type TC, twisted, shielded pairs of instrument cables, grouped in a single cable, designed for use for instrumentation, process control, and computer applications. Suitable for installation in conduit, wireway, or other approved raceways. Minimum cable temperature rating shall be 90 degrees C dry and wet locations.

b) Conductors: No. 18 stranded bare annealed copper, Class B, 7-strand, concentric per ASTM B8. Tinned copper drain wires sized as shown on the Drawings, one for each pair and one for the overall group.

c) Insulation and Jacket: Each conductor 15-mil PVC and 4-mil nylon insulation. Pair conductors pigmented black and red or black and white, with red or white conductor numerically printed for group identification. Outer jacket flame-retardant and sunlight- and oil-resistant PVC with 45 mil minimum thickness. Individual pair shield aluminum/polyester. Group shield aluminum/polyester, overlapped for 100 percent coverage.

d) Acceptable Manufacturers:

i) Belden No. 1048A (2 pairs), 1049A (4 pairs), 1050A (8 pairs).

ii) Okonite Okoseal-N Type P-OS

iii) Or equal as approved by the Engineer.

5. Type 19 (600-Volt Multi-Conductor Control Cable):

a. General: UL listed, Type TC-ER, 600V multi-conductor copper control cable with Class B stranding per ASTM B8, #10 AWG unless noted otherwise on the drawings. Suitable for installation in conduit, cable tray, or other approved raceways. Minimum cable temperature rating 90 degrees C dry and wet locations.

b. Insulation and jacket: Provide conductors having 30-mil ethylene-propylene rubber (EPR) insulation and 60-mil chlorinated polyethylene (CPE) jacket. Color code the conductor group in accordance with ICEA S-61-402, Appendix K, Method 1, Table E-2.

c. Acceptable Manufacturers:

1) The Okonite Company, Okonite-FRM Okolon TS-CPE Type TC-ER Cable.

2) Allied Wire and Cable, FR-EPR/CPE Unshielded Control Cable (E-2 Color Code).

3) Or equal as approved by the Engineer.

6. Type 15 (6/C RS-485):

a. General: industrial low-capacitance shielded cables for EIA RS-485 applications, including security access card readers, suitable for outdoor use and installation in conduit and other approved raceways.

b. Conductors: 3 pairs of conductors, 6 conductors total, 22 AWG, 7 strand tinned copper conductors.

c. Insulation: foam high density polyethylene insulation, pairs colored white/blue and blue/white, white/orange and orange/white, white/green and green/white.

d. Shield: aluminum foil polyester tape providing 100 percent coverage, tinned copper braid providing 90 percent coverage, 7-strand tinned copper 24 AWG drain wire.

e. Jacket: UV and oil resistant PVC, 0.420 inch overall nominal diameter, 300 volt, -20 degrees C to +60 degrees C operating temperature.

f. Applicable Standards: CEC/UL CM and PLTC OIL RES II, UL 1685 Flame Test, UL 1581 Sunlight Resistance Test.

g. Acceptable Manufacturers:

1) Belden 3108A

2) Or equal as approved by the Engineer.

7. Type 16 (Category 6, Indoor Unshielded Twisted Pair):

a. General: Communication cable designed and rated to support high-end Ethernet networking applications, which may have spectral energy that extends up to 500 MHz to support high bandwidth video applications. Suitable for installation in conduit, wireway, and cable trays.

b. Cable shall be capable of supporting network applications such as 100Base-T (Fast Ethernet) The four pair cables are manufactured in an ISO 9001 registered facility and meet ANSI/TIA/EIA-568-B.2-1

Category 6 requirements. Cable shall be plenum rated for all in-building horizontal and vertical runs.

c. Conductors: 4 twisted pairs, 8 conductors total, 23 AWG solid bare copper conductors.

d. Insulation and Jacket: Each conductor insulated with plenum rated Fluorinated Ethylene Propylene (FEP) insulation, 0.008 inch wall thickness, and nominal diameter of 0.041 inch. The two insulated conductors are twisted together to form a pair and four such pairs laid up to form the cable jacketed with flame retardant PVC. Each pair are color coded as such, white//blue, white//orange, white//green, white//brown.

e. Nominal cable outside diameter: 0.250 inches.

f. 10 to +60 degrees C operating temperature.

g. Applicable Standards & Rating: ANSI/TIA/EIA-568-B.2-1, Category 6, C (UL) US listed CEC type CMP, UL Listed.

h. Acceptable manufacturers:

1) Berk-Tek Lanmark 2000.

2) Or equal as approved by the Engineer.

8. Insulated Flat Braided Conductor

a. This cable is permitted in the VFD compartment only.

b. Acceptable Manufacturers:

1) Erico IBS.

2) Or equal as approved by the Engineer.

9. Flexible Cord and Cable Sealing Fittings:

a. Provide liquid-tight strain relief connectors for exposed flexible cord and power cable where cables enter electrical panels and enclosures.

b. Acceptable Manufacturers:

1) OZ Gedney

2) Hubbell

3) Appleton

4) Or equal as approved by the Engineer.

10. Electrical Tape for Color Coding:

    a. Electrical tape shall be premium grade, not less than 7 mils thick, rated for 90 degree C minimum, flame-retardant, weather resistant, and available in suitable colors for color coding. The tape shall be resistant to abrasion, ultraviolet rays, moisture, alkalies, solvents, acids, and suitable for indoor and weather-protected outdoor use. The tape shall be suitable for use with PVC and polyethylene jacketed cables, and meet or exceed the requirements of UL 510.

    b. Acceptable Manufactures:

        1) 3M 35 Scotch Vinyl Electrical Tape for Color Coding

        2) Plymouth Rubber Company Premium 37 Color Coding Tape

        3) Or equal as approved by the Engineer.

G. CONDUCTOR COLOR CODING

1. Color coding of multiconductor control and instrumentation cable is specified in the individual cable type specification.

2. For power conductors, provide all single conductors and individual conductors of multiconductor power cables with integral insulation pigmentation of the designated colors, except conductors larger than No. 6 AWG may be provided with color coding by wrapping the conductor at each end and at all accessible locations with vinyl tape. Where this method of color coding is used, wrap at least six full overlapping turns of tape around the conductor covering an area 1-1/2 to 2 inches wide at a visible location at all conductor termination and pulling points.

3. Phase A, B, C implies the direction of positive phase rotation.

4. Use the following colors:

System	Conductor	Color
All Systems	Equipment Grounding	Green
208Y/120 Volts, 3-Phase, 4-Wire	Grounded Neutral	White
	Phase A	Black
	Phase B	Red
	Phase C	Blue
480Y/277 Volts, 3-Phase, 4-Wire	Grounded Neutral (if used)	White, Black Tracer
	Phase A	Brown

Phase B	Orange
Phase C	Yellow
Single Conductor, AC	Red
Multiple Conductor Control Cables	ICEA Method 1 Table K-2
Multiple Conductor Power Cables	ICEA Method 1, Option D
24V DC Positive	Blue
24V DC Negative	Gray
Single-Conductor, DC Alarm, Annunciator, Instrumentation, and Telemetering (if not shielded)	Purple

5. All conductors carrying AC foreign voltage over 100 VAC into control panels, switchboards, and other enclosures shall be yellow. Multi-conductor cables carrying such foreign voltage shall be marked with yellow tape at each termination point.

H. Lighting (interior of pump sound enclosure and VFD compartment)

1. Provide light fixtures with proper hangers, mounting stems, canopies, energy efficient electronic ballasts, etc., necessary for a complete installation. Provide luminaires having "feed thru" or separate junction boxes. Provide luminaires with wire leads not smaller than 12 AWG and with all electrical components easily accessible and replaceable without removing the luminaire from the ceiling or wall.

2. Provide energy efficient lamps.

   a. Linear fluorescent lamps size and type shall be shown on the Luminaire Schedule Drawing provided by contractor. Minimum requirements: 265 mA, energy saving rapid-start type, 20,000 hours minimum average rated life, 3000 degree K maximum color temperature, minimum color rendering index (CRI) of 75, T-8, for two foot and four foot fixtures and as shown on the drawings.

   b. Compact fluorescent lamps size and type shall be shown on the Luminaire Schedule provided by contractor. Minimum requirements: 12,000 hours minimum average rated life, 3000 degree K maximum color temperature, minimum CRI of 80.

c. Provide spare lamps, two of each lamp type.

d. Acceptable manufacturers:

1) General Electric.

2) Osram-Sylvania.

3) North American Phillips Lighting Company.

4) Or equal as approved by the Engineer.

I. BALLASTS

1. General: Provide energy efficient ballasts conforming to ANSI and UL standards for light output, reliable starting, radio interference, and dielectric rating. Provide only ballasts that are UL listed. Provide ballasts for use in exterior luminaires to produce reliable starting of the lamps at 0 degrees F at 90 percent of nominal line voltage.

2. Fluorescent

a. Unless otherwise indicated in the Luminaire Schedule, fluorescent ballasts shall be electronic, 25 kHz or higher, full-output, rapid-start type for use on 265 mA, T8 lamps.

1) All ballasts shall be U.L. listed, ETL certified, Class “P”, high power factor.

2) Ballasts shall have an “A” sound rating or better.

3) All interior ballasts shall have a minimum starting temperature of 50 degrees F.

4) Ballasts shall be series wired type and designed to operate the number and length of lamps specified.

5) The total harmonic distortion (THD) of each ballast shall in no case exceed 10 percent THD.

6) Ballasts shall have a minimum ballast factor of 0.95.

7) Ballasts shall have nominal power factor 0.99 or higher.

8) Ballasts shall have a maximum lamp current crest factor of 1.5.

9) Ballast shall provide normal rated life for the lamp specified.

10) Acceptable manufacturers:

a) Universal Lighting Technologies.

b) Advance.

c) Osram/Sylvania.

d) Or equal as approved by the Engineer.

J. Wall Switches (interior of enclosure)

1. Switches shall be heavy duty, specification grade, toggle action, flush mounting quiet type with ground screw terminal. Provide 3-way switch for the lighting in the pump compartment.

a. Toggle switch shall be white color.

b. Rating shall be 20A, 120/277 Volt.

c. Acceptable manufacturers:

1) Cooper Wiring Devices, D-1

2) Hubbell, Inc.

3) Pass & Seymour, Inc.

4) Or equal as approved by the Engineer.

K. Duplex Receptacles - Ground fault Interrupter Type (interior of pump sound enclosure and communication panel)

1. Industrial specification grade, 20 Amp, 125 Volt, 2 Pole, 3 Wire, GFCI feed thru type with "test" and "reset" buttons.

2. NEMA 5-20R configuration.

3. Acceptable Manufacturers:

a. Cooper Wiring Devices.

b. Hubbell, Inc.

c. Pass & Seymour, Inc.

d. Or equal as approved by the Engineer.

L. Device Plates

1. Plates for indoor flush mounted devices shall be stainless steel plates, brushed with stainless steel mounting screws for the required number of gangs for NEMA 4X, 4 and 12 (Indoor Process) areas.

2. Plates for indoor surface mounted device boxes shall be cast metal of the same material as the box.

3. Multiple surface mounted devices shall be ganged in a single, common box and provided with an adapter, if necessary, to allow mounting of single gang device plates on multigang cast boxes.

4. Provide Brady labels on device plates of light switch and receptacles indicating the panelboard circuit number(s).

M. Weatherproof Constant Use Cover (interior of pump sound enclosure)

1. UL listed single or two gang box cover made of polycarbonate, vertical arrangement.

2. Acceptable Manufacturers:

a. Crouse-Hinds

b. Or equal as approved by the Engineer

N. Control Panel (See drawings 10572-G-003 to 10572-G-006)

1. Panel shall be 48” x 36” x 16” with piano hinge door.

2. Door shall be accessible from outside of the enclosure.

3. Panel shall have ventilation louvers to the inside of the enclosure, but isolated from the pump compartment.

4. Provide integrated lighting system such that opening the panel door turns on the light.

5. Provide two 2” penetrations for Rigid Steel Conduit for incoming communications entrance cables.

6. Provide two ¾” penetrations for Rigid Steel Conduit from Main Pump Control Panel to Control Panel. One for 120 VAC power and one for control signals.

7. Provide one 2” conduit penetration to the temporary pump roof for the antenna cable. Provide a drip loop for the cable before entering the control panel.

8. All the conduits to Control Panel must enter from the bottom.

9. Provide the following devices inside panel:

    a. Two 20A GFCI receptacle for powering communications equipment.

    b. One thermostatically-controlled panel heater.

10. The control panels shall conform to UL listing 508A and bear a UL 508A label stating "suitable for use as an industrial control panel", and built by an UL listed shop.

11. Cabinet shall be NEMA 4 rated prior to modification for ventilation louvers. Cabinet shall be manufactured with 12-gauge steel, with ANSI 61 gray polyester powder paint external finish unless specified otherwise on the drawings. Cabinet dimensions are as shown on the design drawings. Include back panels and side panels as shown on the drawings.

12. Seams shall be continuously welded and ground smooth without holes or knockouts.

13. The enclosure shall have a single hinged door. When facing the front of the enclosure, the hinge shall be on the left-hand side and the door latch on the right-hand side.

    a. Door shall have heavy-duty continuous stainless steel hinges, with lockable three-point latch. The lock hasp shall be able to accommodate a pad lock with a 3/8” diameter shank.

    b. Door gaskets shall be of oil resistant material and shall be attached with oil-resistant adhesive.

14. Each enclosure shall be provided with a print pocket 12" wide x 12" high x 2" deep provided on door.

15. Acceptable products: Hoffman or equal as approved by the Engineer.

16. Wiring:

    a. Single conductor wiring shall be No. 14 AWG stranded copper with 600 volt Type MTW insulation unless otherwise specified.

    Color Coding:

Function	Gauge	Color	Remarks
Instrument DC Power (+)	14	Blue	
Instrument DC Power (-)	14	Gray	
HVAC DC Power(+)	12	Dark Blue	
HVAC DC Power (-)	12	Gray	
DC Control	18	Purple	
AC Control	16	Red	

AC Common	14	White
AC Power	14	Black
AC Ground	14	Green

b. Wiring to receptacles shall be No. 14 AWG stranded black (line), white (grounded neutral), and green (ground).

c. Instrumentation cables shall be 300 volt twisted shielded pairs, No. 18 AWG stranded copper conductors, 105 degrees CPVC insulation and jacket, color coded black and white, with aluminum/mylar shield overlapped to provide 100 percent coverage, and stranded copper drain wire.

d. No more than 2 wires shall be connected to one terminal.

e. Wires carrying instrument and control D.C. signals shall be physically separated a minimum of 6" from wires carrying A.C. (120 VAC).

f. All wiring shall be neatly routed in wiring ducts and labeled with their assigned wire numbers. Wire labels shall be machine printed, permanent type heat shrinkable polyolefin labels, Brady Permasleeve printable wire markers, or equal as approved by the Engineer.

g. Instruments with grounding terminals shall be grounded to the panel steel. Provide grounding lug for grounding the panel to earth ground.

h. Wire termination:

(1) Screw type terminals: wires terminated on screw type terminal blocks shall be made of 105 degrees C nylon insulated, crimp-on terminals with fork-type tongue for screw-type terminals, AMP, Inc., or Thomas & Betts Co. Sta-Kon, or equal as approved by the Engineer.

(2) Screw clamp terminals: wires terminated on screw clamp terminal blocks such as relays, switches, control units and devices, and power supplies shall be made with plastic insulating color coded collar ferrules. Use twin plastic insulated ferrules for connecting two wires to a single terminal block. Acceptable products: Phoenix Contact Type AI and AI-TWIN, or equal as approved by the Engineer.

Ferrule Color Coding

AC, Power and Controls	Gray
DC, Controls and Instruments	Red
DC Power	Black

Use only manufacturer approved crimping tool designed specifically for the type of ferrule provided.

i. Open-slot-wiring duct sized for the application shall be provided to hold the wires neatly in place. Wiring duct covers shall be hinged. Provide one-inch minimum wire bending radius to prevent wires from being kinked or stressed at the wiring duct junctions. Wiring duct fill shall not exceed 50 percent.

j. Whenever there is any discrepancy between wiring drawings and the control schematic, the control schematics shall take precedence.

17. Control units and devices:

a. Terminal blocks:

1) Terminal blocks shall be finger-safe rated 300 VAC/VDC @ 20A minimum and of the IEC standard feed-through type. Terminal blocks shall accept a wire size range of #26 to #12 AWG and be the DIN rail mountable type.

2) Fused terminal blocks shall be finger-safe rated 300 VAC/VDC @ 15A minimum with LED blown fuse indicator. Fused terminal blocks shall be equipped with built-in fuse puller and with fuse size as shown on drawings.

3) All terminal blocks shall be clearly and permanently labeled with snap-in marker numbers.

4) Terminal block jumpers shall be pre-made specifically designed for the application.

5) Terminal blocks for power and control signals shall be gray in color.

6) Provide all necessary accessories, partition plates, separating plates, end cover, group markers, etc., as required for proper installation of the terminal blocks.

7) Provide 20 percent spare terminal blocks for every terminal strip, space permitting.

8) Acceptable products: Phoenix Contact Clipline Push-In Technology Terminal Blocks or equal as approved by the Engineer

b. Din rail mounted circuit breakers shall be the high density, energy limiting type rated 240VAC or 60VDC, with current ratings as shown on the drawings. Acceptable products: Phoenix Contact TMC 61C, or equal as approved by the Engineer.

18. Control Relays:

    a. Control relays contacts shall be rated 10A at 250V with a contact arrangement and coil voltage as shown on the drawings. The relay shall have a built-in free-wheeling diode for DC coils and an indicator light. The relay shall be the socket mount type. The relay socket shall be the DIN rail mount finger-safe type.

    b. Acceptable product: IDEC RH series or equal as approved by the Engineer.

19. Cabinet Door Intrusion Switch:

    a. Cabinet door intrusion switch shall be rated for 15 amperes at 250 VAC, rod actuator-type door switch, SPDT.

    b. Acceptable products: Honeywell Microswitch Model 1AC2, or equal as approved by the Engineer.

20. Cabinet Light:

    a. The cabinet light shall be a LED light; that is UL listed for damp locations. The LED light shall be capable of being mounted to the top interior surface of a control panel using screws. The operating voltage shall be 90 VAC to 260 VAC and the light shall be equipped with an integral IR motion sensor and produce 900 lm of light.

    b. Acceptable products: Hoffman model LEDA2S35, or equal as approved by the Engineer.

21. Convenience Receptacle:

    a. Fully enclosed, DIN-rail mounted, GFCI duplex utility receptacle, suitable for either vertical or horizontal mounting, rated 15A at 120VAC.

    b. Acceptable products: Phoenix Contact GFCI, or equal as approved by the Engineer.

22. Programmable Logic Controller (PLC)

    a. Small Form Factor PLC: Rockwell Automation MicroLogix 1400 1766-L32BXB/A. No Substitutions.

    b. PLC Memory Module: Provide one memory module for each MicroLogix PLC supplied in this specification. Rockwell Automation Memory Module 1766-MM1. No Substitutions.

    c. Work Included:

        1) PLC programming will be done by the District.

23. Operator interface unit (OIT)

    a. The OIT shall have the following features and characteristics:

        1) Processor: 800 MHz, fanless CPU.

        2) Memory: 256 MB of Flash memory. 256 MB of DRAM.

        3) Connectivity: 1 Ethernet 10/100 Base T Port, 2 RS-232/RS-485 Serial Ports, 1 USB Host Port, 1 SD Card Slot, 1 Line Out, 1 Microphone In

        4) 15 inch active matrix TFT color LCD touch screen display with 1024x768 resolution.

        5) Include touch screen input.

        6) Operating Temperature: 5 to 50 degree Celsius with a relative humidity of 10 to 80 percent non-condensing.

        7) Aluminum NEMA 4 enclosure

        8) Power: 24 to 28 VDC for units powered by 24 VDC

        9) Acceptable products: Maple Systems, Part Number HMI5150P, Communications Cable, Part Number 7446-0137-5, USB configuration cable, Part Number 7431-0115, and windows-based configuration software, Part Number EZware. No substitutions.

    b. Work Included:

        1) OIT programming will be done by the District.

24. ETHERNET SWITCHES – for use in control panels specified in PART 2 Section 2.9.M.

    a. UL listed, industrially hardened, fully managed, DIN-rail mounted Ethernet switch specifically designed to operate reliably in industrial environments.

    b. Switches shall also have the following features:

        1) General

            a) Standalone 16 port managed Ethernet switch with 14-10/100BaseT(X) ports and 2-100BaseFX multi-mode fiber-optic ports with ST connectors, 24 VDC power supply, 0 to 60°C operating temperature.

b) Cyber-security features for NERC CIP compliance including user passwords/multiple security levels, SSH/HTTPS encryption of passwords and data, ability to lock switch ports with 802.1x port-based network access control, ability to disable ports, ability to secure ports by MAC address, Radius/TACACS+ central password management, and SNMPv3 encrypted authentication and access security.

c) Configurable by web browser, Telnet/serial console, and command line interface.

d) Two relay output alarm contacts rated for 1A @ 24 VDC.

2) Warranty: 5 years.

3) Acceptable manufacturers:

a) MOXA EDS-516A-MM-ST Ethernet switch

b) Or equal as approved by the Engineer.

25. Router

a. Acceptable manufacturers:

1) Allen Bradley Stratix 5900. Model 1783-SR.

2) No substitution.

26. Media Converter

a. Acceptable manufacturers:

1) Moxa NPORT 5150A.

2) No substitution.

27. Cellular Modem

a. Cellular modem will be provided by the District.

b. Allow sufficient space for an Airlink GX440.

28. Cellular Antenna

a. Install cellular antenna on top of temporary pump enclosure. The antenna must come with a pigtail of at least 8 feet long.

b. Provide a SMA-male connector for the antenna.

c. Multiband low profile omnidirectional puck antenna operating over 698-960 MHz and 1710-2700 MHz frequency bands.

d. Surface mount antenna that performs well on metallic and non-metallic surfaces.

e. IP67 rated for harsh environment applications.

f. Machine-to-Machine (M2M) application.

g. Operating temperature Range: -30 degree C to 70 degree C.

h. Acceptable products: Laird Omni SISO LTE Disk-Puck Antenna, or equal as approved by the Engineer.

29. DC Power Supply:

a. The 24VDC power supply shall satisfy the following requirements:

1) Nominal input voltage shall be 100 to 240VAC

2) Nominal output voltage shall be 24VDC with an adjustable range of 22.5 to 28.5VDC that can be adjusted via a potentiometer mounted on the front of the power supply.

3) The available output current shall be 10A @ 24VDC with a short circuit current limit of 15A

4) The power supply shall have a DC OK status indicator mount on the front of the unit and a DC OK isolated relay output contact rated at a minimum of 1A at 30VDC

5) The power supply shall be DIN rail mountable

6) The power supply shall by UL listed

7) Acceptable products: Phoenix Contact QUINT or equal as approved by the Engineer

30. Surge Suppressor:

a. Surge suppressors shall be UL listed and consist of a removable plug with visual status indicator and a hardwired base element that allows the surge arresting elements to be replaced without interrupting the power circuit being protected. Units shall be DIN-rail mounted.

b. Units shall be rated for 120 VAC nominal, 150 VAC maximum and 20kA nominal, 40kA maximum surge current (8/20us).

c. Acceptable products: Phoenix Contact Valvetrab compact or equal as approved by the Engineer.

31. Fuses

a. Time delay glass tube construction with nickel plated brass endcaps,

b. Provide fuse sizes as shown on the Drawings.

c. Acceptable products: Bussman MDL or equal as approved by the Engineer.

32. Ground Bar

a. Ground bars shall be UL recognized and have suitable number and size of terminals necessary for terminating stranded copper ground wires.

b. Acceptable products: Square D Ground Bar Kits, or equal as approved by the Engineer.

33. Panel Heater

a. Panel heater shall be UL listed and powered from 120VAC.

b. Integrated fan and thermostat adjustable from 0 DEGF to 100 DEGF

c. 200 watt heating capacity

d. Acceptable products: Hoffman electric heater or equal as approved by the Engineer.

34. Nameplates

a. Nameplates shall be provided.

O. Variable Frequency Drives

1. Rating

a. Service Conditions

1) Input power: 460 VAC, ±10 percent, 3 phase, 60 Hz.

2) Input frequency: 57 to 63 Hz.

3) Ambient temperature: 0 degrees C to 50 degrees C.

4) Elevation: Up to 3300 feet above mean sea level.

5) Relative humidity: Up to 90 percent non-condensing.

b. Minimum drive efficiency: 97 percent or better at 4/4 motor base speed and rated torque.

c. Displacement power factor: 95 percent or higher throughout the entire speed range, measured at drive input terminals.

d. Drive output: 100 percent rated current continuous, suitable for operation of the driven equipment over the required speed range without overloading. Drives shall be capable of a continuous overload up to 110 percent rated current for variable torque loads and 150 percent rated current for constant torque loads. Starting torque shall be matched to the load.

e. Output frequency drift: No more than plus or minus 0.5 percent from setpoint.

f. Drives shall withstand five cycle transient voltage dips of up to 15 percent of rated voltage without an undervoltage trip or fault shutdown, while operating a variable torque load.

2. Signage

a. Provide signage on VFD compartment door. Black, block letters, ½" high on yellow background.

EQUIPMENT IS DERATED FOR 50°C ENVIRONMENT

3. Construction

a. General

1) The VFDs shall utilize a digital pulse width modulated (PWM) design to convert the fixed AC input to a variable voltage, variable frequency AC output. Construction shall be modular, using plug-in type component mounting or keyed ribbon cable connections wherever possible to minimize downtime during repair.

2) The VFD shall operate satisfactorily when connected to a bus supplying other solid state power conversion equipment which may be causing up to 10 percent total harmonic voltage distortion and commutation notches up to 36,500 volt microseconds, or when other VFD's are operating from the same bus. The drive shall include transient voltage suppression to allow reliable operation on a typical commercial power distribution system.

3) The VFD shall consist of a full-wave diode bridge 12-pulse minimum converter to convert incoming fixed voltage/frequency to a fixed DC voltage. Provide a DC link choke smoothing reactor to limit fault throughput.

4) The output shall be generated by power transistors or GTOs which shall be controlled by six identical, optically isolated base driver circuits. The VFD shall have an output voltage regulator to maintain correct output Volt/Hertz despite incoming voltage variations. The VFD shall have a continuous output current rating equal to or greater than the motor full load nameplate current.

4. Operator Interface

a. Provide a door-mounted digital keypad/display, capable of controlling the drive and setting drive parameters. The digital display shall normally display:

1) Speed demand in percent

2) Output current in amperes

3) Frequency in Hertz

4) Control mode - manual or automatic

b. The digital keypad shall allow operators to enter exact numerical settings in English engineering units. A user menu shall be provided as a guide to parameter settings. Coded messages on keypad will not be acceptable. Parameters are to be factory set in EEPROM and resettable in the field. Parameters shall be password protected. The EEPROM stored variables shall be transferable to new and spare boards.

c. The keypad/display module shall have a key switch to control operation of the keypad. The key shall be removable in either the "Enabled" or "Disabled" positions. The keypad module shall contain a "self-test" software program that can be activated to verify proper keypad operation. The keypad display shall contain a full alphanumeric character set.

d. The drive shall have a graphic back-lit liquid crystal display which can be configured to display frequency, current, function code set points, drive status, and fault codes. At a minimum, the display shall display 4 lines with 13 characters of text.

e. At a minimum the following controls and indicators shall be provided, either separately or as part of the keypad/display:

1) POWER ON, RUN AND FAULT indication.

2) FAULT RESET control.

3) LOCAL-OFF-REMOTE control mode selector.

4) Manual START/STOP controls.

5) Manual speed adjust capability.

5. Auxiliary Contacts

   a. Provide two set(s) of Form C auxiliary dry contacts for remote indication of VFD running status.

   b. Provide two set(s) of Form C auxiliary dry contacts for remote indication of VFD fault.

6. Auxiliary Power: Provide 120 VAC auxiliary power on drive terminal strips for use in powering auxiliary control devices.

7. Communications: Provide RJ-45 port for Ethernet IP protocol.

8. Protective and Operational Features

   a. Make provisions for field adjustment of the following parameters through the keypad/display:

      1) Current limit and boost.

      2) Voltage (Volts/Hertz.)

      3) Frequency (Minimum and Maximum)

      4) Independently adjustable acceleration and deceleration rates.

      5) Auto restart delay.

      6) Up to five critical bands where drive operation is inhibited.

9. Make provisions to accept a remote dry contact closure to start and stop the drive(s) with the drive control system in the AUTO mode.

10. Make provisions to accept a 4-20 mA DC input signal for remote speed control. Input shall be isolated at the drive and active with the drive control system in the AUTO mode. Zero and span adjustability shall be provided.

11. Provide a 4-20 mA DC isolated output signal proportional to speed for remote speed indication.

12. Provide the following short circuit and input protective features.

    a. Input circuit breaker.

    b. Solid state instantaneous overcurrent trip.

    c. Undervoltage protection with automatic restart.

    d. Ground fault protection.

    e. Surge protection device.

13. Provide the following internal protective features.

    a. Transient surge protection.

    b. Overcurrent protection.

    c. Current limit, inverse time type.

    d. DC bus fuse protection and discharge circuit.

    e. DC bus overvoltage trip.

14. Provide the following output protective features.

    a. Inverse time motor overload protection.

15. Harmonic and Radio Noise Mitigation

    a. At a minimum input line reactors shall be provided with all drives. Reactors shall be 2-1/2 percent minimum, rated for 150 percent overload for one minute, and have a saturation rating no less than 3.5 times the rated continuous current. Reactors shall be UL, ETL, or CSA approved.

    b. Provide EMI/RFI filters to limit radio frequency noise in excess of the limits specified by FCC Docket 20780 (Part 15, Subpart J) or if the drives create noise in a frequency range which will interfere with other sensitive equipment at the installation (such as lighting systems, telecommunications systems, instrumentation and monitoring equipment).

16. Diagnostic and Fault Capability

    a. The following conditions shall cause an orderly drive shutdown and lockout.

        1) Incorrect phase sequence.

        2) Blown input fuse or single phasing of supply.

3) Control power supply failure.

4) Instantaneous overcurrent.

5) Sustained overload.

6) Transistor overcurrent.

17. Provide complete built-in diagnostic and test capability to enable maintenance personnel to rapidly and accurately identify the cause of equipment failure.

18. Acceptable Manufactures

a. Manufactures: Subject to compliance with these specifications, the typical equipment, systems and accessories installed shall be manufactured by:

1) Allen Bradley, Powerflex 753.

2) ABB, Model ACS550

3) Or equal as approved by the Engineer.

P. Motors

1. Motors are to be provided with the following basic features:

a. Motors shall be designed and connected for operation on a 480 volt, 3 phase, 60 hertz alternating current system. Dual voltage (230/460) rated motors are acceptable; tri-voltage (200/230/460) rated motors are not acceptable. Motors shall be rated up to 20 horsepower.

b. Premium efficiency NEMA design B with a 1.15 service factor at 50 deg C ambient temperature.

c. Shall be rated as definite-purpose inverter fed as defined under NEMA MG-1, Part 31.

d. Totally Enclosed Fan Cooled or Open Drip Proof with Class F insulation.

e. Nameplate shall have, as a minimum, all information as described in NEMA Standard MG 1-20.40.1.

f. Motors shall have a NEMA C-Flange for vertical mounting.

g. Drive end bearings shall be adequately sized so that the minimum L10 bearing life is 17,500 hours at the minimum allowable continuous flow rate for the pump at full rated speed.

Q. Cable Identification Tags

1. Tags relying on adhesives or taped-on markers are not acceptable.

2. Provide cable tags for conductors No. 00 AWG and smaller with legible permanent sleeve of white heat-shrink polyolefin with machine printed weatherproof black marking.

3. Use mini-tags for sizes greater than No. 00 AWG.

4. Meet UL Standard 224 for flammability.

5. Provide necessary tools and accessories to print labels and shrink labels.

6. Acceptable Manufacturers:

   a. Brady Model B-321 Brady sleeve Computer-Printable Wire Markers.

   b. Panduit.

   c. Or equal as approved by the Engineer.

R. Equipment Nameplates.

1. The legend plates or nameplates shall be a minimum of ¾" inches high and 2 – 1/2 inches wide and shall be attached to the equipment by means of round head stainless steel machine screws. The plates shall be approximately 3/22-inch thick with beveled edges and shall have letter sizes and legends as accepted by the Engineer.

2. Plates shall be black and white laminated phenolic material with engraved letters, l/4-inch high extending through the white face into the black layer.

3. Where nameplates cannot be mounted on the equipment, attach the nameplate or tag with a stainless steel cable.

4. Acceptable Manufacturers:

   a. Brady.

   b. Seton.

   c. Or equal as approved by the Engineer.

S. Pushbutton Legend Plates

1. Provide legend plates for pushbuttons, selector switches and pilot lights with inscription as shown on the drawings. Provide adapter ring as necessary to fit devices with legend plates. Legend plates shall be made by same manufacturer as pushbutton device, selector switch and pilot light.

2. Acceptable Manufacturers:

a. Cutler-Hammer HT800 Series.

b. General Electric CR104P Series.

c. Allen Bradley Bulletin 800T.

d. Or equal as approved by the Engineer.

PART 3 - EXECUTION

3.1 WITNESS INSPECTION

A. The District reserves the option to witness the factory pump test and the manufacturer's temporary pump fabrication process at the Vendor's expense (see Section 01 45 27). The Vendor shall notify the District to schedule an inspection or to witness a test a minimum of 3 weeks prior to the start of the factory pump test or temporary-pump fabrication.

3.2 TESTS

A. Factory Testing

1. General

a. Factory tests shall include shop inspection, hydrostatic test of the pump casing, and a running performance test to determine efficiency. Tests shall be witnessed by the District.

1) Factory test to demonstrate:

a) Lighting

b) Tightness of all bolts and connections

c) Torqued and secured electrical connections; good workmanship; and neatness

d) Run each pump individually and combined at various speeds under full load

e) Suction/Discharge Pressure Transmitter

f) Flow meter

g) Controller and VFD panel cooler

h) Hydrostatic test

i) Sound enclosure test

j) Power receptacles

k) Communication between PLC, OIT, and VFD

l) Test all I/O points

m) Run all units at full load for 4 hours. The enclosure temperature shall not exceed design requirements during this test. During the load tests, the following parameters shall be recorded at 15 minute intervals:

i) Time

ii) Temperature: VFD Compartment, Pump Compartment, and Control Panel Compartment

iii) Pump Speed

iv) Suction/Discharge Pressure

v) Flow (measured with flowmeter outside the pump enclosure)

vi) Voltage output (phase-to-phase)

vii) Amperage (each phase)

b. The Contractor shall provide water, pumping load, power, test equipment, labor, materials, and all other equipment and services required for all tests.

2. Witness Travel Expenses

a. See Exhibit G of this RFQ.

3. Hydrostatic Pressure Test:

a. All parts of the pump subjected to discharge pressures shall be hydrostatically tested at a minimum pressure of 1.25 x design pressure for at least one-half hour. During the test the covers and casing shall be free from leaks and objectionable distortions.

4. Check Valve Leakage Test

a. The check valves shall be factory tested to verify that they do not leak. With the pump isolation valves open and the suction side of the pump skid drained, pressurize the discharge side of the skid to between 100 psig and 200 psig and verify there is no leakage through the check valves.

5. Certified Factory Pump Test

    a. The pumps shall be tested in accordance with the ISO 9906:2012 Annex A.

    b. Record data at a minimum of 5 points for each pump at rated speed including: First, second and third design point and shutoff.

    c. Acceptance Criteria: The pumps shall meet the manufacturer's published performance curve for the specified model of pump with ISO 9906:2012 Grade 3B tolerances. Acceptance of the pump will be subject to the proof that it will operate at any point of the performance curve at maximum rated speed within the continuous duty horsepower of the motor.

6. Certified Factory Pump Test Results: submit three (3) copies of certified engineering data and performance characteristics as follows:

    a. Test Data Sheet, which shall include:
    Speed in RPM
    Flow in GPM
    Total Head in Feet
    Input Horsepower to Pump

    b. Curves showing performance characteristics:
    Head/Capacity at rated speed
    Pump Efficiency
    Input Horsepower
    Predicted NPSH Requirements (may be calculated from previous similar tests).

    c. Vibration measurements:
    Measure vibration for one pump in 500 RPM increments from the pump minimum speed up to the rated speed. Take measurements horizontally at the pump motor, parallel (x-direction) and perpendicular (y-direction) with the discharge pipe connection as well as vertically on top of the pump motor (z-direction).

B. Delivery and Extended Field Test

1. See Special Requirements for additional delivery instructions.

2. The Engineer will inspect the delivered equipment and notify the Vendor of any damage, inventory shortage, or other problems discovered within 10 working days. The Vendor shall repair, replace, or otherwise remedy all such problems within 30 working days. In particular, the Vendor shall restore to a like new condition all coated surfaces which are found during inspection to be damaged.

3. The District will schedule the extended field test. The temporary pump package shall be tested together by the Vendor's representative and District personnel to demonstrate ability to pump water without distress to any component. The Vendor's representative shall be factory trained and knowledgeable in operating, adjusting, and troubleshooting the temporary pump package. The Vendor's representative does NOT need to be present for the extended field test except to make repairs.

4. In the extended field test, water shall be pumped from the District pumping tees through suitable throttling valves, if required. The District will furnish, connect and operate suction and discharge pipe, hoses and valves.

5. During the test, the pump will be subjected to suction pressures as high as 150 psig and discharge pressures as high as 232 psig.

6. The pump shall be operated for a continuous period of seven (7) days. The pump shall operate during this test without any problems. If failures occur or defects are found, the Vendor shall repair the temporary pump. Following any repair, the pump shall be operated for a full continuous 7-day period.

7. During the extended field test, the following items shall be verified:

    a. All features of the control systems operate as specified and as intended.

    b. The temporary pump can deliver water in accordance with the factory pump performance test results.

    c. The free field noise produced by the temporary pump with all doors and openings closed meets the requirements of paragraph 2.8.B.3.

    d. The pump and all wetted components shall be free of leaks.

    e. The pump operates reliably for the full 7 days.

C. Conductor Identification:

1. Identify conductors at each termination and in all accessible locations such as manholes, handholes, control panels, panelboards, pull boxes, junction boxes, wireways, junction terminal boxes, switchgear, motor starters, disconnect switches, etc. For identification, use type of conductor and cable tags specified herein.

D. Legend Plates and Nameplates

1. Legend plates or nameplates shall be installed on the doors or covers of all panels, panelboards, starters, contactors, relays and all other electrical equipment enclosures furnished under this Contract and as indicated on the drawings.

2. Nameplates shall be engraved with inscriptions as shown on the drawings; if not shown, Contractor shall submit a schedule showing what is shown as well as what is proposed for the Engineer's approval.

3. Each device which indicates the operation of the equipment, or which may be operated to affect the equipment, shall have an integral legend plate or nameplate indicating the device function. These shall be inscribed as indicated on the drawings or as approved by the Engineer.

E. Tagging of wires and cables

1. All wires and cables shall be tagged and laced in pull or junction boxes, wireways, and at each termination. Each wire and cable shall be tagged at least once as it passes through each pull or junction box, and at each termination. Each wire and cable shall be tagged at least once as it passes through wireways. Wires and cables shall be laced so that the wires of the individual circuits are laced together by circuit and the laced-together circuit or cable shall be tagged with the cable number. Power, lighting, control, alarm, annunciator, and instrumentation wiring shall be bundled, laced, and tagged, as specified herein.

2. All wires and cables within control panels, motor control centers, mechanical mounting panels, terminal junction boxes, etc., shall be tagged at each termination with conductor tags as specified. All circuit identification tags shall be readily accessible for inspection at the locations cited above.

3. Label wires with cable numbers as shown on the drawings. Cable labels shall be placed within one inch of the ends of the cable jacket.

4. All spare pairs shall be bundled and labeled with the cable designation. All individual pairs shall be tagged to enable identification of spare pairs when making future terminations.

5. Identify multi-circuit control cables and individual instrumentation and control circuits as indicated on the drawings. Multi-circuit cable shall be tagged with the cable name around the entire cable assembly and shall have the individual circuits tagged as well. Tag twisted, shielded pairs and where exposed, multi-pair cable twisted pairs around each pair separately.

6. Identify each individual conductor at each termination. This includes such locations as motor control centers, variable frequency drives, control panels, junction/terminal boxes, all field devices, security panels and junction boxes, and all other locations where conductors are terminated. Identify the termination of these conductors in accordance with the accepted shop drawings. Tag conductors with sleeve type labels.

7. Where more than 1 nominal voltage system exists, identify each ungrounded system conductor by phase and system. Permanently post means of

identification at each branch-circuit panelboard, switchboard, switchgear, motor control center, or other type of power distribution equipment.

8. Include the following minimum information for wire and cable identification:

    a. Circuit number or load identification tag number.

    b. Origin (from source).

    c. Destination (to load).

9. Wire Numbers:

    a. The Contractor shall coordinate the wire numbering system with all vendors of equipment so that each and every field wire has a unique wire number associated with it for the entire system.

        1) Generally, the instrument tag is the wire number, with appropriate suffix modifiers to give each wire a unique name. Examples:

        2) Control circuit connecting a temperature switch with tag number TSH-001 to a process control panel would have wire numbers as TSH001+, TSH001-, and TSH001SH, assuming a twisted shielded pair.

        3) Control circuit connecting a thermostat to an air handling unit with tag number TE-075 would have wire numbers TE075+, TE075-, TE075RTN, and TE075SH, assuming a twisted shielded triad.

        4) Multiconductor control cable A1C1 will be labeled as A1C1-1, -2, -3, etc.

        5) Power circuit M1P1 going to a three-phase motor: use suffix modifiers -1, -2, -3, and -G for the individual three-phase and ground conductors.

        6) Power circuits for receptacles and lighting: use the panelboard circuit number(s) where the branch circuit originates (for example, L5P16 with suffix modifiers -L, -N, and –G for a 120VAC lighting circuit originating at panelboard 5, circuit 16).

        7) For telecommunication and specialty control circuits, it is not necessary to provide individual wire numbers for these applications unless otherwise specified in the Drawings.

3.3 SPARE PARTS AND EXTRA MATERIALS

A. Furnish the following securely packaged and labeled with component name and manufacturer's model and part number:

1. One (1) 150A plug for the 150A frame main breaker

2. One (1) Full set of impellers for one pump

3. One (1) cartridge seal

4. One (1) replacement VFD card power cell. The components of the VFD power cell include the following:

    a. Power diodes or input converters.

    b. DC bus filters (inductors and capacitors).

    c. Power transistors or output inverters.

5. One (1) radio ready enclosure preconfigured for wireless systems which includes antenna, UPS DC power supply, battery back-up, and surge protection for the antenna. Phoenix Contact RAD-SYS-NEMA4X-900-2917188.

3.4 SUPPLEMENTS

A. The supplements listed below follow END OF SECTION and are part of this specification.

1. Temporary Pump Data Sheet

2. O&M Manual Review Checklist

3. Typical Maintenance Summary Form

4. Demonstration and Training 01 79 00

5. Shop Inspection 01 45 27

END OF SECTION

Exhibit E

TEMPORARY PUMP

DATA SHEET

The Contractor shall supply the following information:

Temporary Pump Manufacturer _____

Pump Skid Manufacturer _____

Pump Manufacturer _____

Number of Pumps _____ Pump Model _____

Motor Manufacturer _____Motor Model _____

Motor Horsepower & Voltage_____

Controller & VFD Make & Model _____

Flowmeter Manufacturer & Model _____

Overall Dimensions of Pump Enclosure Assembly_____

Weight of Pump Enclosure Assembly _____

Expected Maximum Free-Field Noise with Two Pumps Running at 30 ft _____

Exhibit E

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 33 12 23.20 for details)

DESCRIPTION	PROVIDED?		COMMENTS
	YES	NO	
Specified copies provided			
Binder cover clearly labeled			
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 33 12 23.20 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				
Performance Information				
• Nameplate data				
• Performance test data/curves				
Installation Instructions				
• Installation procedures & drawings				
• Equipment tolerances				

TECHNICAL CONTENT (See Section33 12 23.20 for details)				
DESCRIPTION	LOCATION IN O&M			COMMENTS
	TAB#	PAGES	N/A	
• 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				
• 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				
• Field Test Results				
Troubleshooting guide				
Safety				
• Safety procedures/Lockout discussion				
• CAUTION, WARNING, DANGER text				
• Material Safety Data Sheets (MSDS)				
• Special safety equipment				

TECHNICAL CONTENT (See Section 33 12 23.20 for details)				
DESCRIPTION	**LOCATION IN O&M**			**COMMENTS**
	TAB#	**PAGES**	**N/A**	
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				

Exhibit E

TYPICAL MAINTENANCE SUMMARY FORM

(Use as many pages as necessary. This form is available in MS Word format 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

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

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

OEM Part#	Part Name-Description

8. Equipment Replacement Cost [$] _____

9. MAINTENANCE REQUIREMENTS

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

Exhibit F

SECTION 01 79 00

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: Perform training of District personnel for furnished or installed equipment, systems and facilities operation. Develop training program including scheduling, and coordination of training activities and training materials. Specific training procedures and requirements found in the technical sections shall also apply.

B. Related work specified elsewhere:

1. 33 12 23.20 – Electric Temporary Pump Package

1.2 SUBMITTALS

A. Submit a minimum of 30 calendar days prior to training:

1. Training lesson plan, which shall include learning objectives and a content outline with approximate time schedule for each topic.

2. Manufacturer's training representative’s resume demonstrating their qualifications and ability to perform the specified training services.

3. Vendor shall advise the Engineer in writing of any special coordination required for any system or equipment outages.

1.3 TRAINING OF DISTRICT PERSONNEL

A. Operation and maintenance training of District personnel shall be provided as specified in 33 12 23.20 section 1.6C table. These training services shall be provided by the manufacturer's representative and shall include classroom and hands-on instruction.

B. The Vendor shall provide all equipment and materials required for training.

C. Unless otherwise specified, provide a minimum of two 4-hour training classes (not including trainer’s travel time) for class sizes of approximately 12 trainees for each piece of equipment or system.

D. Training Locations: All classroom training shall be at District facilities or other locations within the San Francisco Bay Area as determined by the District unless otherwise specified. Coordinate the exact locations for training sessions with the District.

E. Training schedules shall be developed by the Vendor and approved by the District, and shall be in accordance with the following:

1. All training shall be completed prior to start of the Extended Field Test.

2. Training for an individual system or piece of equipment shall not proceed until after the system or piece of equipment has successfully passed its Functional Test.

3. Training shall be conducted during normal District work hours and shall be scheduled on Tuesday through Thursday, unless otherwise approved by the Engineer.

4. Generally, only one 4-hour training class shall be scheduled per calendar day unless otherwise approved by the Engineer. If class duration is longer than 4 hours, then the class shall be schedule on multiple days in 4-hour or less increments.

5. Training classes shall not be scheduled concurrently unless approved by the Engineer.

F. All trainers shall familiarize themselves with the installation site prior to the training.

G. The District reserves the right to videotape any or all training sessions.

H. Training Content:

1. O&M Manual Review: Provide a thorough discussion of the contents of the final approved O&M Manuals, including the following:

   a. Procedures for contacting the manufacturer's representative for equipment field service.

   b. Procedures for ordering parts.

   c. Discussion of equipment warranty.

2. Maintenance Training:

   a. Training objectives.

   b. Routine and preventive maintenance.

   c. Adjustment procedures.

   d. Overhaul procedures.

   e. Identify lubrication and adjustment locations.

   f. Maintenance access locations.

   g. Maintenance safety precautions.

   h. Trouble shooting guide.

i. Field test procedures.

3. Operations Training:

a. Training objectives.

b. Principles of operation.

c. Discussion of all design features.

d. Startup, shutdown, and emergency operating procedures.

e. Operational safety precautions.

I. Training Acceptance: Training that does not meet the following training criteria may not be accepted, and the training shall be repeated at the Contractor's expense including all costs for District trainee time.

1. Training shall present all information necessary to properly operate and maintain the system or equipment.

2. Training shall present all material as submitted in the approved training lesson plan.

3. The trainer's expertise shall be sufficient to accurately respond to questions posed by the trainees related to the system or equipment operation, maintenance, or principles of operation.

4. Training shall be efficient and without unrelated or irrelevant discussion. Breaks during training sessions shall be limited to 30-minutes total for each four-hour session.

5. Training Evaluation: Training will be evaluated at the end of each training session by the trainees. The written evaluations will be one means used by the District to determine if the training adequately instructed District personnel on the proper operation and maintenance of the systems and equipment provided.

1.4 TRAINING COORDINATOR

A. The Vendor shall designate one member of the Vendor's staff to be Training Coordinator. To maintain training continuity, the Training Coordinator shall not be replaced throughout the duration of the Contract unless the Training Coordinator is unable to continue the work (termination of employment, long-term illness, etc.) or unless specifically agreed to or requested by the District.

B. The Training Coordinator's responsibilities shall include, but not be limited to:

1. Develop a training schedule that is coordinated with all project schedules, and is acceptable to the District.

2. Work with the District Training Administrator to identify and schedule training locations at District facilities and/or other locations as needed.

3. Coordinate and supervise all facets of each training session. Provide any necessary training materials including computers, box lights, overhead projectors, screens, white boards, flip charts, etc.

4. Schedule of manufacturer visits for training.

5. Arrange for and secure a videographer to digitally record and professionally edit one instance of training program (mechanical maintenance and electrical control elements) and submit the final products in DVD format to the Engineer in a timely manner.

6. Provide refreshments for each training session (coffee, tea, juice, cold soft drinks, a selection of bakery items and fresh fruit, etc.).

PART 2 - NOT USED

PART 3 - NOT USED

END OF SECTION

Exhibit G

SECTION 01 45 27

SHOP INSPECTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Provide the District's Plant Inspection Section with advanced notification for Short Term (three consecutive weeks or less at one facility), and Long Term (more than three consecutive weeks at one facility) inspection assignments, and reimburse the District for travel expenses described in this Section.

2. Provide notification to the District's Plant Inspection Section of all work performed off the project site in fabrication, assembly, and coating plants; provide safe access to all areas where work is being performed.

3. The District reserves the right to use Third Party Inspectors in lieu of District personnel. All aspects of this section shall also apply to District contracted Third Party Inspectors.

B. Vendor shall ensure that there shall be adequate lighting, ventilation, and safety procedures in place to permit safe and thorough inspection at all times.

C. All inspection and measurement tools and equipment employed by the Vendor shall be made available to the District and remain in the area for inspection, and shall be subject to regular inspection and verification by the Vendor that such tools and equipment are properly calibrated and in an operable condition.

D. Vendor shall identify in writing the person responsible for the receipt and coordination of all Inspector communications. A Vendor representative responsible for Quality Control shall be present and available to the Engineer at all times during the course of inspections.

E. Vendor shall respond promptly to address and correct all fabrication and inspection processes to comply with the Contract Documents. Corrective measures undertaken by Vendor shall be documented and the documentation made available for review, inspection and copying by the Engineer at all times.

F. See individual sections, listed in Article 1.4, for specific processes requiring shop inspection.

1.2 WITNESS NOTIFICATION

A. The Vendor shall provide advanced written notification including the following information:

1. The related specification section(s);
2. Details of materials, parts or components to be inspected/tested;
3. Name and location of shop to be visited;
4. Shop's contact information;
5. Approved submittal number; and,
6. Proposed dates for those processes described in this and related Sections (Quality Control) for each shop location.

B. The shop where the inspections and tests will occur shall contact the District Engineer at (510) 287-0160 to schedule all shop inspections. Visits will be scheduled based on Engineer's availability.

C. Notification Schedule:

ONE-WAY DISTANCE FROM OAKLAND	SHORT TERM ASSIGNMENTS	LONG TERM ASSIGNMENTS
less than 75 miles	5 work days in advance	15 work days in advance
75 to 200 miles	10 work days in advance	15 work days in advance
greater than 200 miles	15 work days in advance	20 work days in advance
international	30 work days in advance	30 work days in advance

D. Shift work outside of standard first shift work hours (7 AM to 5 PM), including changes to previously staffed shift work (excluding cancelation of shift work), require advanced approval by the Engineer. Following approval by the Engineer, shift work shall start no sooner than the first Monday following 10 work days' notice for locations up to 200 miles from Oakland, and the first Monday following 15 work days' notice for locations over 200 miles from Oakland.

E. If the required notification is not given, the District will schedule the witness inspection at its convenience and the activity to be witnessed shall not proceed until the Engineer arrives or the Engineer notifies the Contractor that it is choosing to waive its witness inspections. In the event that the required notification is not given and the activity has

occurred in the absence of the Engineer, the Engineer may reject the processes completed to date and require the activity to be redone.

1. Delays resulting from failure to provide the required notification will be non-excusable. Expenses incurred by delays; repeat of the work process; or to correct unacceptable work shall be borne by the Contractor.

1.3 TRAVEL EXPENSES

A. The Vendor shall include in the bid price all travel expenses for the Engineer to conduct the witness inspections noted if any of the inspections are to be performed at a locality exceeding 125 miles one way from Oakland, CA.

B. Travel expenses include hotel lodging at an establishment rated three diamond or better by American Automobile Association (AAA), or comparable listing, and a minimum $61 meal and incidental expenses allowance per day, or at the rate established by US General Services Administration (for domestic) or US Department of State (for international), whichever is greater, for the duration of the trip.

C. If travel exceeds 200 miles one way from Oakland, CA, in addition to the expenses described in 1.3.B, travel expenses shall also include round trip direct route coach airfare from Oakland, CA; San Francisco, CA; Sacramento, CA; or San Jose, CA Airports to manufacturer's plant or testing facility, mid-sized car rental or taxi services, fuel, tolls, ground transportation to and from the airport, and airport parking at the departing airport; the following expenses shall apply as determined by the Engineer:

1. For international or travel outside the continental United States, per diem rates are those established by the US Department of State for the specific location and dates of travel. Travel expenses may include the direct cost of securing passports, visas, language interpreters, document translators, communications, and internet access.

2. If weekend stays are requested to defray transportation costs, reimbursement for the Engineers' stay over the weekend will include meal allowance, hotel expenses, phone and internet access charges, rental car or transportation charges to and from eating establishments, laundry service, language interpreters, or other necessary business expenses or services.

3. Reimburse the District for any inspection that has to be repeated due to repair or rework of unacceptable work. Reimbursement shall include District Engineers' wages, or if done by a District agent, the agent's complete invoice for the needed inspection.

D. All fees incurred such as airline reservation change fees, loss of fare due to purchase of nonrefundable tickets, hotel cancellation/rebooking fees, etc., due to Vendor-requested changes to the inspection schedule after the initial notification shall be borne by the Vendor.

1.4 WITNESS SCHEDULE

A. The District will witness the following processes as specified in the applicable specification sections listed below or as required elsewhere in the Contract Documents. For purposes of estimating, anticipate that one Engineer will cover only one shift of shop inspection work per plant site. The costs for additional inspection required by the operation of more than one work shift per day or by more than one shop inspection site per day shall be included in the bid costs.

Spec. Section	Section Title and Description
33 12 23.20	Temporary Pump

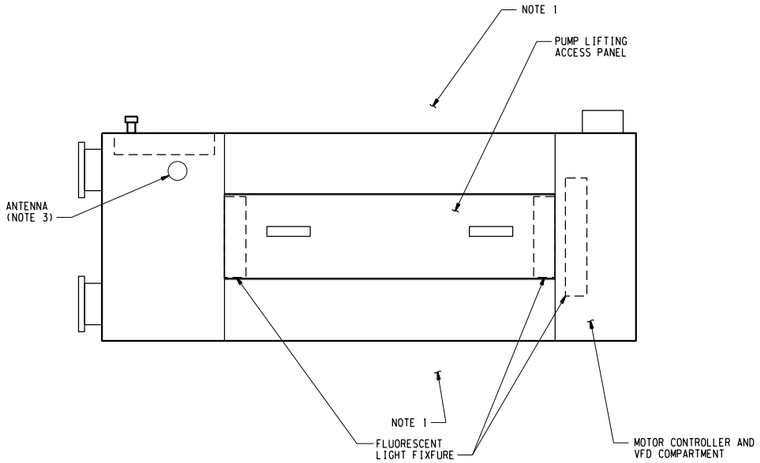
PART 2 – NOT USED

PART 3 – NOT USED

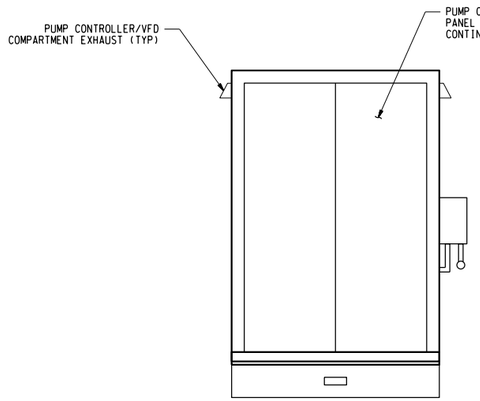
END OF SECTION

SPEC NO.

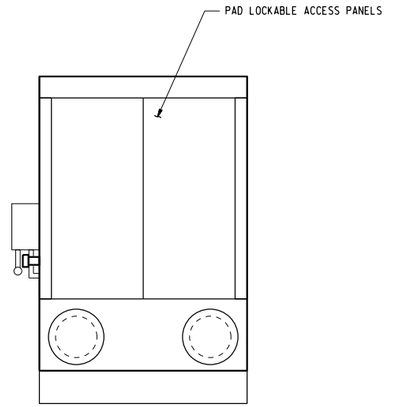
Exhibit H



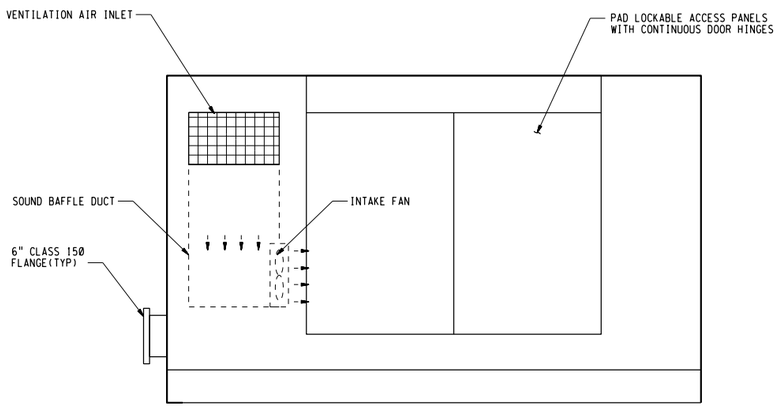
PLAN
NTS



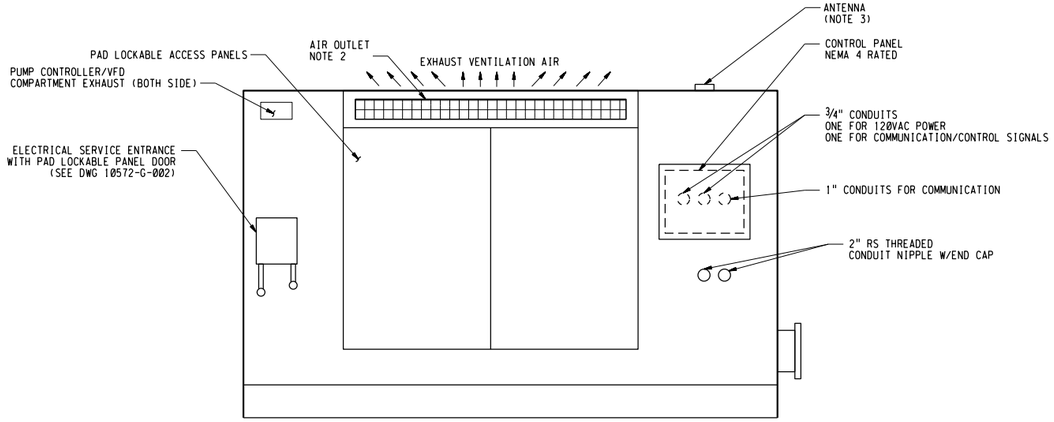
FRONT ELEVATION
NTS



REAR ELEVATION
NTS



RIGHT ELEVATION
NTS



LEFT ELEVATION
NTS

NOTES

1. PROVIDE STAIRS ON BOTH SIDES FOR EASY ACCESS TO PUMP COMPARTMENT.
2. PROVIDE WEATHER SHROUD TO PREVENT RAIN AND DEBRIS FROM ENTERING INSIDE PUMP COMPARTMENT
3. RUN ANTENNA CABLE FROM CONTROL PANEL TO ANTENNA LOCATED ON ROOF OF TRAILER. SEAL PENETRATIONS.

REGISTERED PROFESSIONAL ENGINEER
DARRELL V. SMITH
No. 15609
Exp. 12/31/17
ELECTRICAL
STATE OF CALIFORNIA

3" ON ORIGINAL DOCUMENT
0 1 2 3

NO.	DATE	REVISION	BY	REC.	APP.

DESIGN
DESIGNED BY JAMES JOHNSON-BROWN
DESIGN CHECKED BY EDWARD KAGUCHIA
DRAWN BY FACILITY DRAFTING
REVIEW
PROJECT MANAGER R.P.E. NO. C74803 DENISE V. CICALA
RECOMMENDED: SENIOR ELEC ENGR. R.P.E. NO. E15609 DARRELL V. SMITH
APPROVED: MGR OF DESIGN R.P.E. NO. C48598 SERGE V. TERENTIEFF

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

0.5 MGD PORTABLE ELECTRIC PUMP

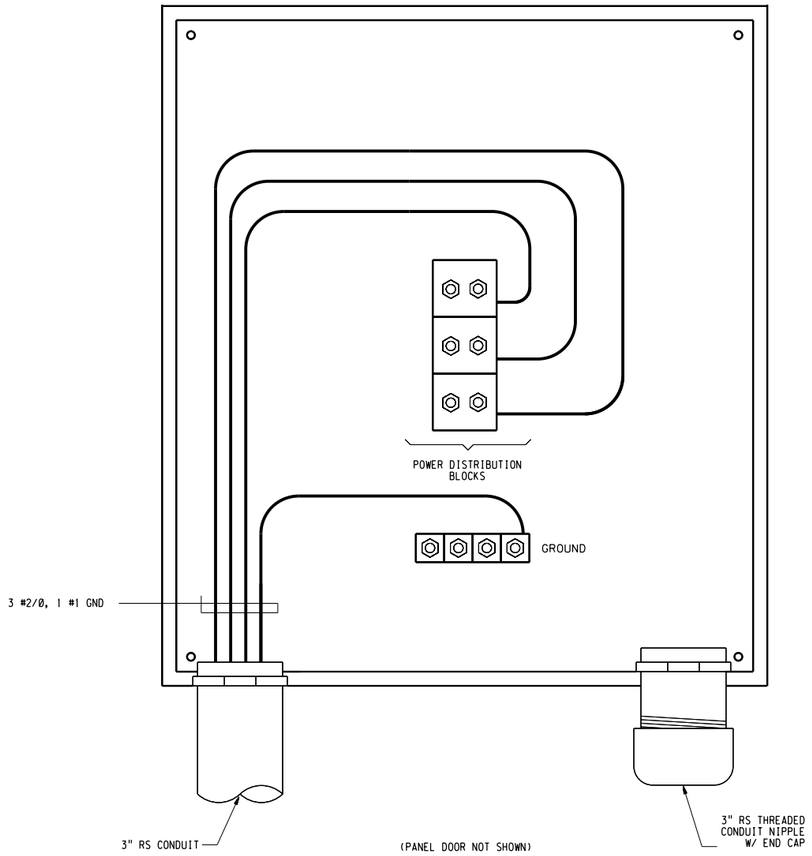
ELECTRICAL

PORTABLE PUMP TRAILER LAYOUT

PROJ NO.			
SCALE	NTS	10572-G-001	0
DATE	20DEC2016	STRUCT. DISC. NUMBER	REV.

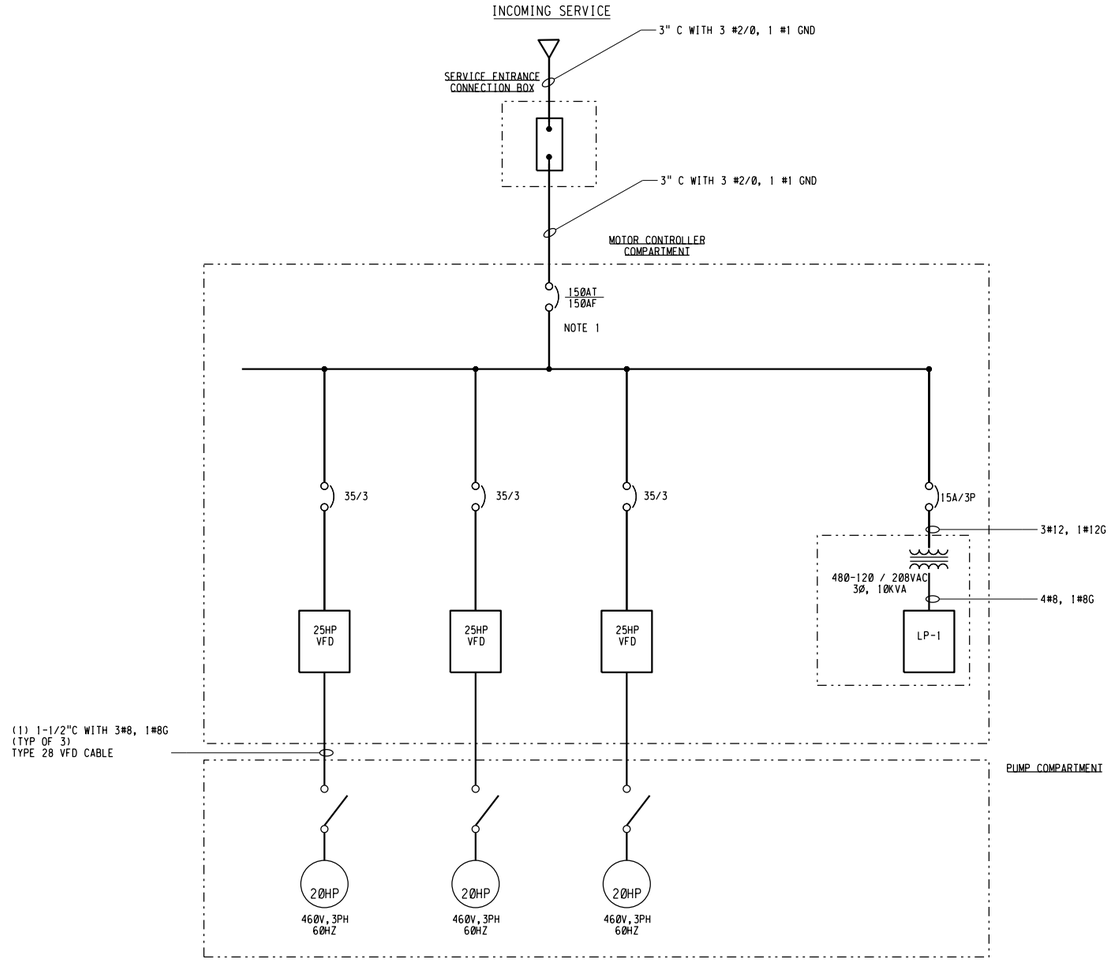
USER: wchow
DATE: 28-DEC-2016 09:25
FILE: H:\spumps\dist\misc\10572G\10572G001.R00

SPEC NO.



SERVICE ENTRANCE CONNECTION BOX

NTS



SINGLE LINE DIAGRAM

NOTES

1. PROVIDE 80A TRIP FOR OPERATION OF 2 UNITS MAX.
2. VFD, PROTECTIVE DEVICES, AND CABLES ARE DERATED FOR 50 DEGREE CELSIUS ENVIRONMENT TO ACCOMODATE 20 HP MOTORS.
3. 120V POWER FOR MAIN PUMP COMPARTMENT FAN SHALL COME FROM LP-1. PROVIDE A 10A/1P BREAKER FOR PROTECTION.
4. WIRE AND PROVIDE POWER TO THERMOSTAT (NOT SHOWN ON DRAWING) FOR MONITORING OF MOTOR CONTROLLER COMPARTMENT TEMPERATURE.

REGISTERED PROFESSIONAL ENGINEER
DARRELL V. SMITH
No. 15689
Exp. 12/31/17
ELECTRICAL
STATE OF CALIFORNIA

3" ON ORIGINAL DOCUMENT
0 1 2 3

NO.	DATE	REVISION	BY	REC.	APP.

DESIGN

DESIGNED BY	JAMES JENNIFER-BROWN
DESIGN CHECKED BY	EDWARD TAGUCHIA
DRAWN BY	FACILITY DRAFTING

REVIEW

PROJECT MANAGER R.P.E. NO. C74803	DENISE V. CICALA
RECOMMENDED: SENIOR ELEC ENGR. R.P.E. NO. E15689	DARRELL V. SMITH
APPROVED: MGR OF DESIGN R.P.E. NO. C48598	SERGE V. TERENTIEV

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

0.5 MGD PORTABLE ELECTRIC PUMP

ELECTRICAL

SINGLE-LINE DIAGRAM AND SERVICE ENTRANCE CONNECTION BOX

PROJ NO.			
SCALE	AS SHOWN	10572-G-002	0
DATE	20DEC2016	STRUCT. DISC. NUMBER	REV.

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DATE: 28-DEC-2016 09:26
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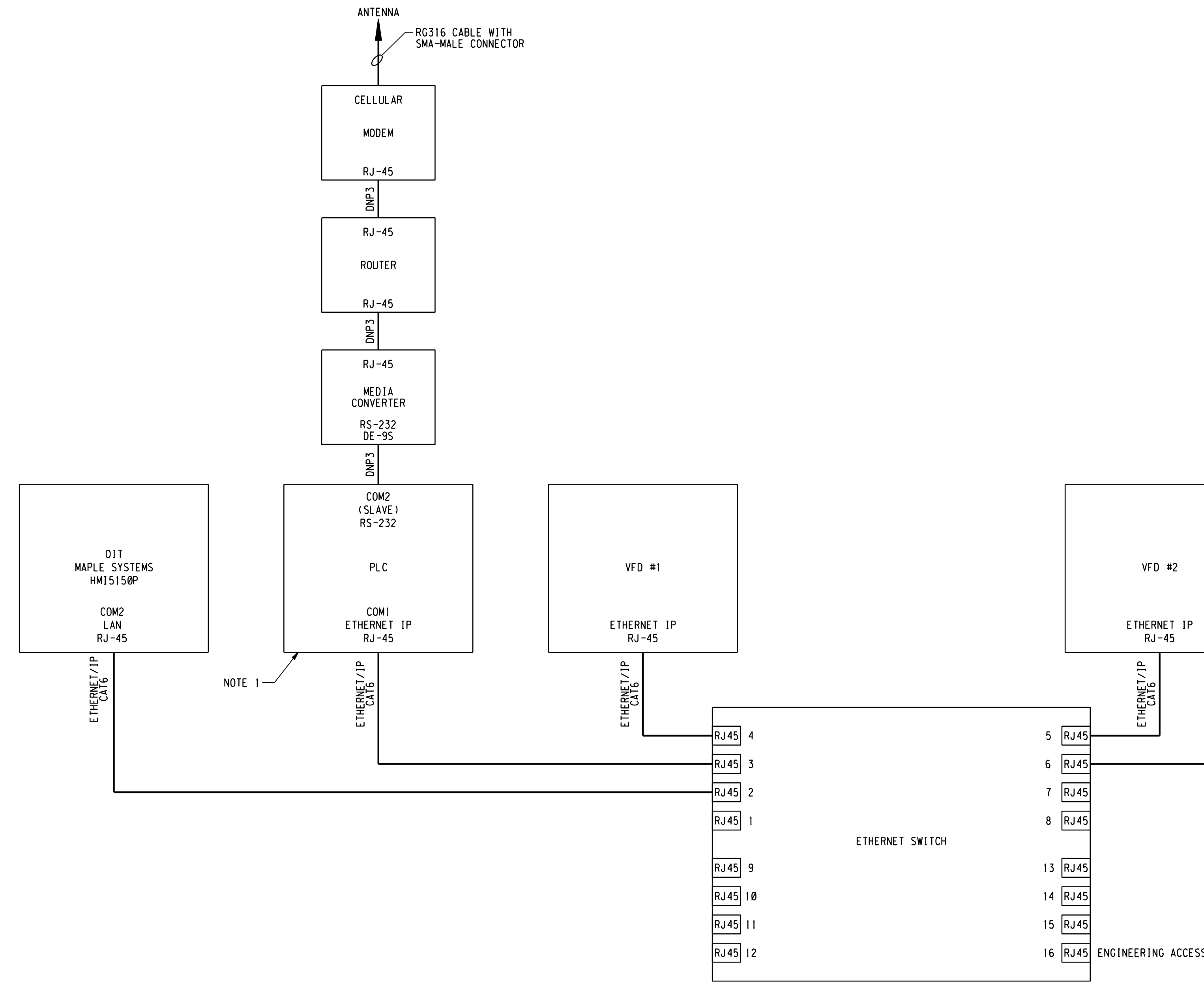


NOTES

1. SEE DWG G-005 TO G-006 FOR PLC DRAWINGS.

3" ON ORIGINAL DOCUMENT 0 1 2 3

NO.	DATE	REVISION	BY	REC.	APP.

DESIGNED BY J. ADEYINKA-BROWN
DESIGN CHECKED BY K. KAGUCHIA
DRAWN BY FACILITY DRAFTING
PROJECT MANAGER R.P.E. NO. C74803 DENISE V. CICALA
RECOMMENDED: SENIOR ELEC ENGR. R.P.E. NO. E15609 DARRELL V. SMITH
APPROVED: MGR OF DESIGN R.P.E. NO. C48598 SERGE V. TERENTIEFF

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

0.5 MGD PORTABLE ELECTRIC PUMP

ELECTRICAL
PORTABLE PUMP CONTROL SYSTEM
BLOCK DIAGRAM

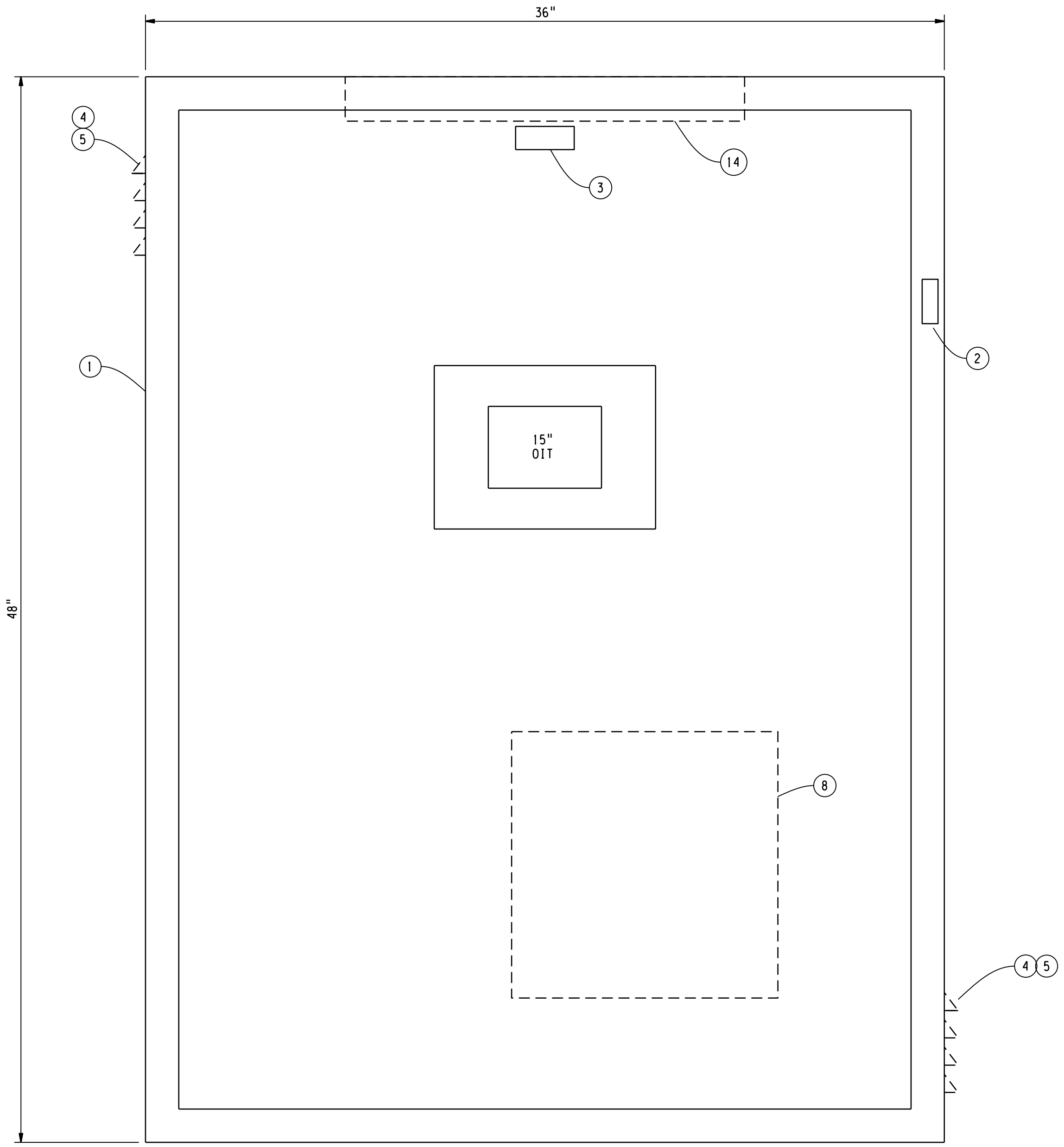
PROJ NO. | SCALE AS SHOWN | DATE 20DEC2016 | 10572-G-003 | REV. 0

SPEC NO.

USER: wchow
DATE: 28-DEC-2016 09:27
FILE: H:spumpsdistsmiscs10572Gs10572G003.r00

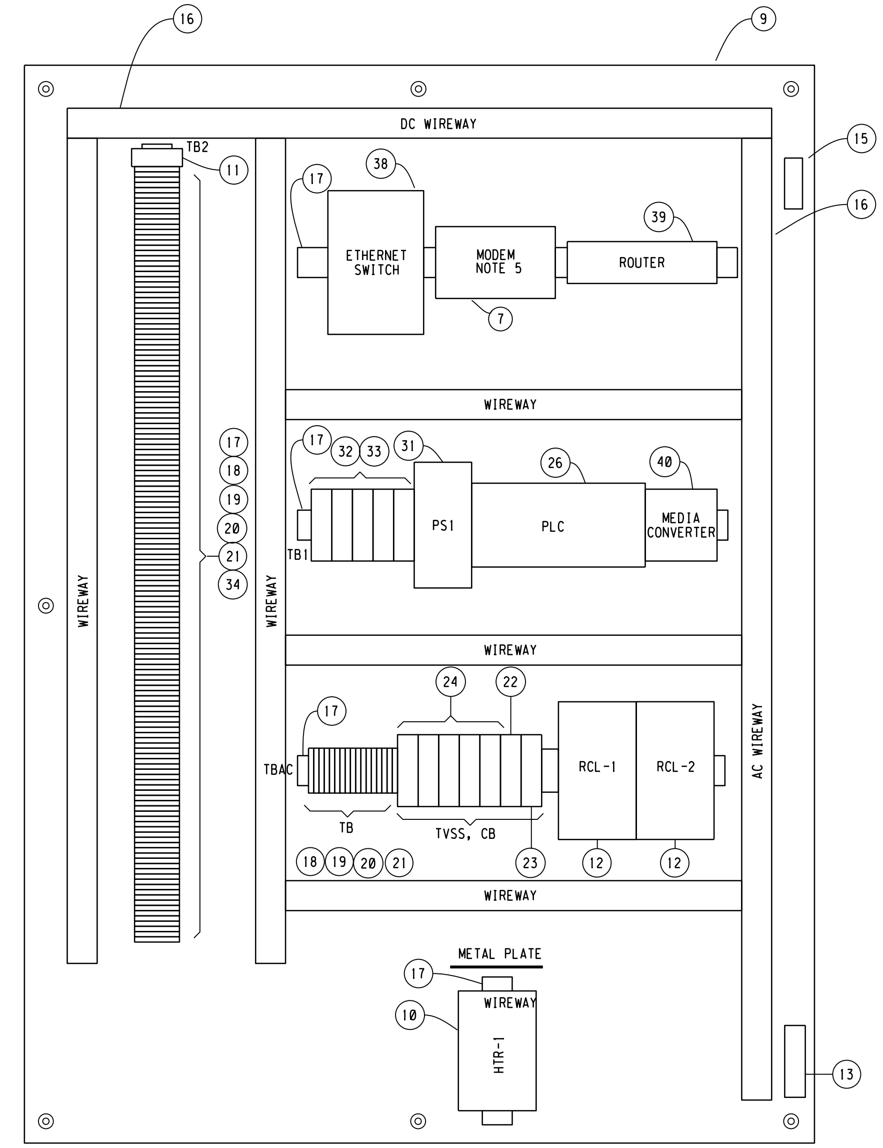
REGISTERED PROFESSIONAL ENGINEER DARRELL V. SMITH No. 15609 Exp. 12/31/17 ELECTRICAL STATE OF CALIFORNIA

SPEC NO.



INTERIOR PANEL ELEVATION

NTS



PLC BACKPANEL

NTS

MATERIAL LIST			
ITEM	REQUIRED	DESCRIPTION	REMARKS
1	1	NEMA 4 ENCLOSURE, 48" (H) X 36" (W) X 16" (D)	
2	1	PADLOCKABLE HANDLE WITH 3-POINT LATCH	
3	1	NAMEPLATE	NOTE 3
4	2	LOUVER KIT, 4.5" X 5.5"	
5	2	FILTER KIT	
6			
7	1	MODEM	NOTE 5
8	1	DATA POCKET (LARGE)	
9	1	BACK PANEL, 45"(H) X 33"(W)	
10	1	PANEL HEATER, 120VAC, 200W	
11	1	THERMOSTAT	
12	2	15A, DUPLEX, GFCI RECEPTACLE, DIN RAIL MOUNT	
13	1	GROUND BUS	
14	1	LED 115VAC LIGHT, 18" LONG, DOOR ACTIVATED SWITCH	
15	1	PANEL INTRUSION SWITCH	
16	AS REQ'D	PLASTIC WIREWAYS (1" W X 2" H)	
17	AS REQ'D	MOUNTING DIN RAIL	
18	AS REQ'D	TERMINAL BLOCK END BARRIER	
19	AS REQ'D	TERMINAL BLOCK END ANCHOR	
20	AS REQ'D	TERMINAL BLOCK GROUP MARKER	
21	AS REQ'D	TERMINAL BLOCK	NOTE 4
22	1	SURGE SUPPRESSOR	
23	1	20A, CIRCUIT BREAKER, DIN RAIL MOUNTED	
24	AS REQ'D	10A CIRCUIT BREAKER, DIN RAIL MOUNTED	
25			
26	1	PLC	
27			
28			
29			
30			
31	1	POWER SUPPLY (10A, 24VDC)	
32	1	CIRCUIT BREAKER, 24VDC, 15A, DOUBLE POLE, DIN RAIL MOUNTED	
33	AS REQ'D	CIRCUIT BREAKER, 24VDC, 5A, DIN RAIL MOUNTED	
34	AS REQ'D	FUSED TERMINAL BLOCKS W/ BLOWN FUSE INDICATOR	
35			
36			
37	1	CELLULAR ANTENNA (NOT SHOWN)	NOTE 6
38	1	ETHERNET SWITCH	
39	1	ROUTER	
40	1	MEDIA CONVERTER (DB-9 TO RJ-45)	

NOTES

1. REFER TO PROPOSAL Q1706 FOR COMPLETE ITEM DESCRIPTION AND OTHER ACCEPTABLE PRODUCTS.
2. NOT USED
3. ATTACH RTU ID LAMICOID LABEL WITH 1/4" SIZE LETTERS, ON DOOR, IN THE CENTER., 1" BELOW TOP OF DOOR. LABEL TO READ: PLC XXXX

   XXXX = SEPP102
4. ATTACH TERMINAL NUMBER TO EACH TERMINAL.
5. CELLULAR MODEM WILL BE FURNISHED BY THE DISTRICT.
6. MOUNT ANTENNA ON TOP OF PORTABLE PUMP.

3" ON ORIGINAL DOCUMENT
0 1 2 3

NO.	DATE	REVISION	BY	REC.	APP.

DESIGNED BY	JAKIRA ADEYINFA-BROWN
DESIGN CHECKED BY	MUNANG KAGUCHIA
DRAWN BY	FACILITY DRAFTING
PROJECT MANAGER R.P.E. NO. C74803	DENISE V. CICALA
PROJECT ENGINEER R.P.E. NO.	
RECOMMENDED: SENIOR ELEC ENGR. R.P.E. NO. E15609	DARRELL V. SMITH
APPROVED: MGR OF DESIGN R.P.E. NO. C48598	SERGE V. TERENTIEFF

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

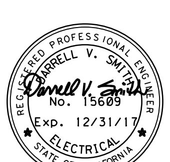
0.5 MGD PORTABLE ELECTRIC PUMP

ELECTRICAL

OP/NET SYSTEM
PLC XXXX CABINET LAYOUT

PROJ NO.
SCALE AS SHOWN
DATE 20DEC2016

STRUCT. DISC. NUMBER	REV.
10572-G-004	0



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DATE: 28-DEC-2016 09:27
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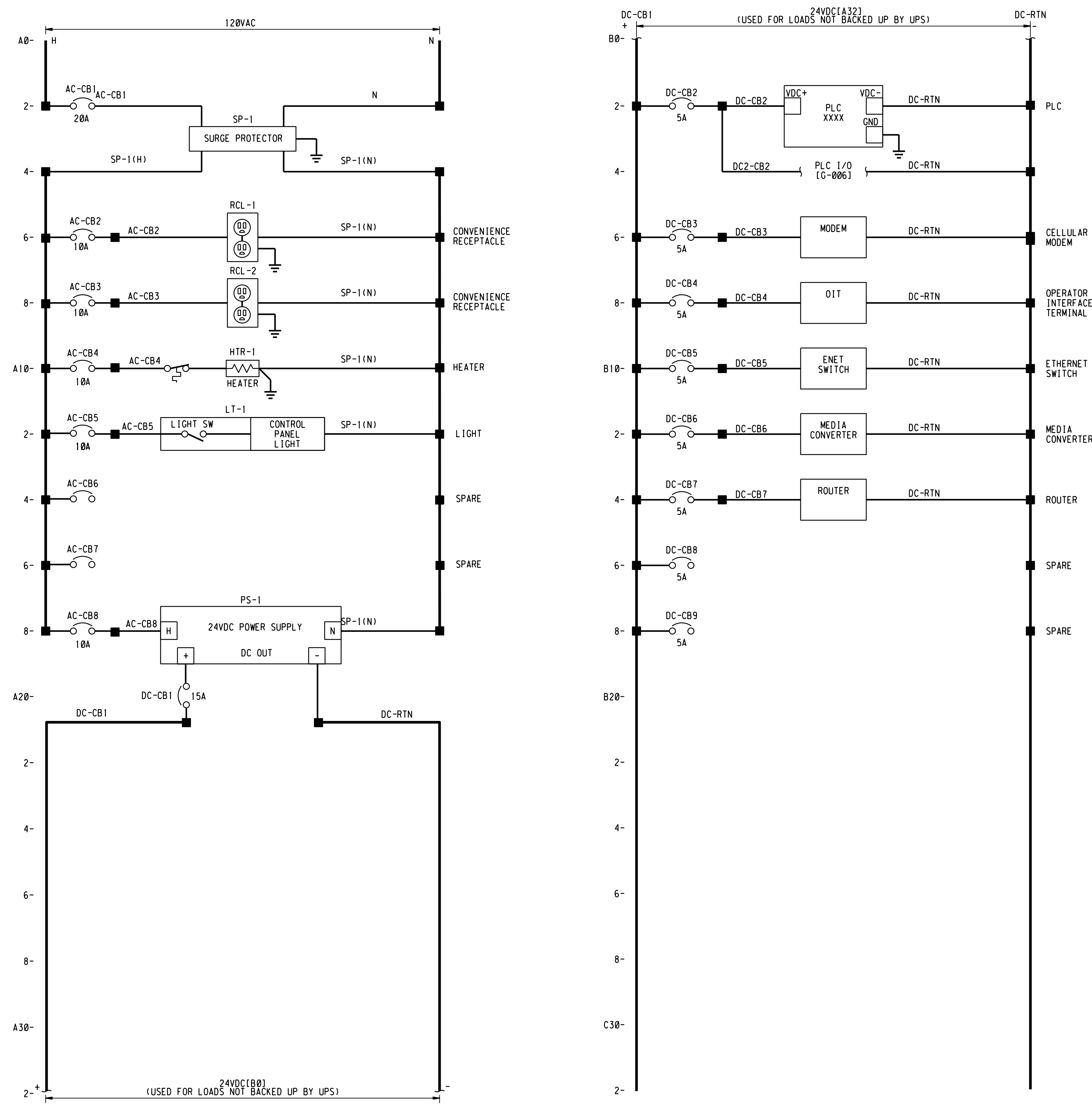
SPEC NO.



NOTES

1. XXXX=SEPP102

3" ON ORIGINAL DOCUMENT
0 1 2 3

NO.	DATE	REVISION	BY	REC.	APP.

DESIGN
DESIGNED BY JAKIRA ADEYINFA-BROWN
DESIGN CHECKED BY ADRIANE KAGUCHIA
DRAWN BY FACILITY DRAFTING
PROJECT MANAGER R.P.E. NO. C74803 DENISE V. CICALA
REVIEW
RECOMMENDED: SENIOR ELEC ENGR. R.P.E. NO. E15609 DARRELL V. SMITH
APPROVED: MGR OF DESIGN R.P.E. NO. C48598 SERGE V. TERENTIEFF

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

0.5 MGD PORTABLE ELECTRIC PUMP

ELECTRICAL

OP/NET SYSTEM
CONTROL PANEL ELEMENTARY DIAGRAM

SHEET 1 OF 2

PROJ NO.
SCALE NONE
DATE 20DEC2016

10572-G-005 | REV. 0
STRUCT. DISC. NUMBER

REGISTERED PROFESSIONAL ENGINEER DARRELL V. SMITH No. 15609 Exp. 12/31/17 ELECTRICAL STATE OF CALIFORNIA

USER: wchow
DATE: 28-DEC-2016 09:41
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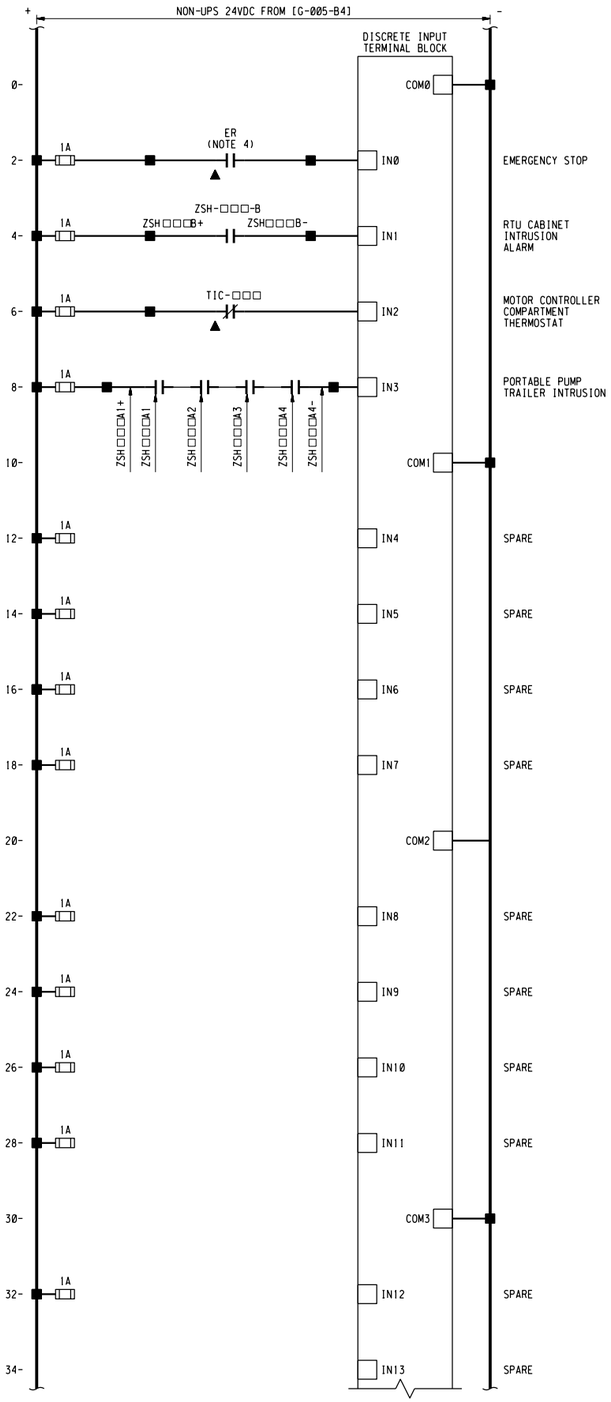
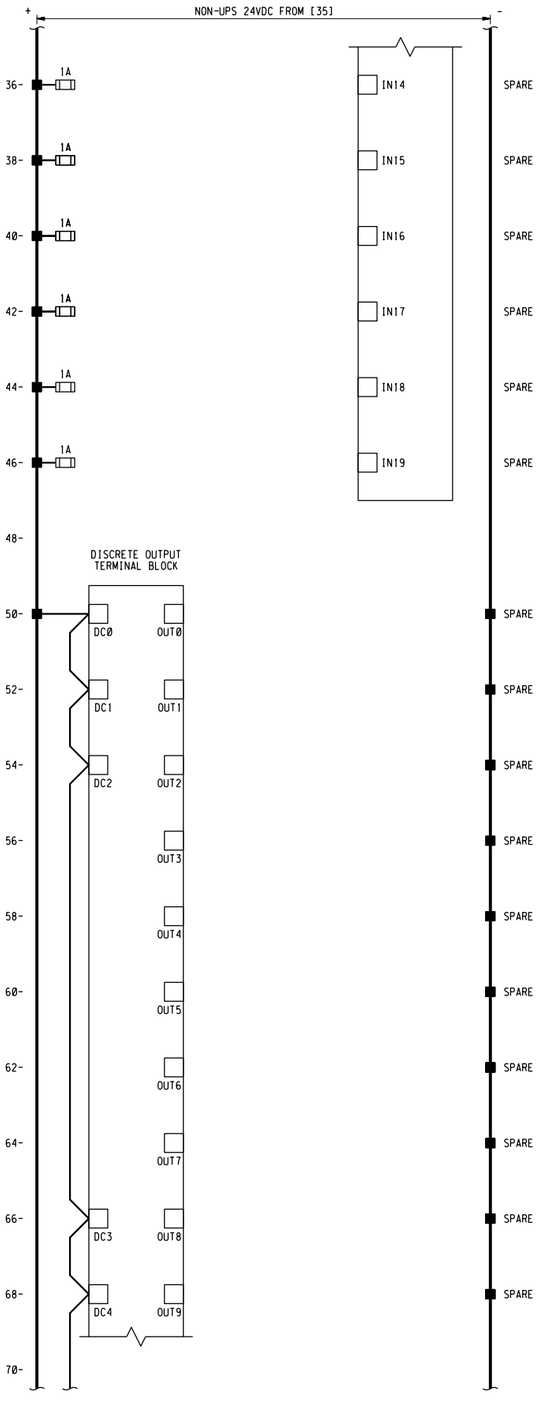
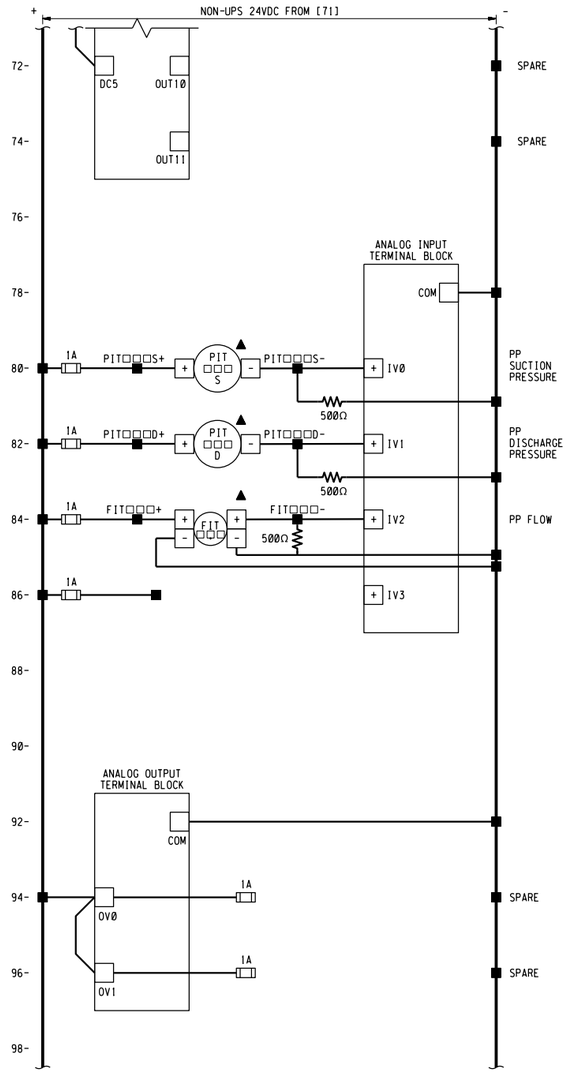
SPEC NO.







NOTES

1. FOR ELECTRICAL LEGEND AND SYMBOLS SEE DRAWING 9492-G-001.
2. ▲ INDICATES DEVICE LOCATED IN THE FIELD.
3. □□□ = 001 FOR LOOP NUMBER.
4. THE E-STOP IN THE VFD COMPARTMENT AND THE PUMP COMPARTMENT SHALL BE CONNECTED IN SERIES AND DIRECTLY KILL POWER TO ALL VFD CONTROLLERS. THE E-STOPS SHALL ALSO BE CONNECTED TO AN INTERPOSING RELAY 'ER' FOR STATUS INPUT TO THE PLC.

REGISTERED PROFESSIONAL ENGINEER
DARRELL V. SMITH
No. 15609
Exp. 12/31/17
ELECTRICAL
STATE OF CALIFORNIA

3" ON ORIGINAL DOCUMENT
0 1 2 3

NO.	DATE	REVISION	BY	REC.	APP.

DESIGN
DESIGNED BY JAMES DOUGLAS-BROWN
DESIGN CHECKED BY EDWARD TAGUCHIA
DRAWN BY FACILITY DRAFTING
REVIEW
PROJECT MANAGER R.P.E. NO. C74803 DENISE V. CICALA
RECOMMENDED: SENIOR ELEC ENGR. R.P.E. NO. E15609 DARRELL V. SMITH
APPROVED: MGR OF DESIGN R.P.E. NO. C48598 SERGE V. TERENTIEFF

EAST BAY MUNICIPAL UTILITY DISTRICT
OAKLAND, CALIFORNIA

0.5 MGD PORTABLE ELECTRIC PUMP

ELECTRICAL

OP/NET SYSTEM
CONTROL PANEL ELEMENTARY DIAGRAM

SHEET 2 OF 2

PROJ NO.			
SCALE	NONE	10572-G-006	0
DATE	20DEC2016	STRUCT. DISC. NUMBER	REV.

USER: wchow
DATE: 28-DEC-2016 09:39
FILE: H:\pumps\dist\misc\10572G\10572G006.r00