EAST BAY MUNICIPAL UTILITY DISTRICT

REQUEST FOR QUOTATION (RFQ) No. 2607
for
MAIN WASTEWATER TREATMENT PLANT (MWWTP) SECONDARY REACTORS BUTTERFLY VALVES

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

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

Bids Due
by
2:00 p.m.
on
May 13, 2026

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

RESPONSE DELIVERED BY SERVICE (UPS, FedEx, DHL, etc., during business hours: 8:00 AM – 3:30 PM only) to:	RESPONSE DELIVERED BY MAIL (U.S. Postal Service) to:	RESPONSE HAND-DELIVERED (during business hours: 8:00 AM – 4:00 PM only)
EBMUD–Purchasing Division MAIN WASTEWATER TREATMENT PLANT (MWWTP) SECONDARY REACTORS BUTTERFLY VALVES – RFQ 2607 375 11th Street Oakland, CA 94607	EBMUD–Purchasing Division MAIN WASTEWATER TREATMENT PLANT (MWWTP) SECONDARY REACTORS BUTTERFLY VALVES – RFQ 2607 P.O. Box 24055 Oakland, CA 94623	EBMUD–Purchasing Division MAIN WASTEWATER TREATMENT PLANT (MWWTP) SECONDARY REACTORS BUTTERFLY VALVES – RFQ 2607 Purchasing Office 375-11TH Street, 1st Floor Oakland, CA 94607

EAST BAY MUNICIPAL UTILITY DISTRICT

RFQ No. 2607
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TABLE OF CONTENTS

ATTACHMENTS

I. STATEMENT OF WORK

A. SCOPE

It is the intent of these specifications, terms, and conditions to describe requirement to furnish and delivery, f.o.b. to the East Bay Municipal Utility District's (District) Main Wastewater Treatment Plant (MWWTP), 2020 Wake Avenue, Oakland, CA 94607, fifteen butterfly valves, as described and specified within**.**

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 providing AWWA butterfly valves sized 30-inch and larger for at least twenty (20) years.

    b. Bidder shall be a certified or authorized manufacturer, dealer, or provider.

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

C. SPECIFIC REQUIREMENTS

1. Supplier (or Manufacturer) shall furnish, certify, and provide manufacturer's services for fifteen (15) butterfly valves as described in the specifications of this Contract (Exhibit F – List of Specifications):

    a. Nine (9) butterfly valves with manual operator

    b. Four (4) butterfly valves with electric motor actuator

    c. Two (2) butterfly valves with pneumatic actuator

2. The District intends to partially assign this Contract to the Contractor for the SD-462 Project. The award for the SD-462 project is anticipated at the end of 2026. By agreeing to this Contract, the Supplier acknowledges this intent and agrees to such an assignment on terms set forth in the "Partial Assignment for Purchase Main Wastewater Treatment Plant (MWWTP) Secondary Reactors Butterfly Valves" form (EXHIBIT I – Partial Assignment).

3. **APPROVED MANUFACTURERS (See I.C.4 for Pre-Approved Equal Procedure)**

Diameter Size	Description	Approved Manufacturers
30"	BUTTERFLY VALVE W/ CHAINWHEEL OPERATOR CONNECTING RAS A & B	**Dezurik, Pratt, or pre-approved equal**
48"	BUTTERFLY VALVE W/ CHAINWHEEL OPERATOR FOR SECONDARY INFLUENT TO REACTOR 5	
18"	BUTTERFLY VALVE W/ CHAINWHEEL OPERATOR FOR RAS TO REACTOR 5	
18"	BUTTERFLY VALVE W/ HANDWHEEL OPERATOR FOR REACTOR 5 DRAIN	
48"	BUTTERFLY VALVE W/ CHAINWHEEL OPERATOR FOR SECONDARY INFLUENT TO REACTOR 6	
18"	BUTTERFLY VALVE W/ CHAINWHEEL OPERATOR FOR RAS TO REACTOR 6	
18"	BUTTERFLY VALVE W/ HANDWHEEL OPERATOR FOR REACTOR 6 DRAIN	
30"	BUTTERFLY VALVE W/ HANDWHEEL OPERATOR FOR RAS PUMP 3	
30"	BUTTERFLY VALVE W/ HANDWHEEL OPERATOR FOR RAS PUMP 4	
42"	BUTTERFLY VALVE W/ ELECTRIC ACTUATOR FOR SECONDARY INFLUENT TO REACTOR 5	**Dezurik, Pratt, Limitorque, or pre-approved equal**
18"	BUTTERFLY VALVE W/ ELECTRIC ACTUATOR FOR RAS TO REACTOR 5	
42"	BUTTERFLY VALVE W/ ELECTRIC ACTUATOR FOR SECONDARY INFLUENT TO REACTOR 6	
18"	BUTTERFLY VALVE W/ ELECTRIC ACTUATOR FOR RAS TO REACTOR 6	
30"	BUTTERFLY VALVE W/ PNEUMATIC ACTUATOR FOR RAS PUMP 3	**Dezurik, Pratt, or pre-approved equal**
30"	BUTTERFLY VALVE W/ PNEUMATIC ACTUATOR FOR RAS PUMP 4	

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

4. **PRE-APPROVED EQUAL PROCEDURE**

Manufacturer/Models other than those listed will be considered as part of this bid submittal process, provided that, by **April 27, 2026**, interested parties shall have submitted substitutions for approval as detailed below:

a. 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

Outside of mailing envelope shall be marked "Submittal Request for Substitution, RFQ No. 2607." The requests for substitution must be submitted by **April 27, 2026**.

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. Proposals shall also include references showing bidder meets minimum qualifications of I.B above. The burden of proof as to qualifications, 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.**

D. **DELIVERY REQUIREMENTS**

Equipment shall be on-site at the MWWTP no later than July 19, 2027.

See EXHIBIT F7 – 33 12 16.15 AWWA Butterfly Valves for delivery requirements.

E. INSPECTION

The District will inspect and witness testing as outlined in EXHIBIT F2 – 01 45 27 Shop Inspection.

F. FAILURE TO MEET SPECIFICATIONS

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

II. CALENDAR OF EVENTS

EVENT	DATE/LOCATION
RFQ Issued	April 15, 2026
Deadline For Submission of Questions	April 22, 2026
Deadline For Submittal of Proposed Pre-Approval Substitutions	April 27, 2026

Addendum to Announce Pre-Approved Equivalents (if necessary)	May 5, 2026
Response Due	**May 13, 2026** by 2:00 p.m. At this time all bids will be opened publicly in the EBMUD Board Room at 375 Eleventh St., Oakland, CA 94607*
Anticipated Contract Start Date	June 24, 2026
Procurement Schedule Submittal	Within 30 calendar days after contract start date
Initial Submittal Deadline	August 10, 2026
Submittal Review Deadline	September 21, 2026
Equipment Delivery Deadline	**July 19, 2027**

Note: All dates are subject to change **by District**.
Bidders are responsible for reviewing **https://www.ebmud.com/business-center/materials-and-supplies-bids/current-requests-quotation-rfqs/** for any published addenda. Hard copies of addenda will not be mailed out.

III. DISTRICT PROCEDURES, TERMS, AND CONDITIONS

A. RFQ ACCEPTANCE AND AWARD

1. RFQ responses will be evaluated to determine that they are responsive, responsible, and that they meet the specifications as stated in this RFQ.

2. The District reserves the right to award to a single or to multiple Contractors, dependent upon what provides the lowest overall cost to the District.

3. The District has the right to decline to award this contract or any part of it for any reason.

4. Any specifications, terms, or conditions, issued by the District, or those included in the bidder's submission, in relation to this RFQ, may be incorporated into any purchase order or contract that may be awarded as a result of this RFQ.

5. Award of contract. The District reserves the right to reject any or all proposals, to accept one part of a proposal and reject the other, unless the bidder stipulates to the contrary, and to waive minor technical defects and administrative errors, as the interest of the District may require. Award will be made, or proposals rejected by the District as soon as possible after bids have been opened.

B. 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.

C. NOTICE OF INTENT TO AWARD AND PROTESTS

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

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

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

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

Protests must be mailed, hand delivered, or emailed to the Manager of Purchasing, Mailstop 102, East Bay Municipal Utility District, 375 Eleventh Street, Oakland, CA 94607 or P.O. Box 24055, Oakland, 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 workday time limit. Any bid protest filed with any other District office shall be forwarded immediately to the Manager of Purchasing.

The bid protester can appeal the determination to the requesting organization’s Department Director. The appeal must be submitted to the Department Director no later than five workdays from the date which the protest determination was transmitted by the District, to the protesting party. The appeal shall focus on the points raised in the original protest, and no new points shall be raised in the appeal.

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

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

D. METHOD OF ORDERING

1. Written POs may be issued upon approval of written itemized quotations received from the Contractor.

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

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

E. TERM / TERMINATION

1. The term of the contract, which may be awarded pursuant to this RFQ, will be approximately two (2) years.

2. his 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.

F. WARRANTY

1. For any contract awarded pursuant to this RFQ, Contractor expressly warrants that all goods furnished will conform strictly with the specifications and requirements contained herein and with all approved submittals, samples and/or

models and information contained or referenced therein, all affirmations of fact or promises, and will be new, of merchantable quality, free from defects in materials and workmanship, including but not limited to leaks, breaks, penetrations, imperfections, corrosion, deterioration, or other kinds of product deficiencies. Contractor expressly warrants that all goods to be furnished will be fit and sufficient for the purpose(s) intended. Contractor guarantees all products and services against faulty or inadequate design, manufacture, negligent or improper transport, handling, assembly, installation or testing, and further guaranties that there shall be strict compliance with all manufacturer guidelines, recommendations, and requirements, and that Contractor guaranties that it will conform to all requirements necessary to keep all manufacturer warranties and guarantees in full force and effect. Contractor's aforesaid warranties and guarantees shall be in full force and effect for a period of one year from the date of acceptance by the District but shall continue in full force and effect following notice from District of any warranty or guarantee issue, until such issue has been fully resolved to the satisfaction of District.

G. INVOICING

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

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

3. Invoices shall contain, at a minimum, District purchase order number, invoice number, remit to address, and itemized products and/or services description.

4. The District will pay Contractor in an amount not to exceed the total amount quoted in the RFQ response.

5. Supplier shall submit invoices for payment in accordance with the following schedule:

    a. Payment 1 – 15% upon approval of submittals and calculations

    b. Payment 2 – 15% upon submission of certified letter at time of release to production by the Manufacturer

    c. Payment 3 – 65% upon delivery

    d. Payment 4 – 2.5% upon completion of start-up, testing, and training for valves installed in first year of SD-462 construction (2027)

    e. Payment 5 – 2.5% upon completion of start-up, testing, and training for valves installed in second year of SD-462 construction (2028)

IV. RFQ RESPONSE SUBMITTAL INSTRUCTIONS AND INFORMATION

A. DISTRICT CONTACTS

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

TECHNICAL SPECIFICATIONS:
Attn: Pauline Laikijrung, Assistant Engineer
EBMUD-Wastewater Engineering Div. / Wastewater Dept.
E-Mail: pauline.laikijrung@ebmud.com
PHONE: (510) 287-1867

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

AFTER AWARD:
Attn: Pauline Laikijrung, Assistant Engineer
EBMUD-Wastewater Engineering Div. / Wastewater Dept.
E-Mail: pauline.laikijrung@ebmud.com
PHONE: (510)287-1867

B. SUBMITTAL OF RFQ RESPONSE

1. Responses must be submitted in accordance with Exhibit A – RFQ Response Packet, including all additional documentation stated in the "Required Documentation and Submittals" section of Exhibit A.

2. Late and/or unsealed responses will not be accepted.

3. RFQ responses submitted via electronic transmissions will not be accepted. Electronic transmissions include faxed RFQ responses or those sent by electronic mail ("e-mail").

4. All RFQ responses must be SEALED and received by 2:00 p.m. on the due date specified in the Calendar of Events. Any RFQ response received after that time/date, or at a place other than the stated addresses, cannot be considered and will be returned to the bidder unopened. The EBMUD mailroom and Purchasing Division timestamp shall be considered the official timepiece for the purpose of establishing the actual receipt of RFQ responses.

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

   Mailed (USPS):

   East Bay Municipal Utility District
   MAIN WASTEWATER TREATMENT (MWWTP) SECONDARY REACTORS BUTTERFLY VALVES
   RFQ No. 2607
   EBMUD–Purchasing Division
   P.O. Box 24055
   Oakland, CA 94623

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

   East Bay Municipal Utility District
   MAIN WASTEWATER TREATMENT (MWWTP) SECONDARY REACTORS BUTTERFLY VALVES
   RFQ No. 2607
   EBMUD–Purchasing Division
   375 Eleventh Street, First Floor
   Oakland, CA 94607

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

6. All costs required for the preparation and submission of an RFQ response shall be borne by the bidder.

7. California Government Code Section 4552: In submitting an RFQ response to a public purchasing body, the bidder offers and agrees that if the RFQ response is accepted, it will assign to the purchasing body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2, commencing with Section 16700, of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, materials, or services by the bidder for sale to the purchasing body pursuant to the RFQ response. Such assignment shall be made and become effective at the time the purchasing body tenders final payment to the bidder.

8. Bidder expressly acknowledges that it is aware that if a false claim is knowingly submitted (as the terms “claim” and “knowingly” are defined in the California False Claims Act, Cal. Gov. Code, §12650 et seq.), the District will be entitled to civil remedies set forth in the California False Claim Act.

9. The RFQ response shall remain open to acceptance and is irrevocable for a period of one hundred eighty (180) days, unless otherwise specified in the RFQ documents.

10. It is understood that the District reserves the right to reject any or all RFQ responses.

11. RFQ responses, in whole or in part, are NOT to be marked confidential or proprietary. The District may refuse to consider any RFQ response or part thereof so marked. RFQ responses submitted in response to this RFQ may be subject to public disclosure. The District shall not be liable in any way for disclosure of any such records.

EXHIBIT A
RFQ RESPONSE PACKET
RFQ No. 2607 – MAIN WASTEWATER TREATMENT PLANT (MWWTP)
SECONDARY REACTORS BUTTERFLY VALVES

To: The EAST BAY MUNICIPAL UTILITY District ("District")

From: _____

(Official Name of Bidder)

RFQ RESPONSE PACKET GUIDELINES

- **BIDDERS ARE TO SUBMIT ONE (1) ORIGINAL HARDCOPY RFQ RESPONSE WITH ORIGINAL INK SIGNATURES, CONTAINING THE FOLLOWING IN THEIR ENTIRETY:**
  - **EXHIBIT A – RFQ RESPONSE PACKET**
    - **INCLUDING ALL REQUIRED DOCUMENTATION AS DESCRIBED IN "EXHIBIT A-REQUIRED DOCUMENTATION AND SUBMITTALS"**

- **ALL PRICES AND NOTATIONS MUST BE PRINTED IN INK OR TYPEWRITTEN; NO ERASURES ARE PERMITTED; ERRORS MAY BE CROSSED OUT AND CORRECTIONS PRINTED IN INK OR TYPEWRITTEN ADJACENT AND MUST BE INITIALED IN INK BY PERSON SIGNING THE RFQ RESPONSE.**

- **BIDDERS THAT DO NOT COMPLY WITH THE REQUIREMENTS, AND/OR SUBMIT AN INCOMPLETE RFQ RESPONSE MAY BE SUBJECT TO DISQUALIFICATION AND THEIR RFQ RESPONSE REJECTED IN TOTAL.**

- **IF BIDDERS ARE MAKING <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 BY INSERTING THEIR OWN LANGUAGE OR FALSE CLAIMS IN THEIR RESPONSE. ANY EXCEPTIONS AND CLARIFICATIONS MUST BE PLACED IN THE "EXCEPTIONS/ CLARIFICATIONS" PAGE, NOT BURIED IN THE PROPOSAL ITSELF."**

EBMUD

BIDDER INFORMATION AND ACCEPTANCE

1. The undersigned declares that all RFQ documents, including, without limitation, the RFQ, Addenda, and Exhibits, have been read and that the terms, conditions, certifications, and requirements are agreed to.

2. The undersigned is authorized to offer, and agrees to furnish, the articles and services specified in accordance with the RFQ documents.

3. The undersigned acknowledges acceptance of all addenda related to this RFQ.

4. The undersigned hereby certifies to the District that all representations, certifications, and statements made by the bidder, as set forth in this RFQ Response Packet and attachments, are true and correct and are made under penalty of perjury pursuant to the laws of California.

5. The undersigned acknowledges that the bidder is, and will be, in good standing in the State of California, with all the necessary licenses, permits, certifications, approvals, and authorizations necessary to perform all obligations in connection with this RFQ and associated RFQ documents.

6. It is the responsibility of each bidder to be familiar with all of the specifications, terms, and conditions and, if applicable, the site condition. By the submission of an RFQ response, the bidder certifies that if awarded a contract it will make no claim against the District based upon ignorance of conditions or misunderstanding of the specifications.

7. Patent indemnity: Contractors who do business with the District shall hold the District, its Directors, officers, agents, and employees, harmless from liability of any nature or kind, including cost and expenses, for infringement or use of any patent, copyright, or other proprietary right, secret process, patented or unpatented invention, article, or appliance furnished or used in connection with the contract or purchase order.

8. Insurance certificates are not required at the time of submission. However, by signing Exhibit A – RFQ Response Packet, the bidder agrees to meet the minimum insurance requirements stated in the RFQ. This documentation must be provided to the District prior to execution of an agreement by the District and shall include an insurance certificate which meets the minimum insurance requirements, as stated in the RFQ.

9. The undersigned acknowledges that RFQ responses, in whole or in part, are NOT to be marked confidential or proprietary. The District may refuse to consider any RFQ response or part thereof so marked. RFQ responses submitted in response to this RFQ may be subject to public disclosure. The District shall not be liable in any way for disclosure of any such records.

10. The undersigned bidder hereby submits this RFQ response and binds itself on award to the District under this RFQ to execute in accordance with such award a contract and to furnish the bond or bonds and insurance required by the RFQ. The RFQ, subsequent Addenda, bidder's Response Packet, and any attachments, shall constitute the Contract, and all provisions thereof are hereby accepted.

11. The undersigned acknowledges ***ONE*** of the following (please check only one box):

☐ Bidder is not an SBE and is ineligible for any bid preference; **OR**

☐ Bidder is an SBE or DVBE as described in the Contract Equity Program (CEP) and Equal Employment Opportunity (EEO) Guidelines, is requesting a 7% bid preference, and has completed the CEP and EEO forms at the hyperlink contained in the CEP and EEO section of this Exhibit A.

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

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

Street Address Line 1: _____

Street Address Line 2: _____

City: _____ State: _____ Zip Code: _____

Webpage: _____

Type of Entity / Organizational Structure (check one):

☐ Corporation ☐ Joint Venture

☐ Limited Liability Partnership ☐ Partnership

☐ Limited Liability Corporation ☐ Non-Profit / Church

☐ Other: _____

Jurisdiction of Organization Structure: _____

Date of Organization Structure: _____

Federal Tax Identification Number: _____

Department of Industrial Relations (DIR) Registration Number: _____

Primary Contact Information:

Name / Title: _____

Telephone Number: _____ Fax Number: _____

E-mail Address: _____

Street Address Line 1: _____

City: _____ State: _____ Zip Code: _____

SIGNATURE: _____

Name and Title of Signer (printed): _____

Dated this _____ day of _____ 20_____

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.

Item	Description	Estimated Quantity	Unit Cost	Extended Cost
1	30" Butterfly Valve w/ Chainwheel Operator Connecting RAS A & B, as specified within. Butterfly Valve Manufacturer _____ Model _____	1 ea.	$	$
2	48" Butterfly Valve w/ Chainwheel Operator for Secondary Influent to Reactor 5, as specified within. Butterfly Valve Manufacturer _____ Model _____	1 ea.	$	$
3	42" Butterfly Valve w/ Electric Actuator for Secondary Influent to Reactor 5, as specified within. Butterfly Valve Manufacturer _____ Model _____ Electric Actuator Manufacturer _____ Model _____	1 ea.	$	$
4	18" Butterfly Valve w/ Chainwheel Operator for RAS to Reactor 5, as specified within. Butterfly Valve Manufacturer _____ Model _____	1 ea.	$	$

Item	Description	Estimated Quantity	Unit Cost	Extended Cost
5	18” Butterfly Valve w/ Electric Actuator for RAS to Reactor 5, as specified within. Butterfly Valve Manufacturer _____ Model _____ Electric Actuator Manufacturer _____ Model _____	1 ea.	$	$
6	18” Butterfly Valve w/ Handwheel Operator for Reactor 5 Drain, as specified within. Butterfly Valve Manufacturer _____ Model _____	1 ea.	$	$
7	48” Butterfly Valve w/ Chainwheel Operator for Secondary Influent to Reactor 6, as specified within. Butterfly Valve Manufacturer _____ Model _____	1 ea.	$	$
8	42” Butterfly Valve w/ Electric Actuator for Secondary Influent to Reactor 6, as specified within. Butterfly Valve Manufacturer _____ Model _____ Electric Actuator Manufacturer _____ Model _____	1 ea.	$	$
9	18” Butterfly Valve w/ Chainwheel Operator for RAS to Reactor 6, as specified within. Butterfly Valve Manufacturer _____ Model _____	1 ea.	$	$
10	18” Butterfly Valve w/ Electric Actuator for RAS to Reactor 6, as specified within. Butterfly Valve Manufacturer _____ Model _____ Electric Actuator Manufacturer _____ Model _____	1 ea.	$	$

Item	Description	Estimated Quantity	Unit Cost	Extended Cost
11	18” Butterfly Valve w/ Handwheel Operator for Reactor 6 Drain, as specified within. Butterfly Valve Manufacturer _____ Model _____	1 ea.	$	$
12	30” Butterfly Valve w/ Pneumatic Actuator for RAS Pump 3, as specified within. Butterfly Valve Manufacturer _____ Model _____ Pneumatic Actuator Manufacturer _____ Model _____	1 ea.	$	$
13	30” Butterfly Valve w/ Handwheel Operator for RAS Pump 3, as specified within. Butterfly Valve Manufacturer _____ Model _____	1 ea.	$	$
14	30” Butterfly Valve w/ Pneumatic Actuator for RAS Pump 4, as specified within. Butterfly Valve Manufacture _____ Model _____ Pneumatic Actuator Manufacturer _____ Model _____	1 ea.	$	$
15	30” Butterfly Valve w/ Handwheel Operator for RAS Pump 4, as specified within. Butterfly Valve Manufacturer _____ Model _____	1 ea.	$	$
			TOTAL AMOUNT BID	**$**

EBMUD

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. **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.

2. **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.

3. **Sustainability Statement:** Contractors shall submit a statement regarding any sustainable or environmental initiatives or practices that they or their suppliers engage in. This information can be in relation to the specific products procured under this RFQ or in relation to the manufacture, delivery, or office practices of your firm.

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

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

4. **References:**

   (a) Bidders must use the templates in the "References" section of this Exhibit A – RFQ Response Packet to provide references.

(b) References should have similar scope, volume, and requirements to those outlined in these specifications, terms, and conditions.

- Bidders must verify the contact information for all references provided is current and valid.
- Bidders are strongly encouraged to notify all references that the District may be contacting them to obtain a reference.

(c) The District may contact some or all of the references provided in order to determine Bidder's performance record on work similar to that described in this RFQ. The District reserves the right to contact references other than those provided in the RFQ response.

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

(a) The RFQ response shall include a separate section calling out all clarifications, exceptions, and amendments, if any, to the RFQ and associated RFQ documents, which shall be submitted with Bidder's RFQ response using the template in the "Exceptions, Clarifications, Amendments" section of this Exhibit A – RFQ Response Packet.

(b) **THE DISTRICT IS UNDER NO OBLIGATION TO ACCEPT ANY EXCEPTIONS, AND SUCH EXCEPTIONS MAY BE A BASIS FOR RFQ RESPONSE DISQUALIFICATION.**

6. **Contract Equity Program:**

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

REFERENCES

RFQ No. 2607 – MAIN WASTEWATER TREATMENT PLANT (MWWTP) SECONDARY REACTORS BUTTERFLY VALVES

Bidder Name: ________________________________

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

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Number and sizes of Butterfly valves provided / Date(s) of Installation:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Number and sizes of Butterfly valves provided / Date(s) of Installation:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Number and sizes of Butterfly valves provided / Date(s) of Installation:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Number and sizes of Butterfly valves provided / Date(s) of Installation:	

Company Name:	Contact Person:
Address:	Telephone Number:
City, State, Zip:	E-mail Address:
Number and sizes of Butterfly valves provided / Date(s) of Installation:	

EXCEPTIONS, CLARIFICATIONS, AMENDMENTS
RFQ No. MAIN WASTEWATER TREATMENT PLANT (MWWTP)
SECONDARY REACTORS BUTTERFLY VALVES

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 also be downloaded from the District website at the following link: **http://ebmud.com/business-center/contract-equity-program/**

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

EXHIBIT B
INSURANCE REQUIREMENTS

CONTRACTOR/COMPANY NAME: _____

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

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

Provisions Applicable to All Required Insurance

A. Prior to the beginning of and throughout the duration of Services, and for any additional period of time as specified below, CONTRACTOR shall, at its sole cost and expense, maintain insurance in conformance with the requirements set forth below.

B. CONTRACTOR shall provide Verification of Insurance as required by this Agreement by providing the completed Verification of Insurance as requested below by signing and submitting Exhibit B ("Insurance Requirements") to the DISTRICT. The Insurance Requirements may be signed by the insurance broker or the insurance broker's agent (Insurance Broker/Agent) for the CONTRACTOR, or by an officer of the CONTRACTOR (Officer), or by the CONTRACTOR's risk manager (Risk Manager). The Notice to Proceed shall not be issued, and CONTRACTOR shall not commence Services until a signed Verification of Insurance evidencing the specific coverages and limits required by this Agreement has been received by the DISTRICT.

C. CONTRACTOR shall carry and maintain the minimum insurance requirements as defined in this Agreement. CONTRACTOR shall require any contractor/subcontractor to carry and maintain the minimum insurance required in this Agreement to the extent the insurance applies to the scope of the services to be performed by contractor/subcontractor.

D. Receipt of a signed Verification of Insurance by the DISTRICT shall not relieve CONTRACTOR of any of the insurance requirements, nor decrease liability of CONTRACTOR.

E. Insurance must be maintained, and an updated Verification of Insurance must be provided to the DISTRICT before the expiration of insurance by having the Insurance Broker/Agent, Officer, or Risk Manager update, sign and return the Insurance Requirements to the DISTRICT's contract manager. The updated Insurance Requirements shall become a part of the Agreement but shall not require a change order to the Agreement. It is the CONTRACTOR's sole responsibility to provide or to ensure that an updated Verification of Insurance is provided to the DISTRICT. The DISTRICT has no obligation to solicit, remind, prompt, request, seek, or otherwise obtain any updated Verification of Insurance, and any actual or alleged failure on the part of the DISTRICT to obtain any updated Verification of Insurance under this Agreement shall not in any way be construed to be a waiver of any right or remedy of the DISTRICT, in this or any regard.

F. The insurance required hereunder may be obtained by a combination of primary, excess and/or umbrella insurance, and all coverage shall be at least as broad as the requirements listed in this Agreement.

G. Any deductibles, self-insurance, or self-insured retentions (SIRs) applicable to the required insurance coverage must be declared to and accepted by the DISTRICT.

H. At the option and request of the DISTRICT, CONTRACTOR shall provide documentation of its financial ability to pay the deductible, self-insurance, or SIR.

I. CONTRACTOR is responsible for the payment of any deductibles or SIRs pertaining to the policies required under this Agreement. In the event CONTRACTOR is unable to pay the required SIR, CONTRACTOR agrees that such SIR may be satisfied, in whole or in part, by the DISTRICT as the additional insured at the DISTRICT's sole and absolute discretion, unless to do so would terminate or void the policy(ies).

J. Unless otherwise accepted by the DISTRICT, all required insurance must be placed with insurers with a current A.M. Best's rating of no less than A- V.

K. CONTRACTOR shall defend the DISTRICT and pay any damages as a result of failure to provide the waiver of subrogation from the insurance carrier required by this Agreement.

L. For any coverage that is provided on a claims-made coverage form (which type of form is permitted only where specified), the retroactive date must be shown, must be before the date of this Agreement, and must be before the beginning of any Services related to this Agreement.

M. For all claims-made policies the updated Verification of Insurance must be provided to the DISTRICT for at least three (3) years after expiration or termination of this Agreement.

N. If claims-made coverage is canceled or is non-renewed and if the claims-made coverage is not replaced with another claims-made policy form with a retroactive date prior to the effective date of this Agreement and prior to the start of any Services related to this Agreement, CONTRACTOR must purchase an extended reporting period for a minimum of three (3) years after expiration or termination of the Agreement.

O. In the event of a claim or suit, and upon request by the DISTRICT, CONTRACTOR agrees to provide a copy of the pertinent policy(ies) within 10 days of such request to the DISTRICT for review. Any actual or alleged failure on the part of the DISTRICT to request a copy of the pertinent policy(ies) shall not in any way be construed to be a waiver of any right or remedy of the DISTRICT, in this or any regard. Additionally, the DISTRICT may, at any time during CONTRACTOR's performance under this Agreement, request a copy of the Declarations pages and Schedule of Forms and Endorsements of any policy required to be maintained by CONTRACTOR hereunder, whether or not a suit or claim has been filed. Premium details may be redacted from any such documents requested.

P. The defense and indemnification obligations of this Agreement are undertaken in addition to, and shall not in any way be limited by, the insurance obligations contained herein.

Q. Where additional insured coverage is required, the additional insured coverage shall be primary and non-contributory, and will not seek contribution from the DISTRICT's insurance or self-insurance.

R. CONTRACTOR agrees to provide immediate Notice to the DISTRICT of any loss or claim against CONTRACTOR arising out of, pertaining to, or in any way relating to this Agreement or to Services performed under this Agreement. The DISTRICT assumes no obligation or liability by such Notice but

has the right (but not the duty) to monitor the handling of any such claim(s) if the claim(s) is likely to involve the DISTRICT.

S. It is the obligation of the CONTRACTOR to ensure all contractors/subcontractors performing services under this Agreement maintain the necessary coverages and limits. CONTRACTOR shall ensure that all contractors/subcontractors agree to the same indemnity obligation that CONTRACTOR agrees to in this Agreement based on the nature and scope of services being performed by each contractor/subcontractor. CONTRACTOR shall require that each contractor/subcontractor include the DISTRICT, its directors, officers, and employees as additional insureds on its liability policy(ies) (excepting Professional Liability and Workers' Compensation) for all ongoing and completed operations with coverage as broad as required of CONTRACTOR under this Agreement. Failure or inability to secure fully adequate insurance shall in no way relieve the CONTRACTOR or all contractors/subcontractors of the responsibility for its own acts or the acts of any contractors/subcontractors or any employees or agents of either. All contractors/subcontractors are to waive subrogation against the DISTRICT on all policies. CONTRACTOR shall be responsible for maintaining records evidencing contractors'/subcontractors' compliance with the necessary insurance coverages and limits, and such records shall be made available to the DISTRICT within 10 days upon request.

T. It is CONTRACTOR's responsibility to ensure its compliance with the insurance requirements. Any actual or alleged failure on the part of the DISTRICT to obtain proof of insurance required under this Agreement shall not in any way be construed to be a waiver of any right or remedy of the DISTRICT, in this or any regard.

U. Notice of Cancellation/Non-Renewal/Material Reduction**.** The insurance requirements hereunder are mandatory, and the DISTRICT may, at its sole and absolute discretion, terminate the services provided by CONTRACTOR, should CONTRACTOR breach its obligations to maintain the required coverage and limits set forth in this Agreement. No coverage required hereunder shall be cancelled, non-renewed or materially reduced in coverage or limits without the DISTRICT being provided at least thirty (30) days prior written notice, other than cancellation for the non-payment of premiums, in which event the DISTRICT shall be provided ten (10) days prior written notice. Replacement of coverage with another policy or insurer, without any lapse in coverage or any reduction of the stated requirements does not require notice beyond submission to the DISTRICT of an updated Verification of Insurance which shall be met by having the Insurance Broker/ Agent, or Officer, or Risk Manager update, sign and return the Insurance Requirements.

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

A. Workers' Compensation insurance including Employer's Liability insurance with minimum limits as follows:

Coverage A.	Statutory Benefits Limits	
Coverage B.	Employer's Liability of not less than:	
	Bodily Injury by accident:	$1,000,000 each accident
	Bodily Injury by disease:	$1,000,000 each employee
	Bodily Injury by disease:	$1,000,000 policy limit

B. If there is an onsite exposure of injury to CONTRACTOR, and/or contractor/subcontractor's employees under the U.S. Longshore and Harbor Workers' Compensation Act, the Jones Act, or under laws, regulations or statutes applicable to maritime employees, coverage is required for such injuries or claims.

C. If CONTRACTOR is exempt from carrying Workers' Compensation Insurance, CONTRACTOR must return the completed Verification of Insurance confirming that CONTRACTOR has no employees and is exempt from the State of California Workers' Compensation requirements.

D. If CONTRACTOR is self-insured with respect to Workers' Compensation coverage, CONTRACTOR shall provide to the DISTRICT a Certificate of Consent to Self-Insure from the California Department of Industrial Relations. Such self-insurance shall meet the minimum limit requirements and shall waive subrogation rights in favor of the DISTRICT as stated below in section "E."

E. Waiver of Subrogation. Workers' Compensation policies, including any applicable excess and umbrella insurance, must contain a waiver of subrogation endorsement providing that CONTRACTOR and each insurer waive any and all rights of recovery by subrogation, or otherwise, against the DISTRICT, its directors, board, and committee members, officers, officials, employees, agents, and volunteers. CONTRACTOR shall defend and pay any and all damages, fees, and costs, of any kind arising out of, pertaining to, or in any way relating to CONTRACTOR's failure to provide waiver of subrogation from the insurance carrier.

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

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

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

Self-Insured Retention: Amount: $_____

Policy Limit: $_____

Policy Number: _____

Policy Period: from _____ **to** _____

Insurance Carrier Name: _____

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

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

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

A. CONTRACTOR's insurance shall be primary, and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

B. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONTRACTOR.

C. Minimum Requirements. CGL insurance with minimum per occurrence and aggregate limits as follows:

Bodily Injury and Property Damage	$2,000,000 per occurrence & aggregate
Personal Injury/Advertising Injury	$2,000,000 per occurrence & aggregate
Products/Completed Operations	$2,000,000 per occurrence & aggregate

D. Coverage must be on an occurrence basis and be as broad as Insurance Services Office (ISO) form CG 00 01.

E. Coverage for Products, and Completed Operations, and Ongoing Operations must be included in the insurance policies and shall not contain any "prior work" coverage limitation or exclusion applicable to any Services performed by CONTRACTOR and/or contractor/subcontractor under this Agreement.

F. There will be no exclusion for explosions, collapse, or underground liability (XCU).

G. Insurance policies and Additional Insured Endorsement(s) shall not exclude liability and damages to work arising out of, pertaining to, or in any way relating to services performed by contractor/subcontractor on CONTRACTOR's behalf.

H. Contractual liability coverage shall be included and shall not limit, by any modification or endorsement, coverage for liabilities assumed by CONTRACTOR under this Agreement as an "insured contract."

I. Waiver of Subrogation. The policy shall be endorsed to include a Waiver of Subrogation ensuring that the CONTRACTOR and its insurer(s) waive any rights of recovery by subrogation, or otherwise, against the DISTRICT, its directors, board, and committee members, officers, officials, agents, volunteers, and employees. CONTRACTOR shall defend and pay any and all damages, fees, and costs, of any kind, arising out of, pertaining to, or in any way resulting from CONTRACTOR's failure to provide the waiver of subrogation from its insurance carrier(s).

J. Independent Contractor's Liability shall not limit coverage for liability and/or damages arising out of, pertaining to, or in any way resulting from Services provided under this Agreement.

K. To the fullest extent permitted by law, the DISTRICT, its directors, board, and committee members, officers, officials, employees, agents, and volunteers must be covered as Additional Insureds on a primary and noncontributory basis on all underlying, excess and umbrella policies that shall be evidenced in each case by an endorsement. Coverage for the Additional Insureds must be as broad as ISO forms CG 20 10 (ongoing operations) and CG 20 37 (completed operations) for liability arising in whole, or in part, from work performed by or on behalf of CONTRACTOR, or in any way related to Services performed under this Agreement.

L. A severability of interest provision must apply for all the Additional Insureds, ensuring that CONTRACTOR's insurance shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the policies' limit(s).

Verification of Commercial General Liability (CGL) Insurance Coverage

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

Self-Insured Retention: Amount: $_____

Policy Limit: $_____

Policy Number: _____

Policy Period: from _____ **to** _____

Insurance Carrier Name: _____

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

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

III. Business Auto Liability Insurance Coverage

A. CONTRACTOR's insurance shall be primary, and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

B. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONTRACTOR.

C. Minimum Requirements. Auto insurance with minimum coverage and limits as follows:
   a. Each Occurrence Limit (per accident) and in the Aggregate: 2,000,000
   b. Bodily Injury and Property Damage: $2,000,000

D. Coverage must include either "owned, non-owned, and hired" autos or "any" automobile. This provision ensures the policy covers losses arising out of use of company-owned vehicles ("owned autos"), employee's personal autos ("non-owned autos" meaning not owned by company/insured) or autos that are rented or leased ("hired autos").

E. If CONTRACTOR is transporting hazardous materials or contaminants, evidence of the Motor Carrier Act Endorsement-hazardous materials clean-up (MCS-90, or its equivalent) must be provided.

F. If CONTRACTOR's Scope of Services under this Agreement exposes a potential pollution liability risk related to transport of potential pollutants, seepage, release, escape or discharge of any nature (threatened or actual) of pollutants into the environment arising out of, pertaining to, or in any way related to CONTRACTOR's and/or contractor's/subcontractor's performance under this Agreement, then Auto Liability Insurance policies must be endorsed to include Transportation Pollution Liability insurance. Alternatively, coverage may be provided under the CONTRACTOR's Pollution Liability Policies if such policy has no exclusions that would restrict coverage under this Agreement. Coverage shall also include leakage of fuel or other "pollutants" needed for the normal functioning of covered autos.

G. To the fullest extent permitted by law, the DISTRICT, its directors, board, and committee members, officers, officials, employees, agents, and volunteers must be covered as Additional Insureds on a primary and noncontributory basis on all underlying and excess and umbrella policies.

H. A severability of interest provision must apply for all the Additional Insureds, ensuring that CONTRACTOR's insurance shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the insurer's limits of liability.

Verification of Business Auto Liability Insurance Coverage

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

Self-Insured Retention: Amount: $_____

Policy Limit: $_____

Policy Number: _____

Policy Period: from _____ **to** _____

Insurance Carrier Name: _____

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

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

IV. Excess and/or Umbrella Liability Insurance Coverage (*Optional* – See Paragraph A below)

A. The insurance requirements set forth above may be satisfied by a combination of primary and excess or umbrella policies. Where excess or umbrella policies are used the following shall apply:

B. CONTRACTOR's insurance shall be primary, and any insurance or self-insurance procured or maintained by the DISTRICT shall not be required to contribute to it.

C. The insurance requirements under this Agreement shall be the greater of (1) the minimum coverage and limits specified in this Agreement; or (2) the broader coverage and maximum limits of coverage of any insurance policies or proceeds available to the Named Insured. It is agreed that these insurance requirements shall not in any way act to reduce coverage that is broader or that includes higher limits than the minimums required herein. No representation is made that the minimum insurance requirements of this Agreement are sufficient to cover the obligations of the CONTRACTOR.

D. Minimum Requirements: It is expressly understood by the parties that CONTRACTOR's Excess and/or Umbrella Liability policies shall, at minimum, comply with all insurance requirements set forth within this Agreement, and shall be at least as broad as coverage required of the underlying policies required herein.

1. Coverage for Products, Completed Operations, and Ongoing Operations must be included in the insurance policies and shall not contain any "prior work" coverage limitation or exclusion applicable to any Services performed under this Agreement and, if it is a claims-made policy, it must be maintained for a minimum of three (3) years following final completion of the Services.

2. There will be no exclusion for explosions, collapse, or underground damage (XCU).

3. Insurance policies and Additional Insured Endorsements shall not exclude coverage for liability and damages from services performed by contractor/subcontractor on CONTRACTOR's behalf.

4. Contractual liability coverage shall be included and shall not limit, by any modification or endorsement, coverage for liabilities assumed by CONTRACTOR under this Agreement as an "insured contract."

5. Independent Contractor's Liability shall not limit coverage for liability and/or damage arising out of, pertaining to, or in any way related to Services provided under this Agreement.

6. To the fullest extent permitted by law, the DISTRICT, its directors, officers, officials, agents, volunteers, and employees must be covered as Additional Insureds on a primary and noncontributory basis on all excess and umbrella policies. The Additional Insureds must be covered for liability arising in whole or in part from any premises, Products, Ongoing Operations, and Completed Operations by or on behalf of CONTRACTOR, in any way related to Services performed under this Agreement.

7. A severability of interest provision must apply for all the Additional Insureds, ensuring that the CONTRACTOR's insurance shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the policy's limits.

8. CONTRACTOR and its excess and/or umbrella Liability insurance coverage must waive any rights of subrogation against the DISTRICT, its directors, officers, officials, employees, agents, and volunteers, and CONTRACTOR shall defend and pay any damages as a result of failure to provide the waiver of subrogation from the insurance carrier(s).

Verification of Excess and/or Umbrella Liability Insurance Coverage

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

Excess/Umbrella Limits: Amount $ _____

Policy Limit: $ _____

Policy Number: _____

Policy Period: from _____ **to** _____

Insurance Carrier Name: _____

Underlying Policy(ies) listed above to which Excess/Umbrella applies:

_____

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

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

EXHIBIT C
GENERAL REQUIREMENTS

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

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 https://www.cslb.ca.gov/OnlineServices/InsuranceSearch/INSRequest.aspx) admitted to transact such business in California by the California Department of Insurance. After acceptance of the bond(s) by the District, a copy of the bond(s) will be returned to the Contractor.

c. If, during the continuance of the Contract, any of the sureties, in the opinion of the District, are or become irresponsible, the District may require other or additional sureties, which the Contractor shall furnish to the satisfaction of the District within ten

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

3. CONTRACTOR'S FINANCIAL OBLIGATION

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

4. SAMPLES OR SPECIMENS

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

5. MATERIAL AND WORKMANSHIP

a. All goods and materials must be new and of the specified quality and equal to approved sample, if samples have been required. In the event any goods or materials furnished, or services provided by the Contractor in the performance of the Contract fail to conform to the requirements, or to the sample submitted by the Contractor, the District may reject the same, and it shall become the duty of the Contractor to reclaim and remove the item promptly or to correct the performance of services, without expense to the District, and immediately replace all such rejected items with others conforming to the Contract. All work shall be done and completed in a thorough, workmanlike manner, notwithstanding any omission from these specifications or the drawings, and it shall be the duty of the Contractor to call attention to apparent errors or omissions and request instructions before proceeding with the work. The Project Manager may, by appropriate instructions, correct errors and supply omissions, which instructions shall be binding upon the Contractor as though contained in the original Contract Documents.

b. All materials furnished and all Work must be satisfactory to the Project Manager. Work, material, or machinery not in accordance with the Contract Documents, in the opinion of the Project Manager, shall be made to conform.

6. DEFECTIVE WORK

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

7. WARRANTY

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

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

8. NOT USED

9. SAFETY AND ACCIDENT PREVENTION

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

10. CHARACTER OF WORKFORCE

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

11. PREVAILING WAGES & DIR REGISTRATION

a. Please see www.dir.ca.gov for further information regarding the below.

b. All Contractors and Subcontractors of any tier bidding on or offering to perform work on a public works project shall first be registered with the State Department of Industrial Relations (DIR) pursuant to Section 1725.5 of the Labor Code. No bid will be accepted, nor any contract entered into without proof of the Contractor and Subcontractors' current registration with the DIR (LC § 1771.1).

c. All public works projects awarded after January 1, 2015, are subject to compliance monitoring and enforcement by the DIR (LC § 1771.4) and all Contractors are required

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

e. To the extent applicable, pursuant to Section 1773 of the Labor Code, the District has obtained from the Director of Industrial Relations of the State of California, the general prevailing rates of per diem wages and the general prevailing rates for holiday and overtime work in the locality in which the Work is to be performed, for each craft, classification, or type of worker needed to execute the contract. Pursuant to Section

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

f. The holidays upon which such rates shall be paid shall be all holidays recognized in the collective bargaining agreement applicable to the particular craft, classification, or type of worker employed on the Work.

g. The Contractor shall post a copy of the general prevailing rate of per diem wages at the jobsite pursuant to Section 1773.2 of the Labor Code.

h. Pursuant to Section 1774 of the Labor Code, the Contractor and any of its Subcontractors shall not pay less than the specified prevailing rate of wages to all workers employed in the execution of the contract.

i. As set forth with more specificity in Section 1773.1 of the Labor Code, "per diem" wages include employer payments for health and welfare, pension, vacation, travel, subsistence and, in certain instances, apprenticeship or other training programs, and shall be paid at the rate and in the amount spelled out in the pertinent prevailing wage determinations issued by the Director of Industrial Relations.

j. The Contractor shall, as a penalty to the State or the District, forfeit not more than the maximum set forth in Section 1775 of the Labor Code for each calendar day, or portion thereof, for each worker paid less than the prevailing rates for the work or craft in which the worker is employed under the contract by the Contractor or by any Subcontractor under him. The difference between the prevailing wage rates and the amount paid to each worker for each calendar day or portion thereof for which such worker was paid less than the stipulated prevailing wage rate shall be paid to such worker by the Contractor.

k. The specified wage rates are minimum rates only and the District will not consider and shall not be liable for any claims for additional compensation made by the Contractor because of its payment of any wage rate in excess of the general prevailing rates. All disputes in regard to the payment of wages in excess of those specified herein shall be adjusted by the Contractor at its own expense.

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

m. asterisk or a double asterisk. Pursuant to California Code of Regulations, Title 8, Section 16204, the single asterisk means that the general prevailing wage determination shall be in effect for the specified contract duration. The double asterisk means that the predetermined wage modification shall be paid after the expiration date. No adjustment in the Contract Sum will be made for the Contractor’s payment of these predetermined wage modifications.

12. PAYROLL RECORDS & ELECTRONIC SUBMISSION

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

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

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

b. The Contractor shall submit for each week in which any contract Work is performed a copy of all payroll records to the Project Manager. The Contractor shall be responsible for submission of copies of payroll records of all Subcontractors.

c. The Contractor or Subcontractor shall certify the payroll records as shown on the DIR form. In addition, the records shall be accompanied by a statement signed by the Contractor or Subcontractor certifying that the classifications truly reflect the Work performed and that the wage rates are not less than those required to be paid.

d. For public works projects awarded on or after April 1, 2015, or that are still ongoing after April 1, 2016, no matter when awarded, each Contractor and Subcontractor shall furnish the certified payroll related records as more specifically described above and in Labor Code section 1776 directly to the Labor Commissioner (see LC § 1771.4). These records shall be provided to the Labor Commissioner at least monthly or more frequently if required by the terms of the Contract. For exception on projects covered by collective bargaining agreements like a PLA, please see Labor Code section 1771.4.

e. In the event of noncompliance with the requirements of Section 1776 of the Labor Code, the Contractor shall have 10 days in which to comply subsequent to receipt of written notice specifying in what respects such Contractor must comply with said Section. Should noncompliance still be evident after such 10-day period, the Contractor shall, as a penalty to the State or the District, forfeit the amount set forth in Section 1776 of the Labor Code for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, such penalties shall be withheld from progress payments then due.

f. The Contractor and every Subcontractor shall post at the workplace and comply with all required wage related workplace postings. Copies of the required postings may be downloaded or ordered electronically from the Department of Industrial Relations website at http://www.dir.ca.gov/wpnodb.html.

13. HOURS OF LABOR

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

a. Eight hours of labor constitutes a legal day's Work under the contract.

b. The time of service of any worker employed upon the work shall be limited and restricted to eight hours during any one calendar day, and forty hours during any one calendar week except as provided in Article 13.iv below.

c. The Contractor shall, as a penalty to the State or the District, forfeit the amount set forth in Section 1813 of the Labor Code for each worker employed in the execution of the contract by the Contractor or by any Subcontractor for each calendar day during which such worker is required or permitted to work more than eight hours in any

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

d. Work performed by employees of the Contractor in excess of eight hours per day, and forty hours during any one calendar week, shall be permitted upon compensation for all hours worked in excess of eight hours per day at not less than one and one-half times the basic rate of pay.

e. The Contractor and every Subcontractor shall keep an accurate record showing the name of and the actual hours worked each calendar day and each calendar week by each worker employed by him in connection with the Work; the record shall be kept open at all reasonable hours to the inspection of the District and to the Division of Labor Standards Enforcement of the State of California.

14. EMPLOYMENT OF APPRENTICES

a. In the performance of the contract, the Contractor and any Subcontractor shall comply with the provisions concerning the employment of apprentices in Section 1777.5 of the Labor Code and any amendments thereof.

b. In the event the Contractor or any Subcontractor willfully fails to comply with the aforesaid section, such Contractor or Subcontractor shall be subject to the penalties for noncompliance in Labor Code, Section 1777.7.

15. CHANGES

a. Changes in the Work can only be made in writing signed by an authorized employee of the District. If the change causes an increase or decrease in the contract sum, or a change in the time for performance under the Contract, an adjustment may be made as determined by the Project Manager.

b. The District reserves the right to make changes in the design of materials, equipment, or machinery, to make alterations or additions to or deviations or subtractions from the Contract and any specifications and drawings, to increase or decrease the required quantity of any item or portion of the Work or to omit any item or portion of the Work, as may be deemed by the Project Manager to be necessary or advisable and to order such extra work as may be determined by the Project Manager to be required for the proper execution and completion of the whole Work contemplated. Any such changes will be ordered in writing by the Project Manager. The determination of the Project Manager on all questions relating to changes, including extra work, shall be conclusive and binding.

c. Prior to issuing an amendment or change to the Contract, the Project Manager may request that the Contractor submit a proposal covering the changes. Within 10 business days of receiving the request, the Contractor shall submit its proposal to the Project Manager of all costs associated with the proposed amendment or change and any request for an extension of Contract time. Contractor's proposal shall include detailed estimates with cost breakdowns, including labor, material, equipment, overhead, and profit. Labor shall be broken down into hours and rate per hour. If applicable, the proposal shall include a breakdown for off-site labor (including factory labor, engineering, etc.). The Contractor's proposal shall include an analysis of schedule impact when the Contractor is requesting an adjustment in contract time. The

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

d. If the Contractor agrees with the terms and conditions of the approved Change Order, the Contractor shall indicate its acceptance by signing the original copy and returning it to the Project Manager within 10 Work Days after receipt or with reasonable promptness and in such sequence as to not delay the Work or activities of the District or of separate contractors, whichever is sooner. If notice of any change is required to be given to a surety by the provisions of any bond, the Contractor shall provide notice and the amount of each applicable bond shall be adjusted separately. Payment in accordance with the terms and conditions set forth in the executed Change Order shall constitute full compensation for all Work included in the Change Order and the District will be released from any and all claims for direct, indirect, and impact expenses and additional time impact resulting from the Work. If the Contractor disagrees with the terms and conditions of the approved Change Order, the Contractor shall indicate specific areas of disagreement and return the approved Change Order to the Project Manager with a detailed written dispute. No payment will be made on the disputed work until the approved Change Order is returned to the Project Manager. However, whether or not the Contractor agrees with the terms and conditions of an approved Change Order, the Contractor shall immediately revise its sequence of operations as required to facilitate timely completion of the changed work and shall proceed with the revised work sequence.

e. The Project Manager may, after having received a written cost quotation from the Contractor, order the Contractor, in writing, to proceed with the work prior to issuance of an approved Change Order through a change directive. The change directive will authorize the Contractor to proceed with the work subject to the cost quotation submitted by the Contractor. Within five days following receipt of the change directive, the Contractor shall submit a detailed change proposal documenting the amount of compensation. The Project Manager will review the change proposal and, at its option, will either issue an approved Change Order for the work or direct the Contractor to perform the work through Force Account. Until the method of compensation is determined, and the approved Change Order is received, the Contractor shall keep full and complete time and material records of the cost of the ordered work and shall permit the Project Manager to have access to such records. An approved Change Order shall supersede any previously issued written change directive covering the same Work.

16. EFFECT OF EXTENSIONS OF TIME

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

17. DELAYS

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

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

b. For inexcusable delays (delays caused by circumstances within the Contractor's control, the control of its subcontractors or supplies of any tier, or within the scope of the Contractor's contract responsibilities) the Contractor shall not be entitled to an extension of time or additional compensation for any loss, cost, damage, expense or liability resulting directly or indirectly from the inexcusable delay.

c. For excusable delays (delays to completion of the Work within the time limits set forth in the Contract Documents directly caused by events beyond the control of both the Contractor and the District, which delay is not concurrent with an inexcusable delay and which could not have been avoided by the Contractor through reasonable mitigation measures the Project Manager will grant the Contractor an extension of time in an amount equal to the period of Excusable Delay based on the analysis of schedule impact and delay analysis diagram, which shall be the Contractor's sole and exclusive remedy for such delay. Excusable Delays shall include labor strikes, adverse weather, and Acts of God.

d. For compensable delays (delays to completion of the Work within the time limits set forth in the Contract Documents that could not be avoided by Contractor mitigation, caused directly and solely by the District or by causes within the exclusive control of the

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

f. Manager will grant the Contractor an extension of the time to perform under the Contract and compensation in an amount that represents the Contractor's actual direct costs incurred as a direct result of the compensable delay. The Contractor may recover its direct costs only and may not recover (and waives) all other types of indirect, consequential, special and incidental damages.

g. For concurrent delays (two or more independent causes of delay directly preventing the Contractor from completing the Work within the time limits set forth in the Contract Documents where the delays occur at the same time during all or a portion of the delay period being considered, and where each of the delays would have caused delay to the Contractor even in the absence of any of the other delays, and none of the delays could have been avoided by Contractor mitigations) the following rules apply:

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

ii. All of the concurrent delays are inexcusable, then the period of concurrent delay will be inexcusable.

18. TERMINATION

a. Termination by the District for Cause:

i. District may terminate the Contractor's right to proceed under the Contract, in whole or in part, for cause at any time after the occurrence of any of the following events, each of which constitutes a default:

1. The Contractor becomes insolvent or files for relief under the bankruptcy laws of the United States.

2. The Contractor makes a general assignment for the benefit of its creditors or fails to pay its debts as the same become due.

3. A receiver is appointed to take charge of the Contractor's property.

4. The Contractor fails to supply skilled supervisory personnel, an adequate number of properly skilled workers, proper materials, or necessary equipment to prosecute the Work in accordance with the Contract Documents.

5. The Contractor fails to make progress so as to endanger performance of the Work within the contractually required time.

6. The Contractor disregards legal requirements of agencies having jurisdiction over the Work, the Contractor, or the District.

7. The Contractor fails to provide the District with a written plan to cure a District identified default within five business days after the District's request for a plan to cure; the District does not accept the Contractor's plan for curing its default; or the Contractor does not fully carry out an accepted plan to cure.

8. The Contractor abandons the Work. Abandonment is conclusively presumed when the District requests a written plan to cure a default and the Contractor does not submit the plan within five business days of the District's request.

9. The Contractor materially fails to meet its obligations in accordance with the Contract Documents.

10. The Contractor is in default of any other material obligation under the Contract Documents.

ii. If any of the above events occur, the District may, in its discretion, require that the Contractor submit a written plan to cure its default, which plan must be provided to the District within 5 business days of the request and must include a realistic, executable plan for curing the noted defaults.

iii. Upon any of the occurrences referred to in Article 18.a.i. above, the District may, at its election and by notice to the Contractor, terminate the Contract in whole or in part; accept the assignment of any or all of the subcontracts; and then complete the Work by any method the District may deem expedient. If requested by the District, the Contractor shall remove any part or all of the Contractor's materials, supplies, equipment, tools, and machinery from the site of the Work within seven days of such request; and, if the Contractor fails to do so, the District may remove or store, and after 90 days sell, any of the same at the Contractor's expense.

iv. No termination or action taken by the District after termination shall prejudice any other rights or remedies of the District provided by law or by the Contract Documents.

v. Conversion: If, after termination for other than convenience, it is determined that the Contractor was not in default or material breach, or that the default or material breach was excusable, the rights and obligations of the parties shall be the same as if the termination had been issued for convenience pursuant to Article 18.b. below.

b. Termination by the District for Convenience:

i. The District may, at its option, and for its convenience, terminate the Contract at any time by giving written notice to the Contractor specifying the effective date of termination. Upon such termination, the Contractor agrees to comply with the notice and further agrees to waive any claims for damages, including loss of anticipated profits, on account of the termination; and, as the sole right and remedy of the Contractor, the District shall pay the Contractor as set forth below.

ii. Upon receipt of a notice of termination for convenience, the Contractor shall, unless the notice directs otherwise, do the following:

1. Immediately discontinue its performance of the Contract to the extent specified in the notice.

2. Place no further orders or subcontracts for materials, equipment, services, or facilities, except as may be necessary for completion of a portion of the Work that is not discontinued or that is necessary for an orderly cessation of the Work.

3. Promptly cancel, on the most favorable terms reasonably possible, all subcontracts to the extent they relate to the performance of the discontinued portion of the Work.

4. Thereafter, do only such Work as may be necessary to preserve and protect Work already in progress and to protect materials, plants, and equipment in transit to or on the site of performance.

iii. Upon such termination for convenience, the District will pay to the Contractor the sum of the following:

1. The amount of the contract sum allocable to the portion of the Work properly performed by the Contractor as of the effective date of termination, less sums previously paid to the Contractor.

2. Previously unpaid costs of any items delivered to the project site that were already fabricated for subsequent incorporation into the Work.

3. Any proven losses with respect to materials and equipment directly resulting from the termination.

4. Reasonable demobilization costs.

iv. The above reimbursement is the sole and exclusive remedy to which the Contractor is entitled in the event the contract is terminated for convenience; and the Contractor expressly waives any other claims, damages, demands, compensation or recovery related to this contract or project. The Contractor agrees to sign a general release incorporating this waiver.

c. Effect of Termination: Upon termination, the obligations of the Contract shall continue as to portions of the Work already performed and, subject to the Contractor's obligations under Article 18.b.ii, as to bona fide obligations assumed by the Contractor prior to the date of termination.

d. Force Majeure: If the contract is suspended or terminated by the District because Contractor's performance is prevented or delayed by an event including an irresistible, superhuman cause, or by the act of public enemies of the State of California or of the United States ("Force Majeure") , the Contractor will be paid for Work performed prior to the Force Majeure event at either (i) the unit prices named in the Contract; or (ii) in the event no unit prices are named, a sum equal to the percentage of the total contract amount that matches the percentage of the total contract Work performed prior to the Force Majeure event.

19. DAMAGES

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

20. ORDER OF PRECEDENCE

a. In the case of conflicts, errors, or discrepancies in any of the Contract Documents, the order of precedence is as follows. Within the same order of precedence, specific requirements shall take precedence over general requirements.

i. Approved Change Orders.
ii. Addenda.
iii. RFQ or RFP.
iv. Referenced Standard Specifications and Drawings.
v. Contractor's Response Packet.

b. With reference to drawings:

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

21. INDEMNIFICATION

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

22. PROHIBITION OF ASSIGNMENT

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

23. NEWS RELEASES

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

24. SEVERABILITY

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

25. COVENANT AGAINST GRATUITIES

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

26. RIGHTS AND REMEDIES OF THE DISTRICT

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

27. WAIVER OF RIGHTS

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

28. CONFIDENTIALITY

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

EXHIBIT D
IRAN CONTRACTING ACT CERTIFICATION

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

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

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

CERTIFICATION FOR PARAGRAPH 1:

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

Firm: _____

By: _____ Date: _____
(Signature of Bidder)

Title: _____

Signed at: _____ County, State of: _____

OR

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

EXHIBIT E

Drawings

DRAWING INDEX

NOTES:

1. PROJECT DRAWING NUMBERS ARE DEFINED AS FOLLOWS:
   RFQ#2607-AAA.BB-C-XXX.D WHERE:
   AAA = AREA CODE
   (3-DIGIT ALPHA/NUMERIC NUMBER FOR FACILITY OR AREA)
   (OMITTED WHEN NOT APPLICABLE)
   BB = SUBSTRUCTURE NUMBER
   (NUMBER FOR STRUCTURE WITHIN FACILITY OR AREA)
   (OMITTED WHEN NOT APPLICABLE)
   C = DISCIPLINE CODE LETTER
   A - ARCHITECTURAL　I - INSTRUMENTATION (P&ID)
   C - CIVIL　L - LANDSCAPE
   E - ELECTRICAL　M - MECHANICAL
   G - GENERAL　S - STRUCTURAL
   XXX = SERIAL NUMBER
   (MAY INCLUDE A DECIMAL AND/OR LETTER SUFFIX)
   D = ADDITIONAL INFORMATION CODE LETTER
   D - DEMOLITION DRAWING (OMITTED WHEN NOT APPLICABLE)

2. AREA CODES AND SUBSTRUCTURE NUMBERS ARE DEFINED AS FOLLOWS:
   W45 SECONDARY REACTORS - MULTIPLE PROJECT AREAS
   W4500 - ALL SECONDARY REACTORS
   W4500 - REACTOR BASIN
   W4510 - REACTORS DECK
   W4520 - SECONDARY INFLUENT CHANNEL
   W4530 - MIXED LIQUOR CHANNEL
   W4560 - REACTORS AREA AT GALLERY LEVEL

3. IF A CALL-OUT REFERENCES A DRAWING WITH THE SAME AREA CODE AND SUBSTRUCTURE NUMBER, THE AREA CODE AND SUBSTRUCTURE NUMBER WILL BE OMITTED. ONLY THE DISCIPLINE CODE AND SERIAL NUMBER WILL BE SHOWN.

4. ITEMS SHOWN IN GRAY/SCREENED TYPICALLY REFER TO EXISTING FEATURES OR TO NEW CONSTRUCTION UNDER A DIFFERENT DISCIPLINE. SEE NOTE 6 REGARDING REFERENCE DRAWINGS.

5. SECTION AND DETAILS ARE DESIGNATED BY FRACTIONAL SYMBOLS SUCH AS: A/C-001; 3/M-001.

THE NUMERATOR IDENTIFIES THE SECTION OR DETAIL:
- LETTERS IDENTIFY SECTIONS.
- NUMERALS IDENTIFY DETAILS.

THE DENOMINATOR IS THE SHEET REFERENCE NUMBER:
- IN A PARENT VIEW, IT IDENTIFIES THE SHEET ON WHICH THE SECTION OR DETAIL VIEW IS SHOWN.
- IN THE CAPTION OF A SECTION OR DETAIL VIEW, IT IDENTIFIES EACH SHEET ON WHICH THE PARENT VIEW IS SHOWN.

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN	DESIGN BY:	P. LAIKIJRUNG
	DRAWN BY:	J. TANG
REVIEW	DESIGN REVIEWER: R.P.E. No.	
	CONSTRUCTION REVIEWER: R.P.E. No.	
	ELECTRICAL REVIEWER: R.P.E. No.	
MANAGEMENT	PROJECT ENGINEER R.P.E. No.	
	PROJECT MANAGER R.P.E. No.	
	RECOMMENDED: SR. ENGINEER R.P.E. No.	

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND. CALIFORNIA

MAIN WASTEWATER TREATMENT PLANT

GENERAL

SHEET INDEX AND GENERAL NOTES

SHEET NO. 1

SCALE NO SCALE
DATE 10/28/2025

RFQ#2607-G001
DRAWING NUMBER

0
REV.

VALVE SCHEDULE

EQUIP TAG NO.												ACTUATOR		COATING				
AREA	Sys	TYPE	ID #	MOD	QNTY	DESCRIPTION	LOCATION	SIZE	OPERATING & TEST PRESSURE	GASKET MATERIAL	END CONNECTION	TYPE	SPECIFICATION	SPECIFICATION	DRAWING NUMBER	ROTATION TO OPEN	SPARE PARTS
W-45-	RAS-	HV-	020		1	BUTTERFLY VALVE W/ CHAINWHEEL OPERATOR CONNECTING RAS A & B	SOUTH REACTOR GALLERY	30" DIAMTER	150B	BUNA-N-SEAT	FLANGE	MANUAL; GEAR, CHAINWHEEL	33 12 16.15	09 96 56.10	W4560-M110	COUNTER CLOCKWISE	NONE REQUESTED
W-45-	PEF-	HV-	501		1	BUTTERFLY VALVE W/ CHAINWHEEL OPERATOR FOR SECONDARY INFLUENT TO REACTOR 5	SOUTH REACTOR GALLERY - REACTOR 5	48" DIAMETER	150B	BUNA-N-SEAT	GROOVED (MATCH VICTAULIC STYLE 44)	MANUAL; GEAR, CHAINWHEEL	33 12 16.15	09 96 56.10	W4560-M110	COUNTER CLOCKWISE	NONE REQUESTED
W-45-	PEF-	MOV-	502		1	BUTTERFLY VALVE W/ LIMITORQUE ACTUATOR FOR SECONDARY INFLUENT TO REACTOR 5	SOUTH REACTOR GALLERY - REACTOR 5	42" DIAMETER	150B	BUNA-N-SEAT	GROOVED (MATCH VICTAULIC STYLE 44)	ELECTRIC. GEAR	40 05 57.23	09 96 56.10	W4560-M110	COUNTER CLOCKWISE	NONE REQUESTED
W-45-	RAS-	HV-	503		1	BUTTERFLY VALVE W/ CHAINWHEEL OPERATOR FOR RAS TO REACTOR 5	SOUTH REACTOR GALLERY - REACTOR 5	18" DIAMTER	150B	BUNA-N-SEAT	FLANGE	MANUAL; GEAR, CHAINWHEEL	33 12 16.15	09 96 56.10	W4560-M111	COUNTER CLOCKWISE	NONE REQUESTED
W-45-	RAS-	MOV-	504		1	BUTTERFLY VALVE W/ LIMITORQUE ACTUATOR FOR RAS TO REACTOR 5	SOUTH REACTOR GALLERY - REACTOR 5	18" DIAMTER	150B	BUNA-N-SEAT	FLANGE	ELECTRIC. GEAR	40 05 57.23	09 96 56.10	W4560-M111	COUNTER CLOCKWISE	NONE REQUESTED
W-45-	ML-	HV-	505		1	BUTTERFLY VALVE W/ HANDWHEEL OPERATOR FOR REACTOR 5 DRAIN	NORTH REACTOR GALLERY - REACTOR 5	18" DIAMTER	150B	BUNA-N-SEAT	FLANGE	MANUAL; GEAR, HANDWHEEL	33 12 16.15	09 96 56.10	W4560-M105	COUNTER CLOCKWISE	NONE REQUESTED
W-45-	PEF-	HV-	601		1	BUTTERFLY VALVE W/ CHAINWHEEL OPERATOR FOR SECONDARY INFLUENT TO REACTOR 6	SOUTH REACTOR GALLERY - REACTOR 6	48" DIAMETER	150B	BUNA-N-SEAT	GROOVED (MATCH VICTAULIC STYLE 44)	MANUAL; GEAR, CHAINWHEEL	33 12 16.15	09 96 56.10	W4560-M111	COUNTER CLOCKWISE	NONE REQUESTED
W-45-	PEF-	MOV-	602		1	BUTTERFLY VALVE W/ LIMITORQUE ACTUATOR FOR SECONDARY INFLUENT TO REACTOR 6	SOUTH REACTOR GALLERY - REACTOR 6	42" DIAMETER	150B	BUNA-N-SEAT	GROOVED (MATCH VICTAULIC STYLE 44)	ELECTRIC. GEAR	40 05 57.23	09 96 56.10	W4560-M111	COUNTER CLOCKWISE	NONE REQUESTED
W-45-	RAS-	HV-	603		1	BUTTERFLY VALVE W/ CHAINWHEEL OPERATOR FOR RAS TO REACTOR 6	SOUTH REACTOR GALLERY - REACTOR 6	18" DIAMTER	150B	BUNA-N-SEAT	FLANGE	MANUAL; GEAR, CHAINWHEEL	33 12 16.15	09 96 56.10	W4560-M111	COUNTER CLOCKWISE	NONE REQUESTED
W-45-	RAS-	MOV-	604		1	BUTTERFLY VALVE W/ LIMITORQUE ACTUATOR FOR RAS TO REACTOR 6	SOUTH REACTOR GALLERY - REACTOR 6	18" DIAMTER	150B	BUNA-N-SEAT	FLANGE	ELECTRIC. GEAR	40 05 57.23	09 96 56.10	W4560-M111	COUNTER CLOCKWISE	NONE REQUESTED
W-45-	ML-	HV-	605		1	BUTTERFLY VALVE W/ HANDWHEEL OPERATOR FOR REACTOR 6 DRAIN	NORTH REACTOR GALLERY - REACTOR 6	18" DIAMTER	150B	BUNA-N-SEAT	FLANGE	MANUAL; GEAR, HANDWHEEL	33 12 16.15	09 96 56.10	W4560-M106	COUNTER CLOCKWISE	NONE REQUESTED
W-54-	RAS-	AOV-	301		1	BUTTERFLY VALVE W/ PNEUMATIC ACTUATOR FOR RAS PUMP 3	OPS CENTER BASEMENT - RAS PUMP 3	30" DIAMETER	150B	BUNA-N-SEAT	FLANGE	PNEUMATIC	33 12 16.34	09 96 56.10	W5400-M101.1	COUNTER CLOCKWISE	NONE REQUESTED
W-54-	RAS-	HV-	302		1	BUTTERFLY VALVE W/ HANDWHEEL OPERATOR FOR RAS PUMP 3	OPS CENTER BASEMENT - RAS PUMP 3	30" DIAMETER	150B	BUNA-N-SEAT	FLANGE	MANUAL; GEAR, HANDWHEEL	33 12 16.15	09 96 56.10	W5400-M101.1	COUNTER CLOCKWISE	NONE REQUESTED
W-54-	RAS-	AOV-	401		1	BUTTERFLY VALVE W/ PNEUMATIC ACTUATOR FOR RAS PUMP 4	OPS CENTER BASEMENT - RAS PUMP 4	30" DIAMETER	150B	BUNA-N-SEAT	FLANGE	PNEUMATIC	33 12 16.34	09 96 56.10	W5400-M101.1	COUNTER CLOCKWISE	NONE REQUESTED
W-54-	RAS-	HV-	402		1	BUTTERFLY VALVE W/ HANDWHEEL OPERATOR FOR RAS PUMP 4	OPS CENTER BASEMENT - RAS PUMP 4	30" DIAMETER	150B	BUNA-N-SEAT	FLANGE	MANUAL; GEAR, HANDWHEEL	33 12 16.15	09 96 56.10	W5400-M101.1	COUNTER CLOCKWISE	NONE REQUESTED

NOTES:

1. MANUFACTURER SHALL CONFIRM END CONNECTIONS, SIZING, AND ACTUATOR TYPE AT SUBMITTAL PREPARATION SITE VISIT.

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN
DESIGN BY: P. LAIKIJRUNG
DRAWN BY: J. TANG

REVIEW
DESIGN REVIEWER: R.P.E. No.
CONSTRUCTION REVIEWER: R.P.E. No.
ELECTRICAL REVIEWER: R.P.E. No.

MANAGEMENT
PROJECT ENGINEER R.P.E. No.
PROJECT MANAGER R.P.E. No.
RECOMMENDED: SR. ENGINEER R.P.E. No.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND. CALIFORNIA

MAIN WASTEWATER TREATMENT PLANT
REACTORS
MECHANICAL
VALVES SCHEDULE

SHEET NO. 2

SCALE NO SCALE
DATE 10/28/2025
RFQ#2607-M301
DRAWING NUMBER
0
REV.

USER: Laikijrung, Paulina
DATE: 10/28/2025 2:15 PM
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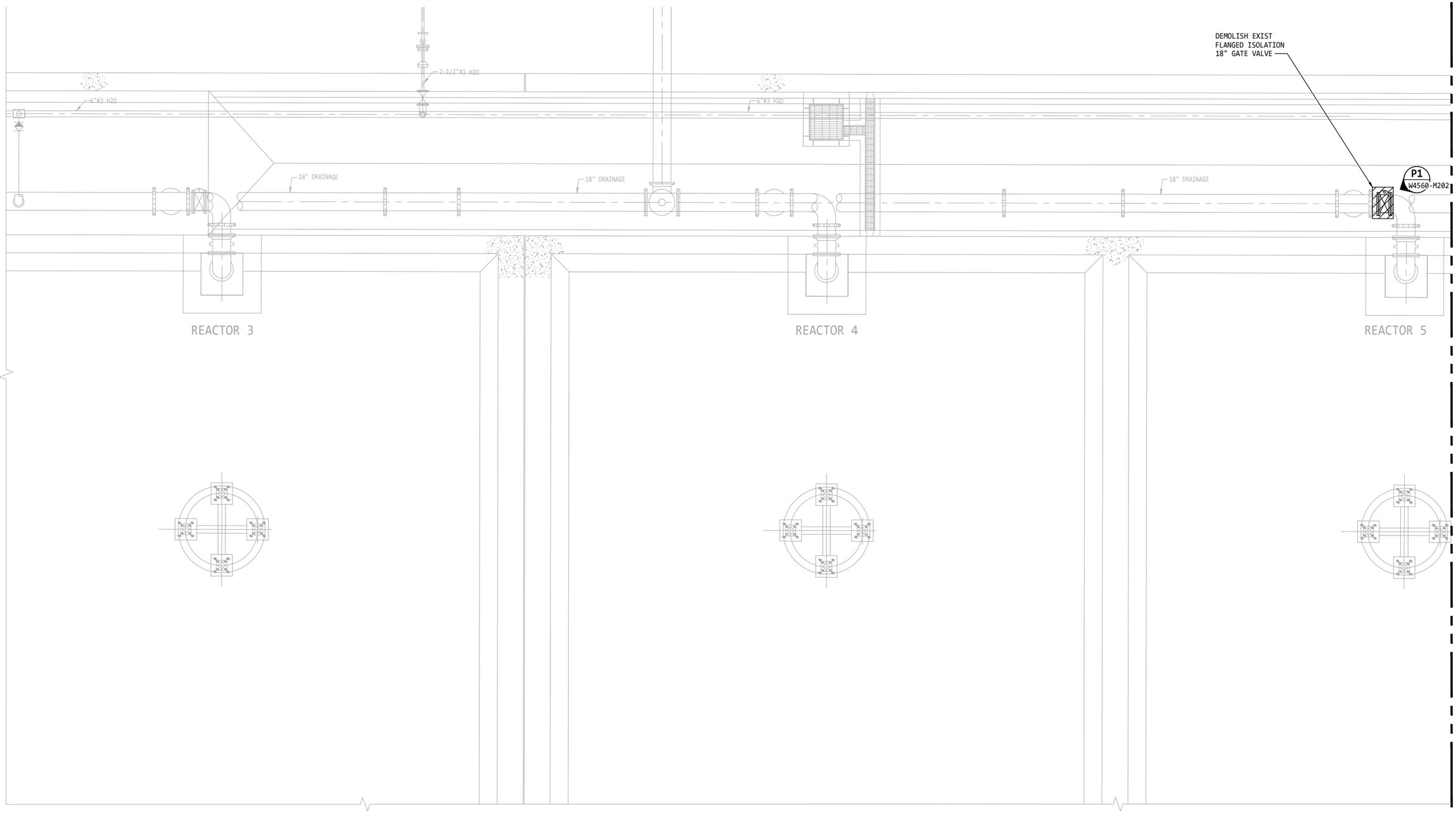
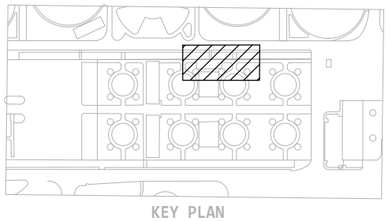


PLAN - NORTH REACTOR GALLERY

SCALE: 1/4" = 1'-0"



KEY PLAN

GENERAL NOTES:

1. DEMOLITION WORK IS SHOWN FOR REFERENCE ONLY.
2. DEMOLITION WORK IS NOT PART OF THIS RFQ#2607 AND WILL BE PERFORMED UNDER A SEPARATE CONTRACT.

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN	DESIGN BY: P. LAIKIJRUNG	EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND. CALIFORNIA
	DRAWN BY: J. TANG	
REVIEW	DESIGN REVIEWER: R.P.E. No.	MAIN WASTEWATER TREATMENT PLANT REACTORS MECHANICAL
	CONSTRUCTION REVIEWER: R.P.E. No.	
	ELECTRICAL REVIEWER: R.P.E. No.	
MANAGEMENT	PROJECT ENGINEER R.P.E. No. C83148 JENNY H TRAN	DEMOLITION - NORTH REACTOR GALLERY AT REACTORS 3, 4 & 5 SHEET NO. 3
	PROJECT MANAGER R.P.E. No. C83148 JENNY H TRAN	
	RECOMMENDED: SR. ENGINEER R.P.E. No.	SCALE AS SHOWN DATE 10/28/2025
		RFQ#2607-W4560-M105D (DRAWING NUMBER) — REV. 0

USER: Liu Zivens
DATE: 10/28/2025 8:53:47 PM
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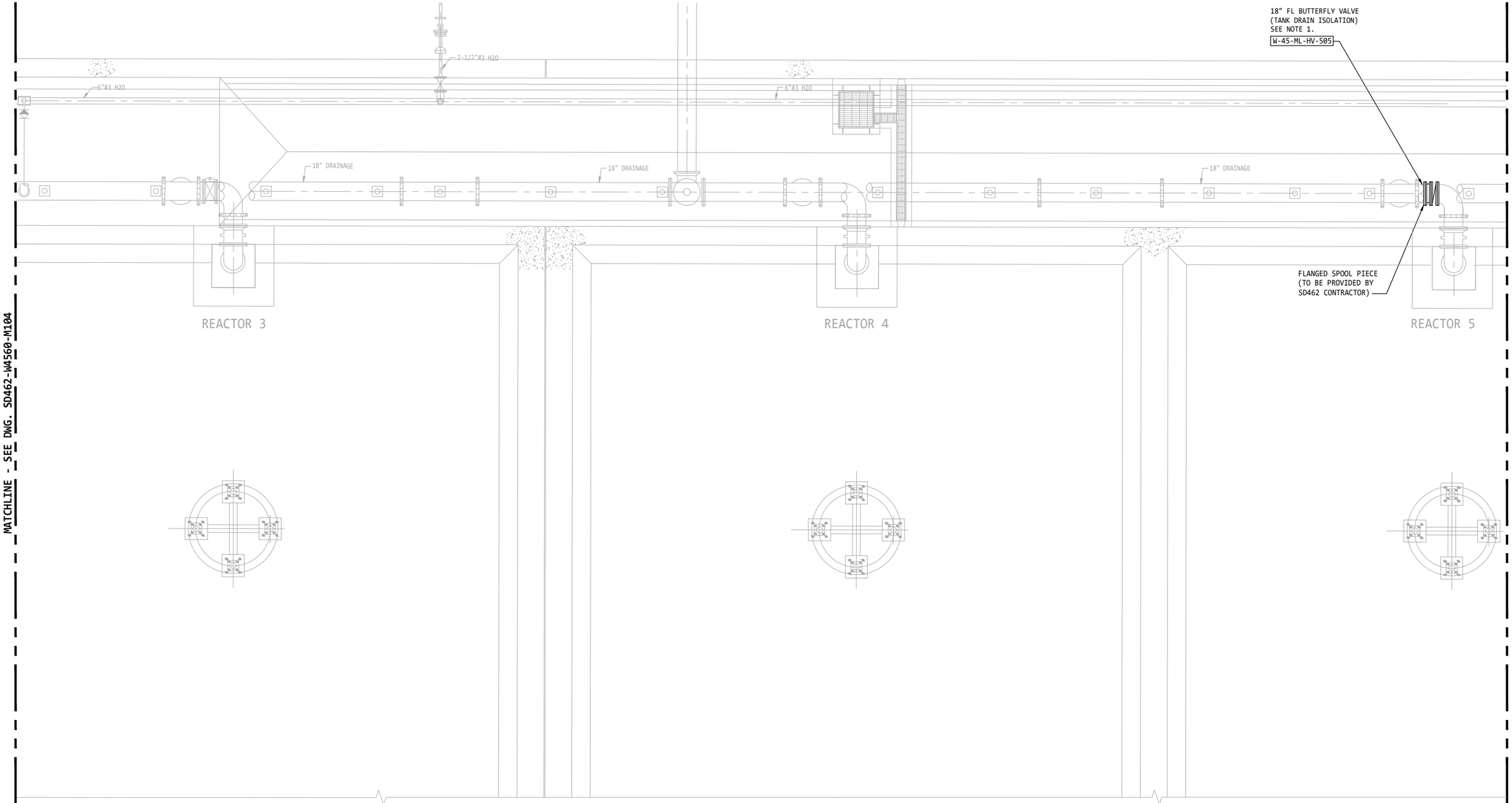
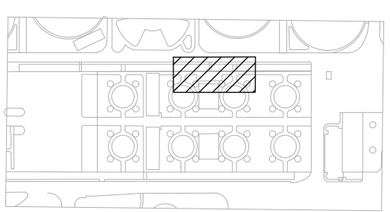


PLAN - NORTH REACTOR GALLERY

SCALE: 1/4" = 1'-0"



KEY PLAN

GENERAL NOTES:

1. THE RFQ #2607 MANUFACTURER SHALL VERIFY END CONNECTIONS ARE COMPATIBLE WITH MATING PIPE AND VALVE DIMENSIONS DO NOT CONFLICT WITH EXISTING PIPING AND OTHER UTILITIES.
2. DISCS IN VALVES SUPPLIED UNDER RFQ #2607, IN OPEN POSITION, SHALL CLEAR ADJACENT PIPING'S COATING (ASSUME EXISTING STEEL PIPING IS 3/8" THICK WITH 30-50 MILS OF COATING.)
3. RFQ #2607 MANUFACTURER SHALL WORK WITH ENGINEER ON LENGTH AND POSITION OF STEM PRIOR TO FABRICATION.

NOTES:

1. THESE ITEMS ARE INCLUDED IN RFQ#2607 - PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES.

0 1' 2' 4' 8' 12'

SCALE: 1/4" = 1'-0"

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN	DESIGN BY: P. LAIKIJRUNG	EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND. CALIFORNIA
	DRAWN BY: J. TANG	
REVIEW	DESIGN REVIEWER: R.P.E. No.	MAIN WASTEWATER TREATMENT PLANT REACTORS MECHANICAL
	CONSTRUCTION REVIEWER: R.P.E. No.	
	ELECTRICAL REVIEWER: R.P.E. No.	
MANAGEMENT	PROJECT ENGINEER R.P.E. No. C83148 JENNY H TRAN	NORTH REACTOR GALLERY AT REACTORS 3, 4 & 5 SHEET NO. 4
	PROJECT MANAGER R.P.E. No. C83148 JENNY H TRAN	
	RECOMMENDED: SR. ENGINEER R.P.E. No.	SCALE AS SHOWN DATE 10/28/2025 RFQ#2607-W4560-M105 (DRAWING NUMBER) 0 (REV.)

USER: Liu Zheng
DATE: 10/28/2025 9:44:00 AM
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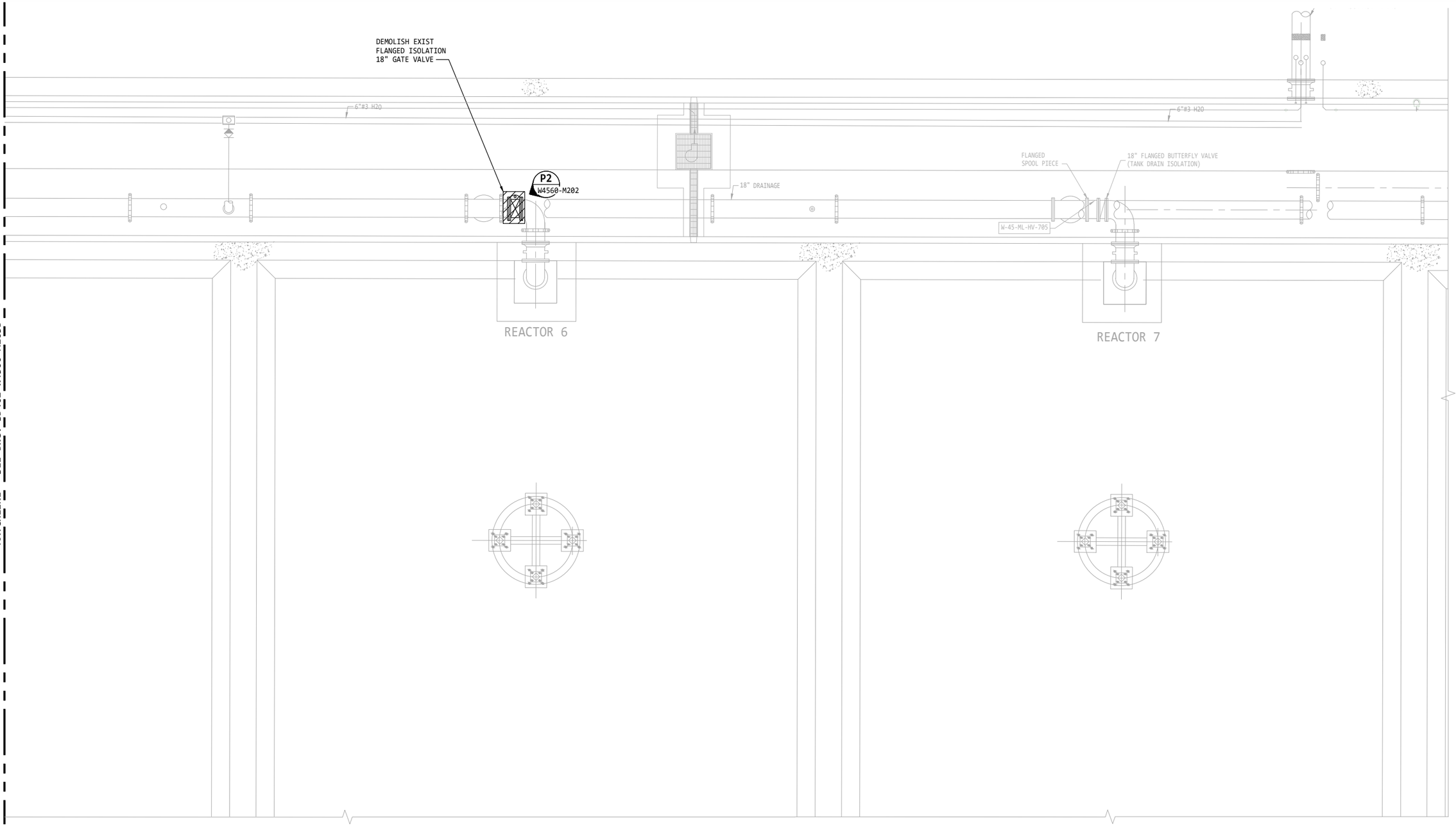
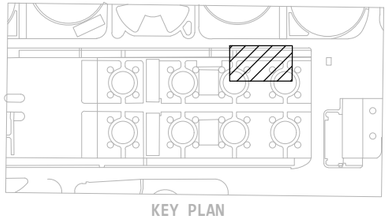


PLAN - NORTH REACTOR GALLERY

SCALE: 1/4" = 1'-0"



KEY PLAN

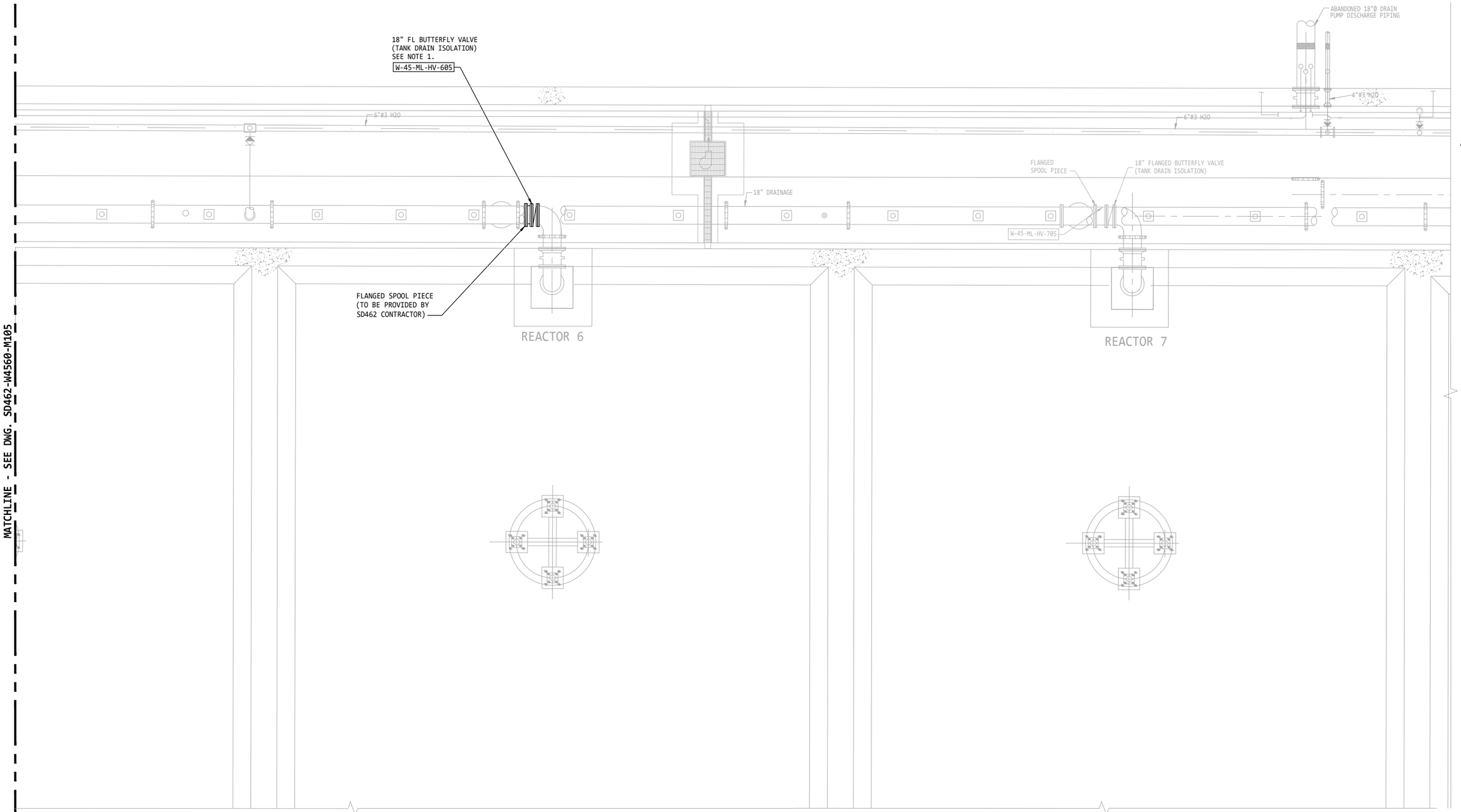
GENERAL NOTES:

1. DEMOLITION WORK IS SHOWN FOR REFERENCE ONLY.
2. DEMOLITION WORK IS NOT PART OF THIS RFQ#2607 AND WILL BE PERFORMED UNDER A SEPARATE CONTRACT.

NO.	DATE	REVISION	BY	REC.	APP.

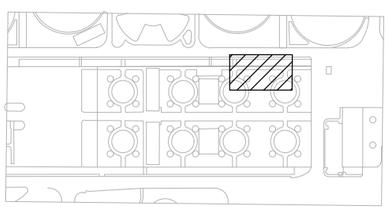
RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN	DESIGN BY: P. LAIKIJRUNG	EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND. CALIFORNIA
	DRAWN BY: J. TANG	
REVIEW	DESIGN REVIEWER: R.P.E. No.	MAIN WASTEWATER TREATMENT PLANT REACTORS MECHANICAL
	CONSTRUCTION REVIEWER: R.P.E. No.	
	ELECTRICAL REVIEWER: R.P.E. No.	DEMOLITION - NORTH REACTOR GALLERY AT REACTORS 5, 6 & 7
MANAGEMENT	PROJECT ENGINEER R.P.E. No. C83148 JENNY H TRAN	SHEET NO. 5
	PROJECT MANAGER R.P.E. No. C83148 JENNY H TRAN	
	RECOMMENDED: SR. ENGINEER R.P.E. No.	SCALE AS SHOWN DATE 10/28/2025
		RFQ#2607-W4560-M106D DRAWING NUMBER
		0 REV.



PLAN - NORTH REACTOR GALLERY

SCALE: 1/4" = 1'-0"



KEY PLAN

GENERAL NOTES:

1. THE RFQ #2607 MANUFACTURER SHALL VERIFY END CONNECTIONS ARE COMPATIBLE WITH MATING PIPE AND VALVE DIMENSIONS DO NOT CONFLICT WITH EXISTING PIPING AND OTHER UTILITIES.
2. DISCS IN VALVES SUPPLIED UNDER RFQ #2607, IN OPEN POSITION, SHALL CLEAR ADJACENT PIPING'S COATING (ASSUME EXISTING STEEL PIPING IS 3/8" THICK WITH 30-50 MILS OF COATING.)
3. RFQ #2607 MANUFACTURER SHALL WORK WITH ENGINEER ON LENGTH AND POSITION OF STEM PRIOR TO FABRICATION.

NOTES:

1. THESE ITEMS ARE INCLUDED IN RFQ#2607 - PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES.

0 1' 2' 4' 8' 12'

SCALE: 1/4" = 1'-0"

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN
- DESIGN BY: P. LAIKIJRUNG
- DRAWN BY: J. TANG

REVIEW
- DESIGN REVIEWER: R.P.E. No.
- CONSTRUCTION REVIEWER: R.P.E. No.
- ELECTRICAL REVIEWER: R.P.E. No.

MANAGEMENT
- PROJECT ENGINEER R.P.E. No. C83148 — JENNY H TRAN
- PROJECT MANAGER R.P.E. No. C83148 — JENNY H TRAN
- RECOMMENDED: SR. ENGINEER R.P.E. No.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND. CALIFORNIA

MAIN WASTEWATER TREATMENT PLANT
REACTORS
MECHANICAL

NORTH REACTOR GALLERY
AT REACTORS 5, 6 & 7

SHEET NO. 6

SCALE AS SHOWN
DATE 10/28/2025

RFQ#2607-W4560-M106 — DRAWING NUMBER

0 — REV.

USER: Liu Zhang
DATE: 2/20/2026 9:44:00 AM
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MATCHLINE - SEE DWG. SD462-W4560-M109D

MATCHLINE - SEE DWG. SD462-W4560-M111D

TRUE NORTH

N

REACTOR 03

REACTOR 04

REACTOR 05

DISCONNECT CONTROLS. SALVAGE EXISTING ACTUATOR.DEMOLISH EXISTING 42" BUTTERFLY VALVE FOR SECONDARY INFLUENT TO REACTOR 5. NOTES 1.

DEMOLISH EXISTING 48" BUTTERFLY VALVE WITH MANUAL OPERATOR FOR SECONDARY INFLUENT TO REACTOR 5.

DEMOLISH EXISTING 30" BUTTERFLY VALVE WITH MANUAL OPERATOR CONNECTING RAS A AND B

ELIEF ALVE

42" MAGNETIC METER

18" MAGNETIC METER

42" MAGNETIC METER

MOTORIZED BUTTERFLY VALVE

18" MAGNETIC METER

42" MAGNETIC METER

MOTORIZED BUTTERFLY VALVE

P3
W4560-M202

16-3W

2" HHWR/SSWS

PIPE SUPPORT RACK, TYP

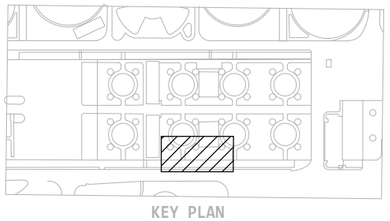
2" HHWR/SSWS

P1
W4560-M201

P2
W4560-M201

SOUTH GALLERY PLAN - REACTORS AREA

SCALE: 1/4" = 1'-0"



KEY PLAN

GENERAL NOTES:

1. DEMOLITION WORK IS SHOWN FOR REFERENCE ONLY.
2. DEMOLITION WORK IS NOT PART OF THIS RFQ#2607 AND WILL BE PERFORMED UNDER A SEPARATE CONTRACT.

NOTES:

1. DE-ENERGIZE AND DISCONNECT THE CABLES BEFORE DEMO. RECONNECT THE WIRES AFTER INSTALLATION.

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN	DESIGN BY: P. LAIKIJRUNG	EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND. CALIFORNIA
	DRAWN BY: J. TANG	
REVIEW	DESIGN REVIEWER: R.P.E. No.	MAIN WASTEWATER TREATMENT PLANT REACTORS
	CONSTRUCTION REVIEWER: R.P.E. No.	MECHANICAL
	ELECTRICAL REVIEWER: R.P.E. No.	DEMOLITION - SOUTH REACTOR GALLERY AT REACTORS 3, 4 & 5
MANAGEMENT	PROJECT ENGINEER R.P.E. No. C83148 JENNY H TRAN	SHEET NO. 7
	PROJECT MANAGER R.P.E. No. C83148 JENNY H TRAN	SCALE AS SHOWN
	RECOMMENDED: SR. ENGINEER R.P.E. No.	DATE 10/28/2025
		RFQ#2607-W4560-M110D DRAWING NUMBER
		0 REV.

USER: Liu Ziyang
DATE: 10/28/2025 9:45:43 PM
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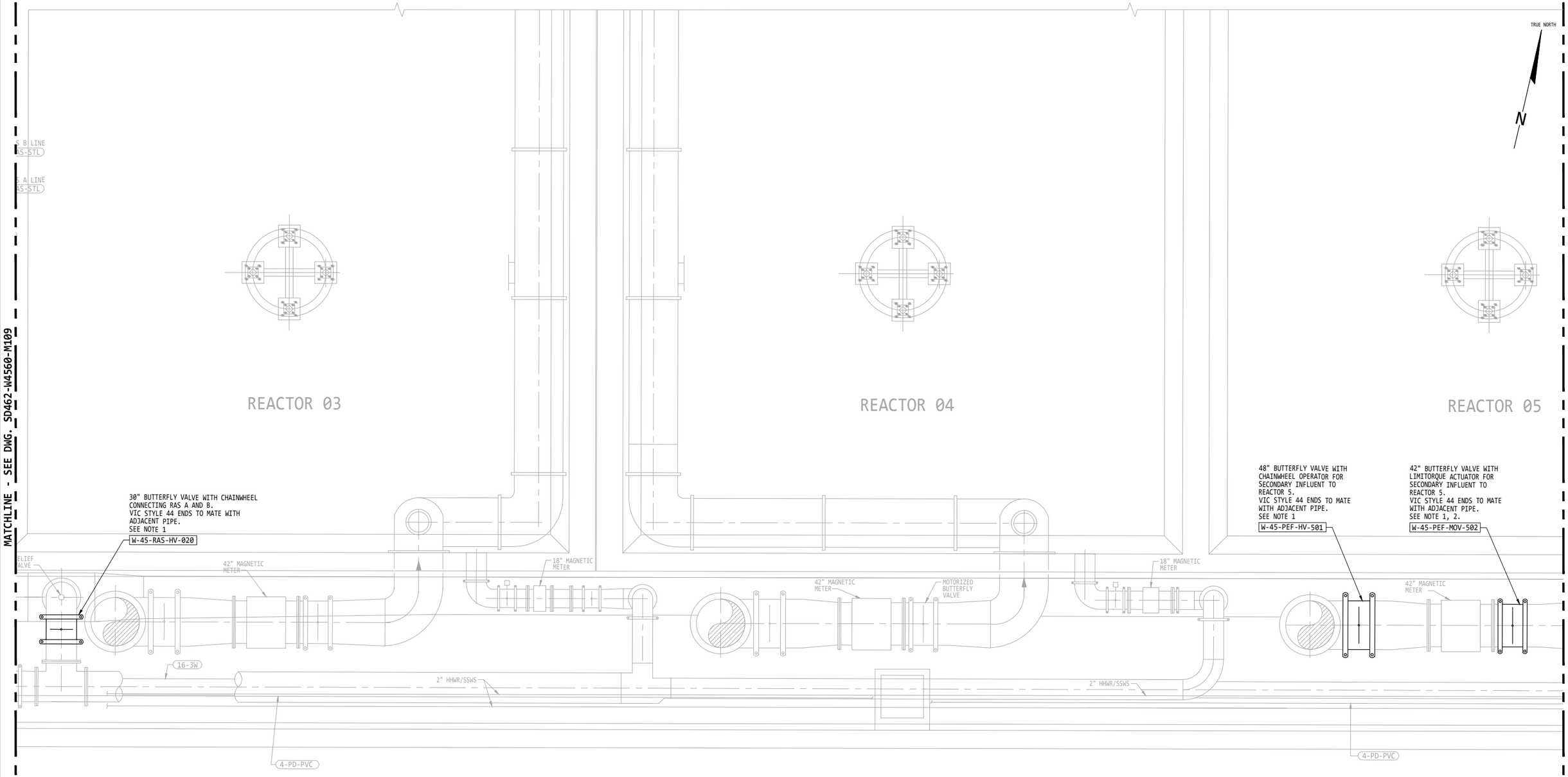
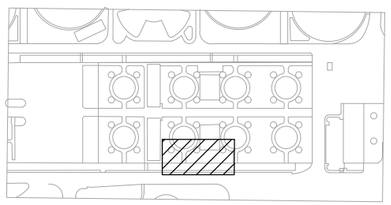


SOUTH GALLERY PLAN - REACTORS AREA

SCALE: 1/4" = 1'-0"



KEY PLAN

GENERAL NOTES:

1. THE RFQ #2607 MANUFACTURER SHALL VERIFY END CONNECTIONS ARE COMPATIBLE WITH MATING PIPE AND VALVE DIMENSIONS DO NOT CONFLICT WITH EXISTING PIPING AND OTHER UTILITIES.
2. DISCS IN VALVES SUPPLIED UNDER RFQ #2607, IN OPEN POSITION, SHALL CLEAR ADJACENT PIPING'S COATING (ASSUME EXISTING STEEL PIPING IS 3/8" THICK WITH 30-50 MILS OF COATING).
3. RFQ #2607 MANUFACTURER SHALL WORK WITH ENGINEER ON LENGTH AND POSITION OF STEM PRIOR TO FABRICATION.

NOTES:

1. THESE ITEMS ARE INCLUDED IN RFQ#2607 - PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES.
2. DE-ENERGIZE AND DISCONNECT THE CABLES BEFORE DEMO. RECONNECT THE WIRES AFTER INSTALLATION.

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN	DESIGN BY: P. LAIKIJRUNG	EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND. CALIFORNIA
	DRAWN BY: J. TANG	MAIN WASTEWATER TREATMENT PLANT REACTORS MECHANICAL SOUTH REACTOR GALLERY AT REACTORS 3, 4 & 5
REVIEW	DESIGN REVIEWER: R.P.E. No.	
	CONSTRUCTION REVIEWER: R.P.E. No.	
	ELECTRICAL REVIEWER: R.P.E. No.	
MANAGEMENT	PROJECT ENGINEER R.P.E. No. C83148 JENNY H TRAN	SHEET NO. 8
	PROJECT MANAGER R.P.E. No. C83148 JENNY H TRAN	SCALE AS SHOWN
	RECOMMENDED: SR. ENGINEER R.P.E. No.	DATE 10/28/2025
		RFQ#2607-W4560-M110 DRAWING NUMBER
		0 REV.

USER: Liu,Zigang
DATE: 10/28/2025 9:56:20 AM
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MATCHLINE - SEE DWG. SD462-W4560-M110D

TRUE NORTH

N

REACTOR 05

REACTOR 06

REACTOR 07

DISCONNECT CONTROLS. SALVAGE EXISTING ACTUATOR. DEMOLISH EXISTING 18" BUTTERFLY VALVE WITH ELECTRIC OPERATOR FOR RAS TO REACTOR 5. NOTE 1.

DEMOLISH EXISTING 18" BUTTERFLY VALVE WITH MANUAL OPERATOR FOR RAS TO REACTOR 5.

DEMOLISH EXISTING 48" BUTTERFLY VALVE WITH MANUAL OPERATOR FOR SECONDARY INFLUENT TO REACTOR 6.

DISCONNECT CONTROLS AND DEMOLISH EXISTING 42" BUTTERFLY VALVE WITH ELECTRIC OPERATOR FOR SECONDARY INFLUENT TO REACTOR 6. NOTE 1.

DISCONNECT CONTROLS AND DEMOLISH EXISTING 18" BUTTERFLY VALVE WITH ELECTRIC OPERATOR FOR RAS TO REACTOR 6. NOTE 1.

DEMOLISH EXISTING 18" BUTTERFLY VALVE WITH MANUAL OPERATOR FOR RAS TO REACTOR 6.

18" MAGNETIC METER

42" MAGNETIC METER

MOTORIZED BUTTERFLY VALVE

P3 W4560-M201

P4 W4560-M201

P5 W4560-M201

P6 W4560-M201

P7 W4560-M201

P8 W4560-M201

2" HHWR/SSWS

4-PD-PVC

2" HHWR/

PIPE SUP RACK (TY

SOUTH GALLERY PLAN - REACTORS AREA

SCALE: 1/4" = 1'-0"

KEY PLAN

GENERAL NOTES:

1. DEMOLITION WORK IS SHOWN FOR REFERENCE ONLY.
2. DEMOLITION WORK IS NOT PART OF THIS RFQ#2607 AND WILL BE PERFORMED UNDER A SEPARATE CONTRACT.

NOTES:

1. DE-ENERGIZE AND DISCONNECT THE CABLES BEFORE DEMO. RECONNECT THE WIRES AFTER INSTALLATION.

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN	DESIGN BY: P. LAIKIJRUNG	EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND. CALIFORNIA
	DRAWN BY: J. TANG	
REVIEW	DESIGN REVIEWER: R.P.E. No.	MAIN WASTEWATER TREATMENT PLANT REACTORS MECHANICAL
	CONSTRUCTION REVIEWER: R.P.E. No.	
	ELECTRICAL REVIEWER: R.P.E. No.	DEMOLITION - SOUTH REACTOR GALLERY AT REACTORS 5, 6 & 7 SHEET NO. 9
MANAGEMENT	PROJECT ENGINEER R.P.E. No. C83148 JENNY H TRAN	
	PROJECT MANAGER R.P.E. No. C83148 JENNY H TRAN	
	RECOMMENDED: SR. ENGINEER R.P.E. No.	SCALE AS SHOWN DATE 10/28/2025
		RFQ#2607-W4560-M111D DRAWING NUMBER
		0 REV.

USER: Liu Zigang
DATE: 10/28/2025 3:45:43 PM
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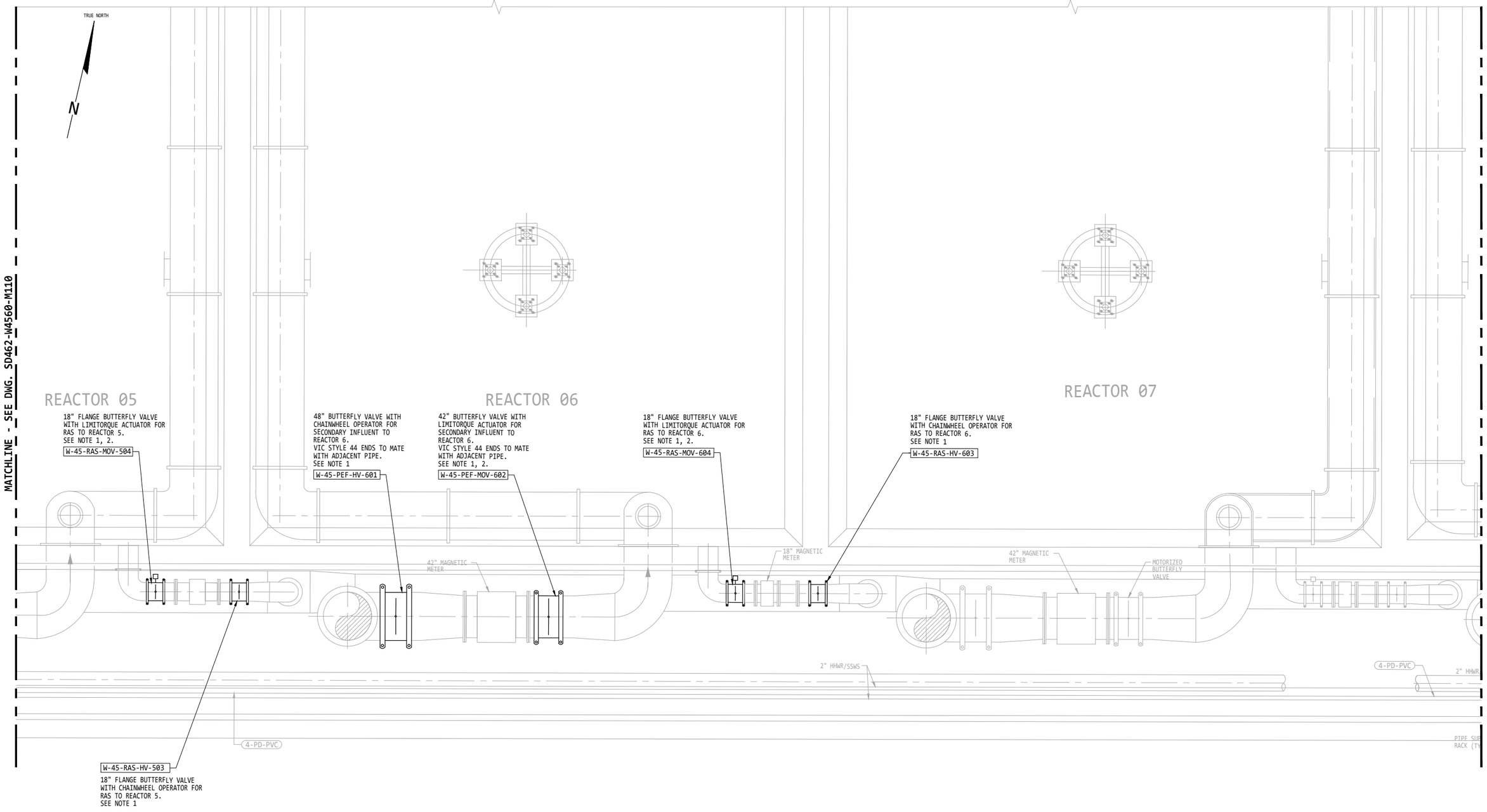
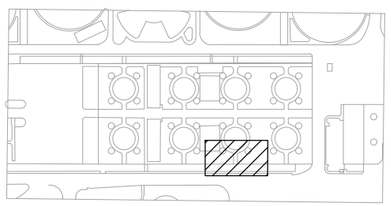


SOUTH GALLERY PLAN - REACTORS AREA

SCALE: 1/4" = 1'-0"



KEY PLAN

GENERAL NOTES:

1. THE RFQ #2607 MANUFACTURER SHALL VERIFY END CONNECTIONS ARE COMPATIBLE WITH MATING PIPE AND VALVE DIMENSIONS DO NOT CONFLICT WITH EXISTING PIPING AND OTHER UTILITIES.
2. DISCS IN VALVES SUPPLIED UNDER RFQ #2607, IN OPEN POSITION, SHALL CLEAR ADJACENT PIPING'S COATING (ASSUME EXISTING STEEL PIPING IS 3/8" THICK WITH 30-50 MILS OF COATING).
3. RFQ #2607 MANUFACTURER SHALL WORK WITH ENGINEER ON LENGTH AND POSITION OF STEM PRIOR TO FABRICATION.

NOTES:

1. THESE ITEMS ARE INCLUDED IN RFQ#2607 - PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES.
2. DE-ENERGIZE AND DISCONNECT THE CABLES BEFORE DEMO. RECONNECT THE WIRES AFTER INSTALLATION.

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN	DESIGN BY: P. LAIKIJRUNG	EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND. CALIFORNIA
	DRAWN BY: J. TANG	
REVIEW	DESIGN REVIEWER: R.P.E. No.	MAIN WASTEWATER TREATMENT PLANT REACTORS
	CONSTRUCTION REVIEWER: R.P.E. No.	MECHANICAL
	ELECTRICAL REVIEWER: R.P.E. No.	SOUTH REACTOR GALLERY AT REACTORS 5, 6 & 7
MANAGEMENT	PROJECT ENGINEER R.P.E. No. C83148 JENNY H TRAN	SHEET NO. 10
	PROJECT MANAGER R.P.E. No. C83148 JENNY H TRAN	SCALE AS SHOWN
	RECOMMENDED: SR. ENGINEER R.P.E. No.	DATE 10/28/2025
		RFQ#2607-W4560-M111 DRAWING NUMBER
		0 REV.

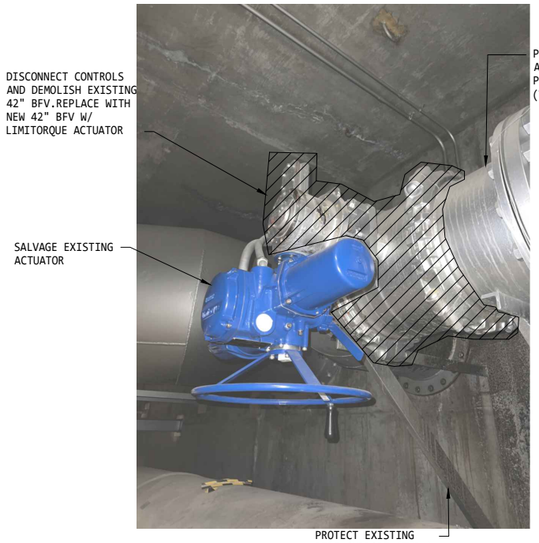
USER: Liu.Zheng
DATE: 10/28/2025 9:56:20 AM
FILE: J:\SD Projects\SD462 Reactor Rehab Ph 2\RFQ#2607 drawing\RFQ#2607-W4560-M110_M111.dwg

EXISTING 48" BFV W/ MANUAL OPERATOR FOR SECONDARY INFLUENT TO REACTOR 5

P1 PHOTO DETAIL
W4560-M110D SCALE: NTS

EXISTING 42" BFV W/ ELECTRIC OPERATOR FOR SECONDARY INFLUENT TO REACTOR 5

P2 PHOTO DETAIL
W4560-M110D SCALE: NTS



EXISTING 18" BFV W/ ELECTRIC OPERATOR FOR RAS TO REACTOR 5

P3 PHOTO DETAIL
W4560-M111D SCALE: NTS

EXISTING 18" BFV W/ MANUAL OPERATOR FOR RAS TO REACTOR 5

P4 PHOTO DETAIL
W4560-M111D SCALE: NTS

EXISTING 48" BFV W/ MANUAL OPERATOR FOR SECONDARY INFLUENT TO REACTOR 6

P5 PHOTO DETAIL
W4560-M111D SCALE: NTS

EXISTING 42" BFV W/ ELECTRIC OPERATOR FOR SECONDARY INFLUENT TO REACTOR 6

P6 PHOTO DETAIL
W4560-M111D SCALE: NTS

EXISTING 18" BFV W/ ELECTRIC OPERATOR FOR RAS TO REACTOR 6

P7 PHOTO DETAIL
W4560-M111D SCALE: NTS

EXISTING 18" BFV W/ MANUAL OPERATOR FOR RAS TO REACTOR 6

P8 PHOTO DETAIL
W4560-M111D SCALE: NTS

GENERAL NOTES:

1. DEMOLITION WORK IS SHOWN FOR REFERENCE ONLY.
2. DEMOLITION WORK IS NOT PART OF THIS RFQ#2607 AND WILL BE PERFORMED UNDER A SEPARATE CONTRACT.

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN
DESIGN BY: P. LAIKIJRUNG
DRAWN BY: J. TANG

REVIEW
DESIGN REVIEWER: R.P.E. No.
CONSTRUCTION REVIEWER: R.P.E. No.
ELECTRICAL REVIEWER: R.P.E. No.

MANAGEMENT
PROJECT ENGINEER R.P.E. No. C83148 JENNY H TRAN
PROJECT MANAGER R.P.E. No. C83148 JENNY H TRAN
RECOMMENDED: SR. ENGINEER R.P.E. No.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND. CALIFORNIA

MAIN WASTEWATER TREATMENT PLANT
REACTORS
MECHANICAL
REACTOR GALLERY - VALVES
SECTIONS AND DETAILS 1
SHEET NO. 11

SCALE AS SHOWN
DATE 10/28/2025
RFQ#2607-W4560-M201
DRAWING NUMBER
0
REV.

USER: Liu,Ziyang
DATE: 12/8/2025 3:44:05 PM
FILE: J:\SD Projects\SD462 Reactor Rehab Ph 2\RFQ#2607 drawings\RFQ#2607-W4560-M201.dwg

EXISTING 18" GATE VALVE W/ MANUAL OPERATOR FOR REACTOR 5 DRAIN

P1 PHOTO DETAIL
W4560-M105D SCALE: NTS

EXISITNG 18" GATE VALVE W/ MANUAL OPERATOR FOR REACTOR 6 DRAIN

P2 PHOTO DETAIL
W4560-M106D SCALE: NTS

EXISITNG 30" BFV W/ MANUAL OPERATOR CONNECTING RAS A & B

P3 PHOTO DETAIL
W4560-M110D SCALE: NTS

GENERAL NOTES:

1. DEMOLITION WORK IS SHOWN FOR REFERENCE ONLY.
2. DEMOLITION WORK IS NOT PART OF THIS RFQ#2607 AND WILL BE PERFORMED UNDER A SEPARATE CONTRACT.

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN
DESIGN BY: P. LAIKIJRUNG
DRAWN BY: J. TANG

REVIEW
DESIGN REVIEWER: R.P.E. No.
CONSTRUCTION REVIEWER: R.P.E. No.
ELECTRICAL REVIEWER: R.P.E. No.

MANAGEMENT
PROJECT ENGINEER R.P.E. No. C83148 JENNY H TRAN
PROJECT MANAGER R.P.E. No. C83148 JENNY H TRAN
RECOMMENDED: SR. ENGINEER R.P.E. No.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND. CALIFORNIA

MAIN WASTEWATER TREATMENT PLANT
REACTORS
MECHANICAL
REACTOR GALLERY - VALVES
SECTIONS AND DETAILS 2 SHEET NO. 12

SCALE AS SHOWN
DATE 10/28/2025
RFQ#2607-W4560-M202 DRAWING NUMBER
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USER: Liu, Ziyang
DATE: 12/9/2025 3:31:42 PM
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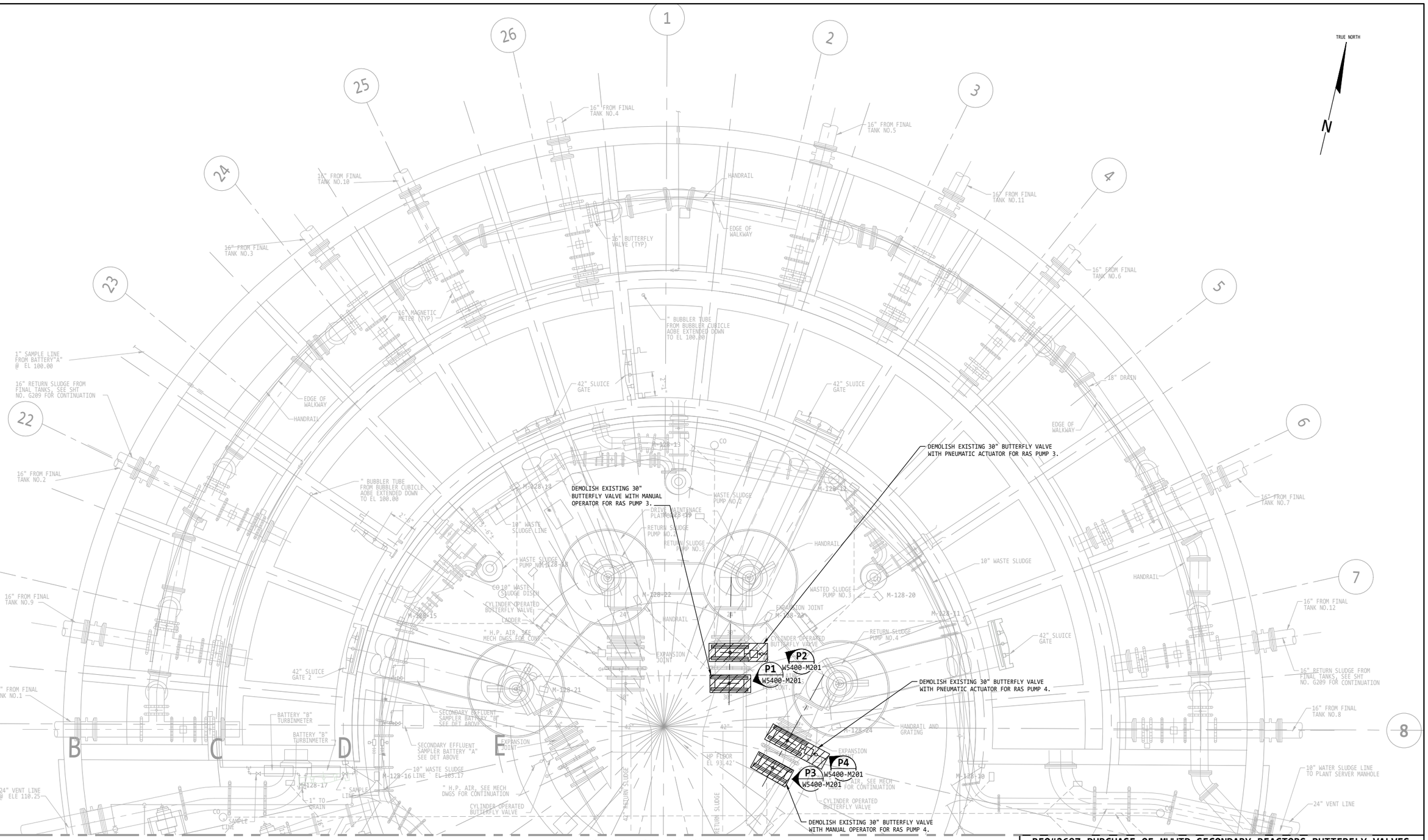

MATCHLINE - SEE DWG. SD462-W5400-M101.2

GENERAL NOTES:

1. DEMOLITION WORK IS SHOWN FOR REFERENCE ONLY.
2. DEMOLITION WORK IS NOT PART OF THIS RFQ#2607 AND WILL BE PERFORMED UNDER A SEPARATE CONTRACT.

1 / W5400-M101 ENLARGED PLAN VIEW
SCALE: 1/4" = 1'-0"

0 2' 4' 8' 16' 24'
SCALE: 1/8" = 1'-0"

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN	DESIGN BY:	P. LAIKIJRUNG
	DRAWN BY:	J. TANG
REVIEW	DESIGN REVIEWER: R.P.E. No.	
	CONSTRUCTION REVIEWER: R.P.E. No.	
	ELECTRICAL REVIEWER: R.P.E. No.	
MANAGEMENT	PROJECT ENGINEER R.P.E. No. C83148	JENNY H TRAN
	PROJECT MANAGER R.P.E. No. C83148	JENNY H TRAN
	RECOMMENDED: SR. ENGINEER R.P.E. No.	

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND. CALIFORNIA

MAIN WASTEWATER TREATMENT PLANT
REACTORS
MECHANICAL
DEMOLITION - OPERATION CENTER
BASEMENT PLAN - NORTH
SHEET NO. 13

SCALE AS SHOWN
DATE 10/28/2025
RFQ#2607-W5400-M101.1D
DRAWING NUMBER
0
REV.

USER Luz.Zyanya
DATE 10/28/2025 11:21:37 AM
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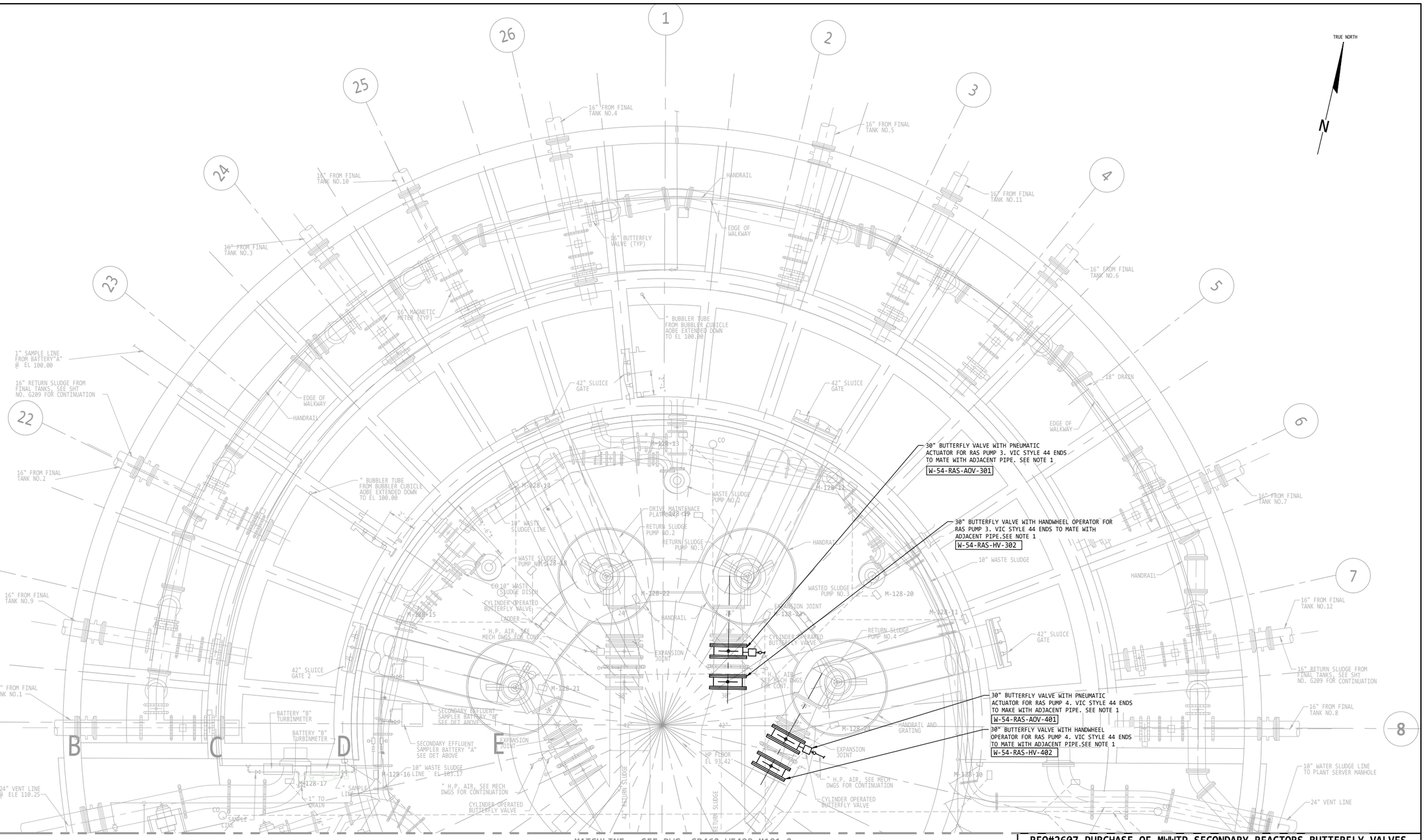

MATCHLINE - SEE DWG. SD462-W5400-M101.2

1 W5400-M101 ENLARGED PLAN VIEW

SCALE: 1/4" = 1'-0"

0 2' 4' 8' 16' 24'

SCALE: 1/8" = 1'-0"

GENERAL NOTES:

1. THE RFQ #2607 MANUFACTURER SHALL VERIFY END CONNECTIONS ARE COMPATIBLE WITH MATING PIPE AND VALVE DIMENSIONS DO NOT CONFLICT WITH EXISTING PIPING AND OTHER UTILITIES.
2. DISCS IN VALVES SUPPLIED UNDER RFQ #2607, IN OPEN POSITION, SHALL CLEAR ADJACENT PIPING'S COATING (ASSUME EXISTING STEEL PIPING IS 3/8" THICK WITH 30-50 MILS OF COATING).
3. RFQ #2607 MANUFACTURER SHALL WORK WITH ENGINEER ON LENGTH AND POSITION OF STEM PRIOR TO FABRICATION.

NOTES:

1. THESE ITEMS ARE INCLUDED IN RFQ#2607 - PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES.

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN	DESIGN BY: P. LAIKIJRUNG	EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND. CALIFORNIA
	DRAWN BY: J. TANG	
REVIEW	DESIGN REVIEWER: R.P.E. No.	MAIN WASTEWATER TREATMENT PLANT REACTORS MECHANICAL
	CONSTRUCTION REVIEWER: R.P.E. No.	
	ELECTRICAL REVIEWER: R.P.E. No.	
MANAGEMENT	PROJECT ENGINEER R.P.E. No. C83148 JENNY H TRAN	OPERATION CENTER BASEMENT PLAN - NORTH SHEET NO. 14
	PROJECT MANAGER R.P.E. No. C83148 JENNY H TRAN	
	RECOMMENDED: SR. ENGINEER R.P.E. No.	SCALE AS SHOWN DATE 10/28/2025 RFQ#2607-W5400-M101.1 DRAWING NUMBER 0 REV.

USER: Liu Zhang
DATE: 10/28/2025 4:00:55 PM
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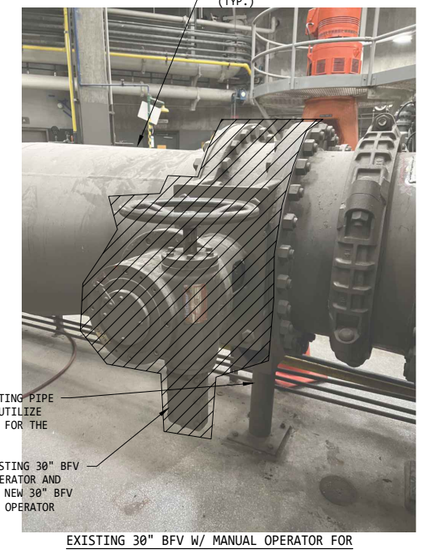
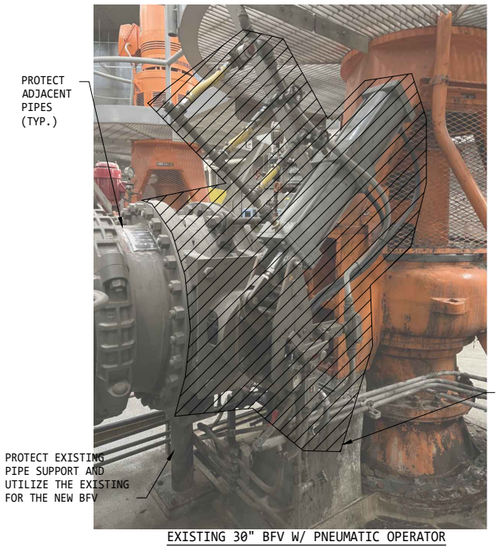


EXISTING 30" BFV W/ MANUAL OPERATOR FOR RAS PUMP 3

P1 PHOTO DETAIL

W5400-M101B SCALE: NTS



EXISTING 30" BFV W/ PNEUMATIC OPERATOR FOR RAS PUMP 3

P2 PHOTO DETAIL

W5400-M101B SCALE: NTS

EXISTING 30" BFV W/ MANUAL OPERATOR FOR RAS PUMP 4

P3 PHOTO DETAIL

W5400-M101B SCALE: NTS

EXISTING 30" BFV W/ PNEUMATIC OPERATOR FOR RAS PUMP 4

P4 PHOTO DETAIL

W5400-M101B SCALE: NTS

GENERAL NOTES:

1. DEMOLITION WORK IS SHOWN FOR REFERENCE ONLY.
2. DEMOLITION WORK IS NOT PART OF THIS RFQ#2607 AND WILL BE PERFORMED UNDER A SEPARATE CONTRACT.

NO.	DATE	REVISION	BY	REC.	APP.

RFQ#2607-PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

DESIGN
DESIGN BY: P. LAIKIJRUNG
DRAWN BY: J. TANG

REVIEW
DESIGN REVIEWER: R.P.E. No.
CONSTRUCTION REVIEWER: R.P.E. No.
ELECTRICAL REVIEWER: R.P.E. No.

MANAGEMENT
PROJECT ENGINEER R.P.E. No. C83148 JENNY H TRAN
PROJECT MANAGER R.P.E. No. C83148 JENNY H TRAN
RECOMMENDED: SR. ENGINEER R.P.E. No.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND. CALIFORNIA

MAIN WASTEWATER TREATMENT PLANT
REACTORS
MECHANICAL

OPERATION CENTER BASEMENT PLAN - NORTH - SECTIONS AND DETAILS SHEET NO. 15

SCALE AS SHOWN
DATE 10/28/2025
RFQ#2607-W5400-M201 DRAWING NUMBER
0 REV.

USER: Liu, Ziyang
DATE: 10/24/2025 10:18:55 AM
FILE: J:\SD Projects\S1402 Reactor Rehab Ph 2\RFQ#2607 drawing\RFQ#2607-W5400-M201.dwg

EXHIBIT F
List of Specifications

The following technical specifications provide additional information about requirements in this Agreement.

Exhibit	Specification Section	Specification Title
F1	01 33 00	Submittal Procedures
F2	01 45 27	Shop Inspection
F3	01 79 00	Demonstration and Training
F4	01 75 17	Field Testing and Startup
F5	05 05 24	Shop and Field Welding
F6	09 96 56.10	Fusion Bonded Epoxy Coatings
F7	33 12 16.15	AWWA Butterfly Valves
F8	33 12 16.34	Hydraulic and Pneumatic Valve Actuators
F9	40 05 57.23	Electric Motor Valve Actuators

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. The term “Supplier” used herein is synonymous with the term “Bidder” and “Manufacturer” used in other documents in this Request for Quote (RFQ) package.

2. Submit samples, drawings, and data for the Engineer's approval which demonstrate fully that the construction, and the materials and equipment to be furnished will comply with the provisions and intent of this Specification. All submittals shall be written in Standard American English and all numerical data, whether in drawings, test reports, engineering calculations, manufacturer’s literature, or maintenance manuals, shall be in United States Customary System (USCS) measuring units (foot, pound, gallons, etc.) If original design work was completed in metric units, their equivalent USCS dimension and unit shall be indicated. All submittals, in printed or electronic format, shall be original quality and completely legible. Any obfuscation or loss of clarity of original which may result in ambiguous interpretation is not acceptable.

3. This Section outlines in general the items that the Supplier must prepare or assemble for submittal during the progress of the work. There is no attempt herein to state in detail all of the procedures and requirements for each submittal.

4. The Supplier's attention is directed to the individual Specification sections in these Contract Documents which may contain additional and special submittal requirements.

5. The District reserves the right to direct and modify the procedures and requirements for submittals as necessary to accomplish the specific purpose of each submittal.

6. The Supplier shall anticipate resubmitting submittals for major pieces of equipment and for control systems.

7. Requirements in this section are in addition to any specific requirements for submittals specified in other divisions and sections of these Contract Documents.

8. Should the Supplier be in doubt as to the procedure, purpose, or extent of any submittal, the Supplier shall direct its inquiry to the District.

1.2 PRODUCT HANDLING

A. Submittals shall be accompanied by a letter of transmittal and shall be in strict accordance with the provisions of this section.

B. Submit priority of processing when appropriate.

C. Submit materials to the EBMUD Materials Testing Laboratory when so specified. Submit other submittals to the Construction Manager in accordance with Article 3.1 unless specified otherwise.

D. Proposals for "or equal" substitutions made prior to bid opening, pursuant to Public Contract Code Section 3400 (see Document 00 21 13 Instructions To Bidders, Article 3), shall be delivered after coordinating the delivery with the District. Supplier shall coordinate with the District's Purchasing Division at the following telephone numbers: (510)-287-0447, (510) 287-1253 or (510) 287-2017.

1.3 SUBMITTALS

A. General

1. Submittals shall be provided to the District by the date set on RFQ Section II – Calendar of Events.

2. Submittals shall include the following information:

a. A copy of the applicable section(s), with addendum updates included as appropriate, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements.

b. A check mark shall denote full compliance with a paragraph as a whole. If deviations from the specifications are indicated, and therefore requested by the Supplier, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons for requesting the deviation. The Engineer is the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance on the part of the Supplier with the specifications.

3. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.

4. Any deviation from the contract documents not specifically requested and clearly identified, although accepted through oversight, may be rejected at any stage of the Work. The Supplier shall, at its own expense, reconstruct all work affected by

the later rejection of a contract deviation that was not specifically called out and explained for review and acceptance by the District as detailed above.

5. The Supplier shall indicate on the submittal transmittal form if and how the submittal deviates from the contract requirements.

6. Submittals will be reviewed for general conformance with the Drawings and Specifications. The intent of the review is to determine if the Supplier is submitting materials and equipment which are in general conformance with the Contract Documents.

7. Accuracy, coordination, and completeness of submittals shall be the sole responsibility of the Supplier, including responsibility to back check comments, corrections, and modifications from the Engineer's review before fabrication.

8. It is considered reasonable that the Supplier shall make a complete and acceptable submittal to the Engineer by the second submission of a submittal item. Additional costs of the Engineer's review beyond the second submission shall be the responsibility of the Supplier and may be deducted from the monthly progress payments. This applies to all submittals including shop drawings.

1.4 TECHNICAL SUBMITTALS

A. General

1. No equipment or material for which listings, drawings, or descriptive material is required shall be fabricated, purchased, or installed until the District has reviewed and accepted such lists, final shop drawings, or other descriptive material. Installation of such equipment or material without accepted submittals will be considered defective work.

2. The Supplier shall provide in its procurement schedule the time for District review of each submittal (and resubmittal for major equipment and control systems) in accordance with the allowable time specified in the RFQ.

3. Shop drawings, layout diagrams, catalog cuts and data, test reports, and information in sufficient detail to show complete compliance with all specified requirements shall be furnished to the Engineer.

PART 2 - PRODUCTS

2.1 SCHEDULE OF SUBMITTALS

A. Schedule of Submittals/Submittal Log shall be in the form of a submittal log similar to that shown in Exhibit H – Forms.

B. Complete columns (a) through (l) showing all submittals required by the specifications.

1. Dates in column (h) through (l) shall be coordinated with the construction progress schedule to ensure sufficient time is allowed for processing of submittals and procurement of material prior to start of a construction activity.

C. A Schedule of Submittals is not required for proposals for "or equal" substitutions made prior to bid opening pursuant to PCC Section 3400 (see Instructions To Bidders, Article 3).

2.2 SHOP DRAWINGS

A. Shop Drawing Requirements: Shop drawings referred to herein shall include shop drawings, catalog cuts and information schematic diagrams, and other submittals for both shop and field-fabricated items.

B. General

1. Shop drawings shall be accurate, distinct, and complete, and shall contain all required information, including satisfactory identification of items, units, and assemblies in relation to the Contract Drawings and Specifications.

2. Shop drawings shall be submitted only by the Supplier, who shall indicate by a signed stamp on the shop drawings, or other approved means, that the Supplier has checked and approved the shop drawings, and that the work shown is in accordance with Contract requirements and has been checked for dimensions and relationship with work of all other trades involved. Submitting incomplete or unchecked shop drawings for the Engineer to correct or finish will not be acceptable, and shop drawings which, in the opinion of the Engineer, indicate that they have not been checked by the Supplier will be rejected and returned to the Supplier for resubmission in the proper form.

3. When the shop drawings have been reviewed by the Engineer, the submittals will be returned to the Supplier. If major changes or corrections are necessary, the shop drawing will be rejected and returned to the Supplier with the need for such changes or corrections indicated. The Supplier shall correct and resubmit rejected shop drawings in the same manner and quantity as specified for the original submittal. If changes are made by the Supplier (in addition to those requested by the Engineer) on the resubmitted shop drawings, such changes shall be clearly explained in a transmittal letter accompanying the resubmitted shop drawings.

4. The review of such shop drawings and catalog cuts by the Engineer shall not relieve the Supplier from responsibility for correctness of dimensions, fabrication details, coordination with other work, and space requirements, or for deviations from the Contract Drawings or Specifications, unless the Supplier has called attention to such deviations in writing by a letter accompanying the shop drawings and the Engineer approves the change or deviation in writing at the time of submission; nor shall review by the Engineer relieve the Supplier from the responsibility for errors in the shop drawings.

5. The Supplier agrees that shop drawing submittals processed by the Engineer do not become Contract Documents and are not Change Orders; that the purpose of the shop drawing review is to establish a reporting procedure and to permit the Engineer to monitor the Supplier's progress and understanding of the design.

6. Shop drawing submittal and coordination are the responsibility of the Supplier; this responsibility shall not be delegated in whole or in part to subcontractors. Designation of work "by others," if shown on shop drawings, shall mean that the work will be the responsibility of the Supplier rather than the subcontractor who has prepared the shop drawings.

C. Final shop drawings to be submitted to Engineer :

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

D. Submittal of interface information (connection and correlation with other work):

1. Where called for on the Specifications, and as determined necessary by the Engineer to provide proper correlation with other equipment, complete interface information shall be submitted. This interface information shall be accurate, and contain all information necessary to allow the completion of detailed design and construction of the interfacing or connecting work. The Supplier shall include in its negotiation for subcontract work, such agreements as may be necessary to ensure the accuracy of subcontractor's interface submittal information. In the event additional costs are incurred due to subsequent changes to information given in said interface information, such additional costs shall be borne by the Supplier.

2.3 COLORS

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

2.4 MANUFACTURER'S LITERATURE

A. Where contents of submitted literature from manufacturers include data not pertinent to the submittal, clearly show which portions of the contents are being submitted for review.

B. Clearly mark the literature with the materials and options being provided to illustrate conformance with the specification details.

C. Provide the complete part number and include the legend containing the descriptive details that define the meaning of each digit of the number.

2.5 SUBSTITUTIONS

A. District’s approval required:

1. The contract is based on the materials, equipment, and methods described in the Contract Documents. Any Supplier’s proposed “or equal” substitutions are subject to the District's approval.

2. The District will consider proposals for substitution of materials, equipment, and methods only when such proposals are accompanied by full and complete technical data, and all other information required by the District to evaluate the proposed substitution.

3. Where substitutions are proposed for consideration, Supplier shall submit a written request for the substitution and shall show that it is equal to the specified item or better. The proposed substitution shall be identified separately and included with the required submittal for the item. When submitting a variation or substitution the Supplier warrants that:

a. The contract has been reviewed to establish that the substitution, when incorporated, will be compatible with other elements of work.

b. The Supplier shall perform all necessary work for making substitutions workable and shall bear any additional cost necessary because of the proposed substitution.

4. Substitutions not specifically requested, although accepted through oversight, may be rejected at any stage of the work. The Supplier shall, at its own expense, reconstruct all work affected by the later rejection of a substitution that was not specifically requested.

2.6 OPERATION AND MAINTENANCE (O&M) MANUALS:

A. See “Table 1: O&M Manual Summary” at the end of this section.

B. The provisions of this article are considered minimal requirements and do not supersede any requirements in individual sections of this specification or technical specifications.

C. Manufacturer shall be made aware of these requirements and all associated costs shall be included in the costs for furnishing the equipment or system.

D. The manuals shall be furnished to the District upon the delivery of the respective equipment. No payment will be made for equipment or materials or equipment installation before the respective O&M manuals have been approved by the Engineer.

E. All equipment shall be serviced in accordance with the manufacturer's recommendations prior to operation. A service record shall be maintained on each

item of equipment and shall be delivered to the Engineer prior to final acceptance of the project.

F. When O&M manuals are required to be submitted covering items included in this work, prepare all such manuals in approximately 8-1/2" x 11" format in durable, three ring plastic binders. Each manual shall be identical and include at a minimum information identified on the O&M Manual Review Checklist attached in Exhibit H – Forms. In addition, furnish the following:

1. Binder Cover: Identification on, or readable through, the front cover stating the District's specification (project) number and title, District facility or facilities where the equipment will be installed, specification section number, and the system or equipment described in the manual.

2. Binder Spine Label: Include the system or equipment name as shown on the binder cover along with the specification section number.

3. Title page including applicable equipment tag numbers and equipment manufacturer's name, address, telephone number, and submittal date. In addition, provide name, address and telephone number of the local manufacturer's representative.

4. Table of contents organized and referenced to manual section dividers.

5. Complete instructions regarding storage, handling, installation, operation, servicing, and maintenance of all equipment involved.

6. Comprehensive replacement parts list, with complete nomenclature of all replaceable parts, their part numbers, current cost, and name and address of nearest vendor of parts

7. Detailed description of handling, replacement, and disposal of all fluids and replacement parts

8. Copies of Safety Data Sheets (SDS) as required.

9. Copies of drawings with all data concerning changes made during construction

10. Copies of all guarantees and warranties issued including the start and end dates for the warranty period or conditions for the initial start date and the duration.

11. Copies of calculations or reports appropriately prepared including sketches, given or known information with the source of the data, equations with each variable defined and applicable units, cross-references, code/standard references, annotations and footnotes.

12. All field and factory test data

13. Engineering calculations or reports pertinent to the content of the O&M manual. See Article 2.8 Engineering Calculations or Reports.

14. Provide a separate section with tab divider for documents developed in the field after the O&M manual has been accepted. These documents include, but not limited to the following: manufacturer's certificate of proper installation, field test results, etc.

G. Materials shall be word-processed.

H. For mechanical or electrical equipment that require O&M manuals: provide separate O&M manuals for each piece of equipment installed at each site. Title the O&M manuals to denote which site the equipment pertains to.

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

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

K. Each copy of the manual shall be assembled in one or more binders, each with title page, typed table of contents, and heavy section dividers with numbered plastic index tabs. Each manual shall be divided into sections paralleling the equipment specifications. Binders shall be three-ring, hard-back type. All data shall be punched for binding and composition and printing shall be arranged so that punching does not obliterate any data. The project title, Division designation, and manual title printed thereon shall be as furnished by the Engineer.

L. Where more than one binder is required, they shall be labeled "Vol. 1", "Vol. 2", and so on. The table of contents for the entire set, identified by volume number, shall appear in each binder. Submit manual organization and format to the Engineer for approval prior to manual preparation.

M. O&M Manual Review Checklist:

1. The Supplier shall fill out a minimum of one O&M Manual Review Checklist form per submittal (See Exhibit H – Forms) and include a copy in each submitted manual.

2. Provide more than one checklist when specified in the technical specification sections. 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.

3. Each submittal requiring review checklists shall comply with the following:

    a. The checklist shall indicate that the O&M Manual as submitted complies in all respects to the contract requirements. Any O&M Manual submitted without a completed checklist will be returned without review.

    b. All portions of the form shall be completed prior to submittal, or the submittal may be returned unreviewed. Submittals may also be returned unreviewed if the O&M Manual Checklist form contains multiple error and/or omissions.

    c. Each page of the submittal shall include a unique and sequential page number. The page numbers shall be located in the same general location on each page.

    d. Page numbering may include “point numbers” (10.1, 10.2, etc.) to facilitate inserting pages without renumbering an entire submittal. However, all pages in the submittal shall be in numerical order.

    e. The review checklists shall be completed in its entirety with accurate page number references for each checklist item. Submittals with inaccurate review checklists may be returned without review for correction.

    f. The review checklist shall be inserted at the beginning of the submittal.

4. O&M Manual Review Process

    a. Preliminary O&M Manuals: Submit preliminary O&M manuals as searchable Portable Document Format (PDF) for review. The District will return the submittals to the Supplier along with comments identifying necessary corrections or additions to the manuals. The District reserves the right to keep possession of all O&M manuals, and have the Supplier arrange to correct the manuals to comply with the reviewer comments.

        1) The preliminary review copies shall be complete in every way including format and content.

        2) Preliminary O&M manuals shall be submitted and accepted prior to the delivery of the respective equipment or system.

    b. Final O&M Manuals:

        1) The manuals shall not be considered final until the submittal has received a review status of “No Exceptions Taken”.

            a) Submit the Final O&M Manuals per the requirements of this Specification Section.

b) Submit requested number of Final O&M Manual hard copies as shown in Table 1 at the end of this section.

c) Final O&M manuals shall be submitted and accepted prior to the Operational Completion (or Ready for Service) milestone.

N. Electronic Files:

1. After the District has accepted each O&M Manual, an electronic version shall be supplied in addition to the required number of hard copies.

2. Electronic files shall be created in both searchable Portable Document Format (PDF) compatible with Adobe Acrobat version XI and Word format compatible with Microsoft Word 2010 or later. The security features (e.g. password protection) of all submitted files shall be disabled so that the District can perform future editing without restriction. Custom-developed drawings included in the O&M manuals (i.e. loop diagrams, system interconnection diagrams, etc.) shall also be submitted electronically in both PDF and the native CAD file format for future editing of the drawings by the Engineer. For CAD files, the associated PDF files shall be saved such that all CAD layering is preserved in the PDF file.

3. An index shall be provided as a separate text file with the name “index” and shall include the file name and detailed description of each individual file.

4. Electronic versions shall match the hard copy page for page with blank pages deleted. Electronic files shall be converted to PDF directly rather than using optical scanning. For any document not already in electronic format, the documents shall be scanned using optical character recognition to provide searching capability in the document.

5. All electronic files shall be submitted to the Engineer via email or downloadable from secure (verification-enabled) cloud storage location.

O. Manufacturers’ certificates and proper installation:

1. The Supplier shall submit manufacturers' certificates of proper installation (See Exhibit H – Forms) for items of equipment as specified under:

a. Section 33 12 16.15 – AWWA Butterfly Valves

b. Section 33 12 16.34 – Hydraulic and Pneumatic Valve Actuators

c. Section 40 05 57.23 – Electric Motor Valve Actuators

P. Maintenance Summary (Forms & Database):

1. General

a. In addition to the O&M Manuals, the Supplier shall provide Maintenance Summary Form and a Maintenance Summary Database as described below.

b. The term "Maintenance Operation" as used in the Maintenance Summary is understood to mean any routine operation, and all typical, routine, or preventive maintenance required to ensure the satisfactory performance and longevity of the equipment. Examples of some typical Maintenance Operations are lubrication, belt tensioning, adjustment of pump packing glands, routine adjustments, etc.

2. Maintenance Summary Forms

a. Individual Maintenance Summary Forms for each equipment item shall be compiled following the outline provided; and two copies submitted for review by the District. The manufacturer's standard form will not be acceptable as a substitute for the Maintenance Summary Form.

b. Furnish a completed Maintenance Summary Form (see Exhibit H – Forms for typical format) as part of the O&M Manual. Include all typical, routine, or preventive maintenance required to ensure satisfactory performance during warranty period and longevity of the equipment. Manufacturer’s representative shall sign and date the form certifying accuracy of the information.

c. Briefly summarize each maintenance activity on the form. Specific references to more detailed maintenance information located elsewhere in the O&M manual may be placed in the “Comments” column. However, simply referencing other sections in the O&M manual without a brief description of the maintenance activity is not acceptable

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

e. The Maintenance Summary Form may take as many pages as required. However, the order and format shown must be adhered to. Only 8 1/2 inch by 11 inch paper will be accepted. However, the order and format shall be in accordance with the supplied form. The Maintenance Summary Forms will be provided in electronic format (MS Word) upon request.

f. The time for submittal of these forms shall be the same as prescribed above for the Operation and Maintenance Manuals

g. The Supplier shall provide Maintenance Summary Forms as described below. The District will provide the Supplier with a standard electronic form. The time for submittal of these forms shall be the same as prescribed above for the Operation and Maintenance Manuals.

3. Maintenance Summary Database

a. Supplier shall submit a Maintenance Summary Database. The template will be provided to the Supplier in Microsoft Excel format by the Engineer.

b. An example of the required fields in the Maintenance Summary Database is included in Exhibit H – Forms.

c. Database shall be submitted in electronic form by email or downloadable from secure (verification-enabled) cloud storage location.

d. Database shall be submitted 60 calendar days prior to the start of the Operational Testing.

2.7 ENGINEERING CALCULATIONS OR REPORTS

A. Engineering calculations/reports required by this specification shall be based on well-established engineering theories and principles. Each calculation/report shall be a complete and independent package.

B. The Supplier shall provide the signing Engineer all necessary reference drawings and data required for completion of the calculations.

C. The calculations/reports shall be comprehensive for each structure or item, in that all calculations/reports are contained within the individual structure or item's calculation/report document (i.e., no calculation/report references to other calculation documents).

D. Presentation format shall be similar to that described in the Operations and Maintenance Manuals section above. As a minimum, all calculations/reports shall be bound in an appropriately labeled binder, and contain the following elements:

1. Facility title, including substructure number, equipment description, applicable equipment tag number(s), and applicable specification section.

2. Table of Contents

3. Introduction, including description of structure or item, purpose of calculation/report, design assumptions with justification, software utilized for the analysis including the version, and codes/standards used.

4. A list of references used to provide the bases for assumptions, equations, or data used in the calculation/report.

5. Calculations or reports appropriately prepared, including sketches, given or known information with the source of the data, equations with each variable defined and applicable units, cross-references, code/standard references, annotations and footnotes.

6. When spreadsheets are used, provide reference equations and the formulas used in the calculations.

7. Results shall be clearly identified. Summary tables shall be used for large amounts of data (especially if a software application is used).

8. Final design details, ready for transmittal to design drawings or shop drawings.

9. Professional Engineer's Seal or signature, as appropriate, of the individual(s) who prepared the calculations/reports.

10. Appendices, including input and output files from computer design, and photocopies of catalog sheets for any special material or equipment (e.g., manufacturer sheet for equipment, ICBO reports for anchors, etc.), and checker markups.

E. When any part of the calculation/report has been prepared by computer software, a copy of the input and output files shall be included as part of the final design calculation.

F. Shop drawings shall not be submitted until all design calculations/reports have been appropriately reviewed, checked and signed. The checker markups and comments shall also be included in an appendix to each calculation.

2.8 SUBMITTAL QUANTITIES

A. Submit one (1) electronic copy of the scanned data and drawings in searchable PDF (compatible with Adobe Acrobat version XI). Submit copy via email or downloadable from secure (verification-enabled) cloud storage location.

B. Submit three (3) hard copy sets of any electronic submittals upon request.

C. Submit three (3) of each sample, unless specified otherwise.

D. Submit the appropriate number of copies of each manual per Table 1 (below) or three (3) if not listed in Table 1.

E. Submit quantity specified of materials submitted to the EBMUD Materials Testing Laboratory.

2.9 ELECTRONIC SUBMITTALS

A. Provide electronic submittals in searchable PDF (compatible with Adobe Acrobat version XI). All portions of the electronic submittals shall be legible and shall be in full color identical to the original material. Provide manufacturer's literature in original electronic file, if available.

B. Provide one (1) electronic submittal file for each submittal except as noted hereinafter. The electronic submittal file name shall use the following format: submittal number – specification section number - description (e.g.: "001.1-01 33 00-Coating of Widgets"). Providing multiple electronic files for a single submittal (except as noted

hereinafter) is not acceptable. The Supplier shall merge multiple files into a single electronic file.

C. For larger submittals containing multiple volumes, submit one electronic file for each hardcopy volume and each electronic submittal file name shall include the corresponding hard copy volume number (e.g. “001.1-01 33 00-Coating of Widgets – Volume 3”).

D. 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 (OCR) to provide text searching capability in the document.

E. Electronic files shall be submitted to the Engineer via email or downloadable from secure (verification-enabled) cloud storage location.

2.10 SAMPLES AND TEST SPECIMENS:

A. Where required in the Specifications, and as determined necessary by the Engineer, test specimens or samples of materials, appliances, and fittings to be used or offered for use in connection with the work shall be submitted to the Engineer at the Supplier's expense, with information as to their sources, with all cartage charges prepaid, and in such quantities and sizes as may be required for proper examination and tests to establish the quality or equality thereof, as applicable.

B. All samples and test specimens shall be submitted in ample time to enable the Engineer to make any tests or examinations necessary, without delay to the work. The Supplier will be held responsible for any loss of time due to its neglect or failure to deliver the required samples to the Engineer, as specified.

C. The Supplier shall submit additional samples as required by the Engineer to ensure equality with the original approved sample and/or for determination of Specification compliance.

D. Laboratory tests and examinations that the District elects to make in its own laboratory will be made at no cost to the Supplier, except that, if a sample of any material or equipment proposed for use by the Supplier fails to meet the Specifications, the cost of testing subsequent samples shall be borne by the Supplier.

E. All tests required by the Specifications to be performed by an independent laboratory shall be made by a laboratory approved by the Engineer. Certified test results of all specified tests shall be submitted in duplicate to the Engineer. The samples furnished and the cost for the laboratory services shall be at the expense of the Supplier and included in the prices bid for the associated work.

F. Approved sample items (fixtures, hardware, etc.) may be incorporated into the work upon approval, and when no longer needed by the Engineer for reference.

2.11 CERTIFICATES OF COMPLIANCE:

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

2.12 EQUIPMENT RECORD (FORMS AND DATABASE)

A. General:

1. Supplier shall provide equipment record forms and a database for equipment items including, but not limited to, pumps, valves, gates, instruments, and electrical panels.

2. Each item shall be listed according to the equipment numbers shown on the Contract Drawings.

B. Equipment Record Forms

1. Provide Equipment Record forms for each equipment item as specified herein. The time for submittals for these forms shall be the same as prescribed for the Operation and Maintenance Manuals.

2. The Equipment Records forms shall be submitted via email or downloadable from secure (verification-enabled) cloud storage location. The Engineer will provide the Supplier with a standard electronic form. An example of the standard form is included in Exhibit H – Forms.

C. Equipment Record Database

1. Supplier shall submit an Equipment Record Database. The template will be provided to the Supplier in Microsoft Excel format by the Engineer.

2. An example of the required fields in the Equipment Record Database is included in Exhibit H – Forms.

3. Database shall be submitted in electronic form via email or downloadable from secure (verification-enabled) cloud storage location.

4. Database shall be submitted 60 calendar days prior to the start of the Operational Testing.

2.13 RECORD DRAWINGS

A. Record Drawings of Equipment

1. The drawings shall be reproducible and at the same dimensional scale as the originals.

2. Electronic files shall be one of the following types:

   a. AutoCAD

   b. Microstation Intergraph.

   c. Adobe Acrobat/Bluebeam pdf.

3. The legibility and contrast of each reproducible and electronic drawing submitted to the District shall be such that every line, number, letter, and character is clearly readable in a full size drawing. Minimum text sizes shall be 1/10-inch if typed and 1/8-inch if hand written.

4. The overall dimensions of each drawing submitted to the District shall be equal to one of the District's standard sheet sizes. The title block area in the lower right hand corner of each drawing shall be clear of all linework, dimensions, details, and notes, except for the Supplier's title block. The dimensions of the title block area are a minimum and are measured from the edges of the drawing sheet.

DRAWING FORMAT	
Sheet Sizes Height x Width	Title Block Area Height x Width
11" x 8-1/2"	2-1/2" x 3-3/4"
11" x 17"	3" x 4"
22" x 34"	3-1/2" x 8"

2.14 QUALITY ASSURANCE

A. Source limitations: To the greatest extent possible for each unit of work, the Supplier shall provide products, materials, or equipment of a singular generic kind from a single source.

B. Compatibility of options: Where more than one choice is available as options for Supplier's selection of a product, material, or equipment, the Supplier shall select an option which is compatible with other products, materials, or equipment already selected. Compatibility is a basic general requirement of product/material selections.

PART 3 - EXECUTION

3.1 GENERAL

A. Prepare and use a transmittal form for submittals that includes the following information:

1. *Project name and specification number

2. *Date of submittal

3. *“To: Wastewater Design, MS #702

East Bay Municipal Utility District
375 11th St,
Oakland, CA 94607
ATTN: [Project SD-462/RFQ#2607 - Pauline Laikijrung]

4. *"From:" Name and address of Manufacturer

5. Name and address of Supplier

6. Name of manufacturer

7. *Spec. Section, Article Number, Paragraph and Subparagraph Number and/or drawing number and detail references

8. Location of use

9. *Submittal number

10. *Signature and title of transmitter

11. *Original submittal or resubmittal

12. Note: All transmittals shall include asterisked items as a minimum to be acceptable for review.

B. Each submittal shall be sequentially numbered starting with the first one delivered. Resubmittals shall include the number of the original submittal plus the suffix “.1” for the first resubmittal, “.2” for the second resubmittal, etc. (e.g. submittal 3.0, 3.1, 3.2, etc.). Submittals not conforming to these requirements will be rejected.

C. Use a separate transmittal form for each specific item or class of material or equipment within a division for which a submittal is required. Transmittal of a submittal of multiple items using a single transmittal form will be permitted only when the items taken together constitute a manufacturer's "package" or when items are so functionally related that review of the group as a whole is appropriate.

D. If a submittal contains multiple items, then each item shall be clearly labeled throughout the submittal or indexed in a manner eliminating confusion in identifying how each item relates to the whole. When submittal items have been assigned a “District equipment tag number” in the contract documents, each tag number shall be included throughout the submittal to clearly associate the specific submittal information to specific tag numbers.

E. Print on each submittal the following certification statement.

1. "I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is that proposed to be incorporated into this project is in compliance with the Contract drawings and specifications, can be installed in the allocated space(s), and is submitted for District (record/review).

   Certified by: __(Supplier’s electronic signature)__Date: _____"

F. The Engineer may reject partial submittals as not complying with the provisions of the Contract Documents.

3.2 SCHEDULE OF SUBMITTALS

A. Submit initial Schedule of Submittals within 30 days after Notice to Proceed.

B. Submit revised Schedule of Submittals within 30 days after date of request from the Engineer. Engineer will review Schedule of Submittals and will notify the Supplier that schedule is acceptable or not acceptable within 10 days after receipt.

C. The Schedule of Submittals shall identify the Supplier “or equal” substitution proposals made prior to bid opening, which have been accepted by the District.

D. Within 30 days of the Notice to Proceed, the Supplier shall submit a complete list of anticipated submittals, including Specification/Drawing references. This list shall be updated with "late start" submittal dates within fifteen (15) days of submittal of the Supplier's construction schedule. The submittal dates shall be updated upon approval of the construction schedule and periodically thereafter. Any additional submittals shall also be included in updates.

3.3 SUBMITTAL PROCEDURE

A. To assist with submittal preparation, the Supplier shall conduct submittal preparation site visits.

B. Following initial submittal and review, the Supplier shall conduct a submittal review site visit.

C. The Supplier shall submit to the Engineer for his/her review electronic copies of each submittal (shop drawings, electrical diagrams, and catalog cuts for fabricated items and manufactured items furnished under this Contract, etc.).

D. Shop drawings shall be submitted in sufficient time to allow the Engineer not less than ten (10) working days for examining the shop drawings.

E. To expedite review of submittals, the Supplier may request conference calls and/or in-person meetings.

3.4 COORDINATION OF SUBMITTALS

A. General

1. Prior to submittal for the Engineer's review, use all means necessary to fully coordinate all material, including the following procedures:

   a. Determine and verify all field dimensions and conditions, space requirements, coordination with other equipment, materials, catalog numbers, and similar data.

   b. Coordinate as required with all trades and with all public agencies involved.

   c. Secure all necessary approvals from agencies having jurisdiction and signify with agency stamp, or other means, that approvals have been secured.

   d. Clearly indicate all deviations from the Contract Documents.

2. Additional work, costs and time resulting from errors in the submittals shall be the Supplier's responsibility and liability.

B. Resubmittals

1. The Supplier shall include a Comment and Response sheet with each resubmittal. The Comment and Response sheet shall be the first item after the submittal transmittal form. The Comment and Response sheet shall include each review comment (word for word) from the previous submittal cycle, followed by the Supplier's response clarifying how the comment has been addressed in the resubmittal. All responses shall at a minimum have a general description of what new information in the resubmittal addresses the review comment; and where in the resubmittal this new information can be located (tab number, page number, etc).

2. Resubmittals that do not comply with the requirements above will be returned to the Supplier without review.

3.5 SUBMITTAL REVIEW AND APPROVAL

A. General

1. Make all submittals far enough in advance of scheduled dates of installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittal, and for placing orders and securing delivery.

2. In scheduling, unless otherwise noted, allow at least twenty (20) work days for the Engineer's review. No time extension will be allowed for the Contract due to time loss in the review process.

3. Shop drawings shall be submitted in sufficient time to allow the District not less than ten (10) working days for examining the shop drawings.

4. The required time for District review shall not be a cause for delay in contract completion nor a reason for an extension of contract time. If the Supplier is required by the District to resubmit data, then neither the time required for the Supplier to prepare and resubmit such data, nor the required time for District review, shall be a cause for delay in contract completion or for an extension of contract time. Responsibility for time required for preparing and submitting required data shall be assigned solely to the Supplier.

3.6 REVIEW BY ENGINEER

A. Acceptance of each submittal by the Engineer will be general only and shall not be construed as:

1. Permitting any departures from the contract requirements

2. Relieving the Supplier of the responsibility for any errors and omissions in details, dimension, or of other nature that may exist.

3. Approving departures from additional details or instructions previously furnished by the Enginner.

B. Submittals (excluding manuals and as built drawings) will be returned to the Supplier marked "No Exceptions Taken", "Make Corrections Noted", "Revise and Resubmit", "Acknowledged Receipt", or “Rejected”, except that in some cases, all copies of a submittal may be returned to the Supplier marked "Returned Without Review". See paragraphs below for proposals for “or equal” substitutions made prior to bid opening pursuant to PCC Section 3400 (see Instructions To Bidders, Article 3):

1. "No Exceptions Taken" indicates that item covered by the submittal may proceed provided it complies with requirements of the specifications. Final acceptance will depend upon that compliance. Does not constitute approval or deletion of specified or required items not shown in the partial submittal.

2. "Make Corrections Noted" indicates that item covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the specifications. Final acceptance will depend on that compliance.

3. "Revise and Resubmit" indicates that the Supplier shall not proceed with any phase of the item covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations and requirements of the specifications.

4. "Acknowledged Receipt" indicates that the item is required to be submitted to the Engineer primarily for information or record purposes, and is not subject to Engineer's review.

5. "Returned Without Review" indicates that the submittal was not reviewed by the Engineer due to the submittal being incomplete, illegible, inadequate, or otherwise failing to conform to the requirements of the specification. Supplier shall prepare a new submittal for this item.

6. "Rejected" indicates that the submittal proposes an action of which the Engineer does not approve, makes an assertion with which the Engineer disagrees, appears to show intent to violate the terms of the Contract, or is otherwise objectionable to the Engineer and is returned to the Supplier with prejudice. Submitted material does not conform to Plans and Specifications in major respect, i.e.: wrong item, wrong size, model, capacity, or material.

C. Resubmit revised drawings or data as indicated unless otherwise specified.

D. Work requiring the District's review and acceptance shall not begin until the submittals for that work have been returned as "No Exceptions Taken" or "Make Corrections Noted".

E. Requests for Information

1. Requests for Information about the Contract Documents shall be directed by the Supplier to the District through email correspondence.

2. The District will reply to the Supplier's Request for Information as soon thereafter as practicable.

3.7 CHANGES TO ACCEPTED SUBMITTALS

A. A resubmittal is required for any proposed change to a submittal that has been marked "No Exceptions Taken" or "Make Corrections Noted". Changes which require resubmittal include, but are not limited to, drawing revisions, changes in materials and equipment, changes to installation procedures and test data. All resubmittals shall include an explanation of the necessity for the change.

B. Minor corrections to an accepted submittal may be accomplished by submitting a "Corrected Copy".

C. After a submittal has been reviewed and accepted, no changes or substitutions in that submittal will be allowed without the District's approval. If allowed, the Supplier will be responsible for the additional costs for engineering, administrative, clerical or other work required for additional review.

3.8 O&M MANUAL SUMMARY LIST

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

Table 1: O&M Manual Summary (Additional O&M manuals might be required in other Sections)		Number of Hard Copy(ies) to Print
Section	System / Equipment, or Facility	
09 96 56.10	AWWA Butterfly Valves	3
33 12 16.15	Hydraulic and Pneumatic Valve Actuators	3
33 12 16.34	Electric Motor Valve Actuators	3

END OF SECTION

SECTION 01 45 27

SHOP INSPECTION

PART 1 - GENERAL

1.1 SUMMARY

A. The term “Supplier” used herein is synonymous with the term “Bidder” and “Manufacturer” used in other documents in this Request for Quote (RFQ) package.

B. Work includes:

1. The District will send inspectors to the manufacturer’s fabrication shop. The District and Manufacturer shall coordinate to schedule and facilitate shop inspection.

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.

4. For Long Term assignments provide the following:

a. Adequate office space including desk, office chair, lighting, and climate control;

b. A large format (up to 11 X 17 paper size) printer/scanner/copier and paper and printer supplies for the duration of the assignment;

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

D. All inspection and measurement tools and equipment employed by the Supplier 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 Supplier that such tools and equipment are properly calibrated and in an operable condition.

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

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

G. See individual sections, listed in Article 1.4 – Witness Schedule, for specific processes requiring shop inspection.

1.2 WITNESS NOTIFICATION

A. The Supplier 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 including start date, end date, duration, shop hours, and requested overtime.

B. The shop where the inspections and tests will occur shall contact the District Plant Inspection Section at (510) 287-1132 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 District. Following approval by the District, 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 Supplier 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 Supplier.

F. Out of Country Inspection and Witnessing

    1. Equipment and items of supply that are subject to witness inspection by the District as identified in Article 1.4 – Witness Schedule and other contractually required work and all places to be used for their production or testing, shall be available to District personnel. The District's decision that such equipment, items, or work cannot be safely inspected or observed, including a decision that the country, area, or facility in which production or testing is to occur may not be safe for District personnel shall be final and shall preclude the Supplier's utilization of such country, area or facility. The District will consult the US Department of State website (https://travel.state.gov/content/passports/en/alertswarnings.html) for "Travel Advisories" to countries and regions to determine the safety of international travel. Areas with travel advisories shall not be considered for procurement of items that require District inspection.

G. Confidentiality or Non-Disclosure Agreements

    1. Facilities that require execution of a Confidentiality or Nondisclosure Agreement (NDA) shall submit a copy of the agreement for review to the District through the submittal process for the project or purchase agreement prior to requesting District inspection. The NDA will be considered an agreement between the District (not individual inspectors) and the requesting company. The requirements of the California Public Records Act shall supersede the terms of any NDA and language to that effect will be included in the NDA by the District.

1.3 TRAVEL EXPENSES

A. Supplier 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 $92 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, rework of unacceptable work, or the Supplier's lack of preparedness for the scheduled inspection. Reimbursement shall include District Engineers' wages, or if done by a District agent, the agent's complete invoice for the needed inspection. The allowance shall not be used for these expenses.

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 the Supplier-requested changes to the inspection schedule after the initial notification shall be borne by the Supplier. The allowance shall not be used for these expenses.

1.4 WITNESS SCHEDULE

A. The District will witness the following processes as specified below or as required elsewhere in the Contract Documents.

B. For pipeline projects, one additional Engineer is required at pipe manufacturing facilities for the sole purpose of reviewing radiographs.

Spec. Section	Section Title and Description
09 96 56.10	Fusion Bonded Epoxy Coatings - Surface preparation, coating application, DFT and Holiday testing
33 12 16.15	Butterfly Valves – Fabrication Process, Performance, leakage, hydrostatic tests, and lining
33 12 16.34	Hydraulic and Pneumatic Valve Actuators – Performance tests
40 05 57.23	Electric Motor Valve Actuators – Functional tests

PART 2 - NOT USED

PART 3 - NOT USED

END OF SECTION

SECTION 01 79 00

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 DESCRIPTION

A. The term “Manufacturer” used herein is synonymous with the term “Bidder” and “Supplier” used in other documents in this Request for Quote (RFQ) package.

1.2 SUMMARY

A. Work includes:

1. 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. Manufacturer shall plan, coordinate, submit deliverables, and execute the training and demonstration requirements for District personnel responsible for operating and maintaining or overseeing the operation and maintenance of furnished, upgraded, or installed equipment, systems, and facilities.

C. Manufacturer shall designate a Training Coordinator to serve as the primary contact for the District throughout the duration of the contract unless otherwise requested by the Engineer or agreed upon in writing by the Engineer and the Manufacturer.

D. Manufacturer shall arrange for and secure a videographer to digitally record and professionally edit one session of required training for each installed equipment, system, and facility. Finalized videos shall be provided in MP4 format by electronic transfer.

1. The District uses recordings to remind or familiarize employees with equipment installed on this project and the recommended maintenance procedures. Recordings are not shared outside the District nor made public unless as required by a Freedom of Information Act request.

2. The Manufacturer is responsible to negotiate as necessary with subcontractors and vendors and sign any agreement required by them (such as non-disclosure or indemnification agreements) in order to satisfy the District’s requirement to video record the training. District representatives will not sign any other vendor agreement, waiver, or non-disclosure agreement.

3. The Manufacturer is responsible for ensuring that all equipment vendors and their representatives are aware of and agree to the requirement to video record the training.

E. The training for each installed equipment, system, or facility shall consist of a minimum of two identical training sessions. Manufacturer shall be available to meet with the Engineer and/or assigned representative to coordinate and align technical training planning efforts.

F. Related Sections:

1. Section 01 75 17 – Field Testing and Startup

2. Section 33 12 16.15 – AWWA Butterfly Valves

3. Section 33 12 16.34 – Hydraulic and Pneumatic Valve Actuators

4. Section 40 05 57.23 – Electric Motor Valve Actuators

G. All training activities shall be shown on the Manufacturer's construction schedule in accordance with Section 01 32 00.

1.3 SUBMITTALS

A. Submit a minimum of ninety (90) calendar days prior to training and include within the Facilities Startup Plan as specified in Section 01 75 17 Field Testing and Startup:

1. Comprehensive training schedule identifying all training by specification section and paragraph number

2. The Manufacturer's Training Coordinator name

3. Training lesson plans for each specification section requiring training. Each lesson plan shall include learning objectives and a content outline with approximate time scheduled for each topic.

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

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

B. Training schedule shall be submitted not less than 21 calendar days prior to the time that the associated training is to be provided and shall be based on the then current Plan of Operation.

1.4 PLAN

A. Prior to delivery of training, equipment and systems for which training is specified shall successfully pass Functional Testing and all related submittals, including the O&M Manuals shall have been submitted and approved by the Engineer.

Manufacturer Training Coordinator shall initiate contact with and arrange to meet with the Engineer to review training requirements, plans, schedules, and other details as determined by the Manufacturer or Engineer. The training meeting shall occur prior to commencement of Functional Testing. Training shall be completed prior to Startup Testing and "Ready for Service" handoffs.

Unless otherwise stated, the meeting shall be held at the District's Main Wastewater Treatment Plant (2020 Wake Ave, Oakland, CA), or at other location as determined by the Engineer. Subsequent meetings may be required until all issues are adequately addressed.

Approved training representatives of the manufacturer(s) shall be present at the training meeting; however if unable to attend, the Manufacturer shall make an effort to include them via teleconference. The Manufacturer shall submit Operations & Maintenance (O&M) Manuals for Engineer review and approval prior to the meeting for all equipment and systems for which technical training is specified. The final approved O&M Manuals shall be provided to the Engineer (in print and electronic format) prior to the meeting.

B. Training shall include a thorough review of the final approved O&M manual, project maps, drawings, and diagrams (e.g. single-line). Topics shall specifically address the maintenance and operation of applicable equipment/systems/facilities.

1. Review of O&M manual contents including:

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

    b. Procedures for ordering parts

    c. Discussion of equipment warranty

2. Maintenance of applicable equipment/system/facility including:

    a. Learning objectives

    b. Routine and preventive maintenance procedures

    c. Adjustment procedures

    d. Overhaul procedures

    e. Identify lubrication and adjustment locations

    f. Maintenance access locations

    g. Maintenance safety precautions

    h. Troubleshooting guide

i. Field test procedures

3. Operations of applicable equipment/system/facility including:

a. Learning objectives

b. Principles of operation

c. Discussion of all design features

d. Startup, shutdown, and emergency operating procedures

e. Operational safety precautions

1.5 TRAINING COORDINATOR

A. The Manufacturer Training Coordinator shall coordinate with equipment vendors to prepare and submit a training agenda and a schedule to the Engineer. See Submittals for document requirements.

B. The Manufacturer Training Coordinator shall coordinate with the Engineer and vendors to organize and plan training sessions in advance. Responsibilities include, but are not limited to:

1. Contribute to planning and coordinating the logistics and supervision of each training session.

a. Maintenance training shall be provided for each piece of equipment listed in Table 1. The Manufacturer shall provide two (2) separate training sessions on a day agreed to by the Engineer. One training session shall focus on mechanical equipment and the other shall concentrate on electrical, instrumentation, and control. Training shall emphasize theory of operations, troubleshooting, and preventative maintenance and repair procedures.

b. Operations training shall be provided for each piece of equipment listed in Table 1. Manufacturer shall provide two (2) separate training sessions for each of three (3) operating shifts (total of 6 training sessions). Sessions are to be provided for each shift, on Tuesday through Thursdays only, within the following time periods.

1) Day Shift 8:00 a.m. - 2:00 p.m.

2) Swing Shift 4:00 p.m. - 10:00 p.m.

3) Grave Shift 12:00 a.m. - 6:00 a.m.

c. Training session schedules shall be approved by the Engineer. Training shall emphasize theory of operations, startup instructions, emergency and normal

shutdown instructions, lockout procedures, troubleshooting, preventative maintenance, and alarm and control logic.

d. The Manufacturer shall confirm each training period a minimum of three (3) working days prior to the schedule time.

e. If a manufacturer's representative fails to conduct a scheduled training class, the Manufacturer hereby agrees to compensate the District for labor costs, including overhead, for all District personnel in attendance for the entire scheduled training period.

f. All training instructors shall prepare and utilize an attendance list. The Manufacturer shall submit the completed list to the District within one (1) working day following completion of each training session.

g. Training sessions shall not be scheduled concurrently unless approved by the Engineer.

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

i. Technical training shall take place at District facilities in the San Francisco Bay area, Upcountry, or other locations as determined by the Engineer unless otherwise specified.

j. Manufacturer Training Coordinator shall provide equipment or accessories needed to deliver training including laptop computer, cables, power cord, overhead projector, screen, white board, flip chart, etc. Manufacturer Training Coordinator shall notify Engineer in advance of any District-supplied equipment requirements.

2. Coordinate and schedule manufacturer visits for training.

   a. Coordinator shall familiarize training representatives with the installation site prior to training.

3. Ensure that copies of training agenda, manuals, and handouts are printed and available for all training attendees.

4. Arrange for digital video-recording of one session of a repeated training session and submit the final product in MP4 format to the Engineer in a timely manner. Coordinator shall submit a notice of transmittal via the CMIS to notify Engineer of shipment of the video. Video recordings are intended solely for District use. Coordinator may engage a vendor of their own choosing. The Engineer can provide a list of professional videographers upon request.

5. Arrange refreshments:

a. For training session durations of four hours or less: provide a continental breakfast or refreshments for all attendees, videographer, and trainers.

b. For training session durations of more than four hours: provide a continental breakfast and lunch for all attendees, videographer, and trainers.

6. Advise the Engineer in writing and at least 10 working days in advance of the need to coordinate equipment outages to support training or demonstration of equipment and systems.

PART 2 - NOT USED

PART 3 - EXECUTION

3.1 DESCRIPTION

A. Table 1 summarizes the equipment, systems, or facilities for which training is required. Table 1 may not be all-inclusive. Manufacturer shall fulfill all training indicated in the Contract Documents whether or not it is listed in Table 1.

B. Training, as specified in Table 1 of this section or referenced in the other sections of the contract documents, shall include both classroom instruction and hands-on field demonstrations. With Engineer approval, classroom instruction may be conducted in the field.

C. The Coordinator shall ensure that all equipment and materials required to properly train and demonstrate operational and maintenance procedures as specified in the corresponding section and paragraph are provided.

D. The Training Coordinator shall ensure that the training room is returned to original condition after each training session is finished.

E. Training Acceptance: Training shall meet the criteria listed below. Training not meeting the criteria shall be corrected and re-delivered at the Manufacturer’s expense inclusive of District labor costs.

1. All information necessary to properly operate and maintain the system or equipment shall be presented and demonstrated.

2. Training delivered shall be consistent with the submitted and approved training lesson plan.

3. The trainer’s expertise shall be sufficient to accurately respond to District questions related to system or equipment operation, maintenance, or principles of operation.

4. The trainer shall demonstrate strong presentation skills and English language proficiency.

5. Training shall be efficient and without unrelated or irrelevant discussion. Breaks during training sessions shall be limited to 10 minutes per two hours of instruction, or one 15-minute break per four hours of instruction.

6. Training Evaluation: Attendees will evaluate the training at the end of each session. The evaluations are one means the District uses to determine if the training adequately instructed District personnel on the proper operation and maintenance of the systems and equipment provided. A typical training evaluation form is included in Appendix D – Forms.

F. Table 1 is a summary of equipment/systems that require training. Additional training might be required when specified elsewhere.

Table 1: Training Summary
(Additional Training may be required in other Sections)

Specification Section & Paragraph	System / Equipment, or Facility
Section 33 12 16.15	AWWA Butterfly Valves
Section 33 12 16.34	Hydraulic and Pneumatic Valve Actuators
Section 40 05 57.23	Electric Motor Valve Actuators

END OF SECTION

SECTION 01 75 17

FIELD TESTING AND STARTUP

PART 1 - GENERAL

1.1 DESCRIPTION

A. The term “Manufacturer” used herein is synonymous with the term “Bidder” and “Supplier” used in other documents in this Request for Quote (RFQ) package.

1.2 DESCRIPTION

A. This section covers general equipment and system testing and startup requirements, services of the manufacturer's representatives and special coordinating services required of the SD-462 Contractor that shall apply during construction. Specific testing and tracking procedures and requirements found in the Technical Specifications shall also apply.

B. Requirements for the SD-462 are included in these specifications and included for the Supplier knowledge and potential coordinate needs with the SD-462 Contractor.

C. Equipment testing shall be satisfactorily completed prior to commencing plant startup associated with the particular equipment item or equipment package. The equipment shall not be considered ready for testing until the following conditions are satisfied:

1. Manufacturer's certification of equipment installation has been accepted by the Engineer.

2. Electrical and/or instrumentation subcontractor certification of motor control logic has been accepted by the Engineer.

3. Related Technical Submittals, O&M Manual and Final Shop Drawings have been accepted by the Engineer.

4. Testing procedures have been submitted in writing and accepted by the Engineer in accordance with Section 01 33 00, Submittal Procedures. All testing procedures and results shall be submitted in writing.

1.3 DEFINITIONS

A. Commissioning: The process of testing the installation for compliance with contract requirements and demonstrating, through documented verification, that the project has successfully met the contractual requirements and the Project is ready for Operational Start-up.

B. Factory Acceptance Testing (FAT): Quality control testing conducted at the Manufacturer's facility to demonstrate components, devices, equipment/systems, and software meets specified performance requirements prior to shipment. Also referred to as source testing

C. Functional Test: The field testing required to determine if installed equipment or system will operate in a satisfactory manner and as specified. The Functional Test is a point-by-point test to confirm that all components associated with the equipment or system is operating properly. Functional testing is not intended to measure efficiency and performance. Functionally test each valve using the Field Functional Test Data Form.

D. Manufacturer's Certificate of Proper Installation: The form is submitted to the Engineer prior to Functional Testing to confirm that the equipment/system is installed in conformance with the Contract Documents. The form is provided at the end of this Section.

E. Operational Startup Test: A test of all systems operating together to demonstrate satisfactory performance of the facility as a whole for a continuous period.

F. Performance Test: The field testing required to demonstrate the individual equipment or system meets all of the specified performance requirements.

G. Startup: The process of performing startup testing of the facility, which includes functional test, performance test, and startup/operational test.

H. Test Procedures: Test procedures shall include testing methods, acceptance criteria, procedures, and test data forms for functional, performance, and startup tests.

1.4 FIELD TESTING INSTRUMENTS

A. The Contractor or its qualified subcontractors/vendors shall provide all instruments and materials necessary to complete the field tests unless otherwise specified. If required calibration instruments and materials are not provided on the day of test, the Engineer may postpone witnessing and sign off of instrument testing.

B. All instruments shall be calibrated prior to the start of testing. Certificates of calibration for all instruments used for testing shall be current, and shall be at the job site during testing. If an uncalibrated instrument was used in a test, the entire test shall be redone with calibrated instruments at the Contractor's sole expense including labor costs and other expenses incurred by District staff to witness the retest.

1.5 QUALITY ASSURANCE

A. All tests shall be subject to approval of the Engineer, and shall be witnessed by the District. No testing shall be scheduled by the Manufacturer without Engineer approved test submittals. For factory testing, the Manufacturer shall provide notification per Section 01 45 27 - Shop Inspection.

1.6 SUBMITTALS

A. Within 90 days after NTP, the Manufacturer shall submit to the Engineer for review, a Startup Plan for the associated items of equipment and/or systems. The Plan shall be updated and/or revised as necessary prior to subsequent Construction Progress Meetings. Testing shall not be scheduled until the Plan is approved. Said Plan shall include:

B. Furnish names and telephone numbers of manufacturer's and vendor's current technical service representatives for use by the Engineer.

C. Within 90 days after NTP, provide a list of the manufacturer's recommended lubricants for use in the plant. All equipment lubrication shall be listed with the lubricant types and quantities recommended and approved by the equipment manufacturers. Provide the necessary lubricants for startup and the initial sixty (60) days of operation.

D. Test Reports:

1. Test Reports shall be submitted for complete systems; which is typically by specification section. Submitting partial test reports is not acceptable. Test submittals shall include the Specification Section number and Equipment Name in the title.

2. Upon completion of testing for each equipment item or system, the Contractor shall submit typewritten or word processed test reports and forms for review and acceptance within 10 calendar days of completed testing. Submit test results with signed statement by manufacturer’s representative that results meet specification requirements and manufacturer standards; when a manufacturer’s representative is not required to be present during testing, this signed statement shall be provided by the Contractor. Upon acceptance, all test reports (including all factory and field testing) shall be inserted by the Contractor into their respective O&M manuals.

1.7 MANUFACTURERS’ SERVICES

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

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

1.8 SYSTEM STARTUP AND TESTING

A. General:

1. The SD-462 Contractor shall coordinate with the Supplier and all parties necessary for all startup and testing needs.

2. The SD-462 Contractor shall submit written details results of all functional, performance, and operational testing.

3. The SD-462 Contractor shall furnish all labor, consumables (power, water, chemicals, air, etc.) tools, equipment, instruments, and services required and incidental to completing all functional, performance and operational testing of installed equipment.

4. All testing shall be witnessed by the District to be considered valid.

B. Equipment ID Tags:

1. All ID tags and labels on equipment, piping, valves, instruments, conduit and other devices or systems directly or indirectly related to the functional test shall be installed by the SD-462 Contractor and verified by the Engineer prior to conducting the functional test.

C. Functional Testing:

1. Supplier shall support the SD-462 contractor in preparation for and during functional testing.

2. All items of mechanical and electrical equipment shall be functionally tested by the SD-462 Contractor after installation for proper operation.

3. The functional test of each piece of mechanical equipment shall continue for not less than eight (8) continuous hours without interruption.

4. The functional test shall include checking for proper rotation, adjustment, alignment, mechanical and electrical connections, proper lubrication, speed, flows, pressure, vibration, sound level, etc. Initial equipment and system adjustment and calibrations shall be performed in the presence of and with the assistance of the manufacturer's representative.

5. The functional test shall include a demonstration of the proper performance of all alarms, local and remote controls (including DCS), instrumentation, equipment functions, and all other electrical, mechanical and piping systems.

6. All parts shall operate satisfactorily in all respects, under continuous full load, and in accordance with the specified requirements, for the full duration of the eight (8) hour test period.

7. If any part of a unit shows evidence of unsatisfactory or improper operation during the eight-hour test period, correction or repairs shall be made and the full

eight (8) hour test operation, as specified herein, shall be repeated after all parts operate satisfactorily.

8. Functional tests shall not proceed until the Engineer has received, reviewed and approved the items listed below. The SD-462 Contractor shall ensure that copies of these materials are on-site during testing.

    a. Interconnection diagrams

    b. As-builts

    c. Manufacturer's Certificate of Proper Installation (when required)

    d. Approved equipment or system technical submittal

    e. Approved draft O&M Manuals with all factory test results and certificates excluding field functional testing and as-builts

    f. All factory test reports

    g. Calibration certificates (for all instruments used during testing)

    h. All piping, conduit, equipment and systems have been properly tagged and labeled

    i. Functional Test Procedures and Field Functional Test Data Forms

9. Installation witness check of control systems wiring and devices with District staff shall not proceed until the following has been completed:

    a. The SD-462 Contractor has completed an initial un-witnessed loop or point-to-point test and insulation resistance test (Megger test) prior to requesting District staff to witness functional testing.

    b. All field cables and wires are properly pulled, terminated, and labeled per contract requirements and match the latest drawings and interconnects.

    c. All piping, conduit, equipment, and systems have been properly tagged and labeled.

10. Functional tests include:

    a. Electrical, Communications, and Control Systems Tests:

    b. Installation Inspection: Check for proper rotation, adjustment, alignment, mechanical and electrical connections, wire labeling, proper lubrication, speed, vibration, sound level, and any other conditions which may damage or impair functioning. Initial equipment and system adjustment and calibrations

shall be performed in the presence of and with the assistance of the manufacturer's representative.

c. Operation Check: Check for the proper operation of all system components.

d. Controls Check: Demonstrate proper function of all local and remote controls, instrumentation, and other equipment functions.

e. Alarms Check: Simulate alarm conditions and verify the proper operation of each alarm at the specified set point. Simulations shall be by means of direct element stimulation whenever possible, or by other means when direct element stimulation is not practical as determined by the Engineer.

f. Run Check: Each system or equipment item shall be operated continuously for 8 hour, minimum, to verify satisfactory operation. Additional operating time may be required as specified in the individual technical specifications, or as recommended by the manufacturer.

g. The individual technical specifications or the manufacturer may specify additional functional test requirements for each component or system.

h. If any part of a unit shows evidence of unsatisfactory or improper operation during the eight-hour test period, or the test period specified by equipment technical specifications, correction or repairs shall be made, and the full test operation, as specified herein, shall be repeated after all parts operate satisfactorily.

D. Startup/Operational Testing:

1. Supplier shall support the SD-462 Contractor in preparation for and during startup/operational testing.

2. The facilities startup test shall not proceed until all of the following have been completed:

a. All other required tests have been completed and accepted by the Engineer. At the Engineer’s discretion, selected performance tests may be conducted during the Startup Test period.

b. Copies of all prior tests (factory, field functional, and performance tests) shall be available on-site.

c. Upon successful completion of operator training and the functional and performance testing, the SD-462 Contractor shall startup the plant facilities and test the equipment operation and performance by conducting a seven (7) day, continuous operational test of the completed facilities as an operational process unit to demonstrate to the Engineer's satisfaction that all equipment

and systems required by these specifications will operate in the manner in which they are intended to perform.

3. Operational Startup tests shall be scheduled no sooner than 7 calendar days after the projected completion of Functional Testing on all related systems. All equipment/systems required by these specifications shall be included in the Startup Test.

4. Upon successful completion of operational testing, all equipment installation, testing, and maintenance records, shall be submitted to the Engineer. Said records shall be bound separately for each piece of equipment or system and shall be collected by type of record.

5. The District will provide Supplier-trained operating personnel for the duration of the Startup Test. The District's operating personnel shall be monitored by the SD-462 Contractor and/or the manufacturer's representatives to ensure each system is being operated as intended.

6. The District will determine facility operating parameters such as plant flow rates, chemical dosages, and which systems or equipment will be operated at any given time. All systems and equipment will be operated within their normal operating ranges.

7. All defects in operation, materials, or workmanship that appear during the Startup Test shall be immediately corrected by the Supplier at the Supplier's expense. In case of a system interruption, the SD-462 Contractor shall repeat the Operational Startup Test of the affected systems and any other system directly related to the operation of the affected system. The Startup Test shall not be accepted as complete until all systems have successfully operated together to the satisfaction of the Engineer for a continuous seven (7) day period.

8. System interruptions include the following:

    a. Malfunction or deficiency that results in a shut down or partial shutdown of any system

    b. Malfunction or deficiency in any backup system that cannot be corrected by the Contractor within 4 hours after notification of the problem

    c. Malfunction or deficiency that results in system or equipment performance that is less than specified

9. The Engineer will maintain a log of equipment or system deficiencies along with the date and time when the SD-462 Contractor was notified of the deficiency and the date and time when the SD-462 Contractor notifies the Engineer that the deficiency has been corrected. All corrected deficiencies must be inspected and approved by the Engineer.

10. The SD-462 Contractor shall maintain a log of equipment or system deficiencies along with a description of the required repairs necessary to correct the problem. The SD-462 Contractor shall furnish up-to-date copies of this log to the Engineer upon request.

11. If the Operational Startup Test is interrupted through no fault of the SD-462 Contractor, the test may resume at the earliest mutually agreeable time at no additional cost to the District.

12. No unit process or part thereof shall be placed in service until it has successfully completed operational testing.

13. Supplier shall respond to equipment questions and address deficiencies within one (1) day of notification.

1.9 PERFORMANCE TESTING:

A. Performance tests shall not proceed until the Functional Test has been successfully completed.

B. Copies of all prior test results (factory, and field functional tests) shall be available on-site, prior to proceeding with performance tests.

C. Performance testing shall demonstrate that the equipment meets all performance requirements specified; see technical specification sections.

D. Where performance testing is required by the Technical Specifications, the testing shall be supervised by the manufacturer's representative. These services shall continue until such times as the applicable equipment or system has been successfully tested for performance and has been accepted by the Engineer for operational testing.

1.10 TEST PROCEDURES

A. The Supplier shall compose test procedures and Field Functional Test Data Forms for each required Functional and Performance test and for all equipment specified in the individual equipment specifications.

B. Unless otherwise noted, submit individual Field Test Procedures and Field Functional Test Data forms by specification section. Grouping test procedures for multiple specification sections into a single submittal is not acceptable. If functional tests are submitted together with performance tests, then separate each procedure and clearly identify each test by name: Functional Test, or Performance Test.

C. Coordinate with the Engineer to determine the operating requirements of adjacent or related systems that may be required to complete the Startup Test.

D. Prior to submitting for Engineer review, the Contractor shall review all test procedures to verify completeness and compliance with the specifications.

E. All test procedures shall be comprehensive, neatly organized, and word-processed. Test procedures shall include the following:

1. Detailed test methods including sample calculations as required.

2. Test setup procedures including details of all necessary adjustments, balancing, required equipment isolations or configurations, testing equipment, and testing instruments.

3. Step-by-step testing procedures (number each step). Specifically identify each test instrument (including tag numbers) used during testing.

4. Acceptance Criteria: For each test phase, specifically indicate what is considered an acceptable test result.

5. Data Forms: Include test name, equipment (with tag numbers as applicable) or system name, specification section and paragraph number, test instrument tag numbers, test date, space for testing personnel names, test data names and units, reference equations for all calculated values, and signature lines for manufacturer's representative, Contractor, and District witness.

6. Field Functional Test Data Form: A template for a field functional test data form is included in Exhibit H – Forms. The Contractor may use this template as a starting point when developing specific field functional test data forms, or the Contractor may develop their own data form provided that the data forms include all required information as specified in the template. A Microsoft Word electronic version of the field functional test data form template will be made available upon request.

7. Test Procedures: Testing procedures and manufacturer representative’s resumes shall be approved by the Engineer prior to performing any tests.

1.11 FACTORY TESTING:

A. The District reserves the right to witness manufacturer's factory testing of all valves shown in the Valve Schedule in Exhibit E – Drawings. See Section 01 45 27 – Shop Inspection for shop inspection requirements.

PART 2 - NOT USED

PART 3 - EXECUTION

3.1 GENERAL

A. The Supplier or its qualified equipment manufacturer representative shall work with SD-462 Contractor to perform all functional and performance testing of installed equipment unless otherwise specified. The SD-462 Contractor shall be present during

all testing, even if the specific functional or performance test is performed by its equipment manufacturer representative.

B. The SD-462 Contractor shall complete all testing in accordance with the District approved test procedures.

C. In addition to the tests specified in the individual technical specifications, the SD-462 Contractor shall perform additional tests as required by the Engineer to demonstrate to the Engineer's satisfaction that all equipment and systems required by the specifications will operate as intended.

D. If the testing of any equipment may affect the operation of existing District facilities, the testing shall be done under direct supervision of the Engineer. The Contractor shall comply with directions given by the Engineer.

E. Table 1 is a summary of equipment/systems that require functional, and performance tests. Additional testing may be required when specified elsewhere.

Table 1: Testing Summary
(Additional tests may be required in other specification sections.)

Specification Section	System / Equipment Name	Functional Test Required	Performance Test Required
33 12 16.15	AWWA Butterfly Valves	X	X
33 12 16.34	Hydraulic and Pneumatic Valve Actuators	X	X
40 05 57.23	Electric Motor Valve Actuators	X	X
All equipment/systems required by these specifications shall be included in the Startup Test.			

3.2 SERVICES DURING CONSTRUCTION

A. General:

1. The Supplier shall provide the services of competent and experienced technical representatives of the manufacturers of all equipment and systems furnished under the contract, for as many days as may be necessary for assembly, installation and testing assistance. Supplier shall arrange to have the manufacturer's representative revisit the job site as often as necessary until testing and startup problems have been resolved to the satisfaction of the Engineer. This requirement applies to manufacturers of all equipment furnished, whether or not specifically set forth in the Technical Specifications. The Supplier shall maintain a service record on each

item of equipment and shall deliver these service records to the Engineer prior to acceptance of operational testing.

B. Fulfillment of Specified Minimum Services:

1. The SD-462 Contractor shall obtain prior written approval from the Engineer for providing manufacturers' services. All requests to the Engineer for prior approval shall 1) be in writing, 2) be submitted not less than ten (10) calendar days prior to providing of the subject services, 3) state the service to be provided, and 4) state the reason(s) why the timing of the service is appropriate. Request made to the Engineer less than ten (10) calendar days prior to the manufacturers' services may not receive consideration and response prior to the times the services are provided. Visits of the Supplier to the jobsite or training classroom without prior approval as provided herein may not act to fulfill the specified minimum man-day requirements.

C. Certificate of Proper Installation:

1. Equipment shall not be considered ready for functional testing until after the following certifications have been submitted and accepted by the Engineer.

a. The Supplier shall coordinate with the SD-462 Contractor to furnish to the Engineer a written and signed report addressed to the District certifying that the equipment has been properly installed, adjusted, lubricated, is in accurate alignment, is free from any undue stress imposed by connecting piping or anchor bolts, has been operated satisfactorily under full-load conditions and is ready for full-time operation. For pumps, compressors, blowers, engines, motors, and other rotating or reciprocating equipment, the report shall certify that the equipment operates within the manufacturer's allowable limits for vibration. The report shall also certify that all controls, protective devices, instrumentation, and control panels furnished as part of the manufacturer's equipment package are properly installed and calibrated; and that the control logic for equipment startup, shutdown, sequencing, interlocks, and emergency shutdown has been tested and is properly operating. The SD-462 Contractor shall also sign said certification. The SD-462 Contractor shall submit "Manufacturer's Certification of Proper Installation" on the District form, provided at the end of this Section.

b. The SD-462 Contractor shall require that the electrical and/or instrumentation subcontractor furnish a written and signed report to the Engineer certifying that the motor control logic for the equipment item that resides in motor control centers, control panels, control boards, microprocessors, distributed processing units, computers, and the like furnished by the electrical and/or instrumentation subcontractor has been properly tested and calibrated. The report shall certify that the control logic for equipment startup, shutdown, sequencing, interlocks, and emergency shutdown has been tested and is properly operating. The Supplier shall also sign said certification.

3.3 RECORD KEEPING

A. The SD-462 Contractor, at a minimum, shall maintain and provide to the District, the following records:

1. Equipment manufacturer's shop drawings

2. Daily logs indicating all equipment testing and startup activities and activities of all manufacturer’s representatives.

3. Log and time sheets of all manufacturers’ representatives performing services on the jobsite

4. Updated equipment testing and startup schedules

5. Records of all tests, calibrations, inspections, adjustments, services and corrective actions taken, including but not limited to:

    a. Records of system cleaning

    b. Hydrostatic and pressure test records

    c. Equipment alignment and vibration measurements and corrective actions

    d. Equipment lubrication records

    e. Insulation resistance measurements

    f. Electrical phase, voltage and amperage measurements

    g. Electrical breaker inspection, test, and adjustment records

    h. Logs of abnormal circuits and lifted wires

    i. Testing and validation of all central and alarm functions

    j. Data sheets of all testing and calibration of instrumentation devices and control loops including documentation of set points

    k. Equipment and system release logs (from construction to startup)

    l. A record of flushing and chemical/mechanical cleaning

6. Copies of all test data collected at the end of each day of testing.

7. Adequate manufacturer's instruction file so that the information will be readily available during equipment testing and startup.

8. Prior to startup, provide the Engineer with a record of all test data and the work completed.

3.4 CONSTRUCTION

A. Removal of temporary bracing:

1. Prior to equipment testing, SD-462 Contractor shall remove all temporary supports, bracing, or other foreign objects that were installed in vessels, transformers, rotating machinery, or installed in other equipment to prevent damage during shipping, storage, and erection. Repair any damage sustained due to the removal of the temporary supports and bracing.

3.5 FIELD QUALITY CONTROL

The general work procedures listed below outline the work to be performed by the SD-462 Contractor. Additional procedures applicable to specific equipment items are specified elsewhere.

A. General

1. Operate the equipment and check for excessive vibration, abnormal operating noises, overheating and lubricant leakage, etc., and test any safety shutdown/alarm devices for proper operation, and make any operating tests required by the Engineer. The adjustments required for proper operation shall be made prior to operational testing.

2. Prior to startup, all sidewalks, gratings, handrails, safety chains, safety shields, etc., shall be installed.

3. Prior to startup, demonstrate to the Engineer's satisfaction that all chemical solution pipelines are connected to the intended tank(s), feeder(s), pump(s), and application points, and that the pipes, appurtenances contained therein and diffusers will operate at the intended flow rates.

4. Prior to startup, the applicable safety equipment, emergency shower and eyewash units, fire extinguishers, fire suppression equipment, self-contained breathing apparatus, toxic and/or combustible gas detectors (including the respective personnel warning system), protective clothing, emergency repair kits, etc., shall be installed in an acceptable manner-subject to the Engineer's approval, and be fully ready for operation.

5. All safety hazards, e.g., exposed drive shafts or rotating equipment members, exposed electrical circuitry, open electrical junction boxes and panels, improperly supported piping and conduits, missing safety devices, etc., shall be corrected prior to supplier training of the District's personnel.

6. The Contractor shall perform a comprehensive safety inspection and correct any safety deficiencies found before implementing plant startup.

7. Roadways that are required for ambulance service, fire fighting access, delivery of treatment chemicals and supplies, and disposal of the treatment byproducts shall be completed prior to startup.

8. Prior to startup, install all warning and safety signs, labels, and devices.

9. Test all tanks and internals, as required to demonstrate conformance to the Contract Documents. Dispose of test media in a manner that is acceptable to and approved by the District and the applicable regulatory agencies.

B. Electrical power and lighting systems:

1. Provide the Engineer with 3-day advance notification in writing of the test schedule. The SD-462 Contractor is advised that the tests shall be witnessed by the Engineer.

2. Perform insulation resistance tests on all wiring 120 volt and larger. Do not meggar instruments or solid-state devices.

3. Perform insulation resistance tests on all motor and transformer windings from phase to phase and phase to ground.

4. Perform grounding system tests to determine the continuity of connections and the value of resistance to ground.

5. Fill electrical gear with oil and/or other media as recommended by the equipment manufacturer.

6. Prior to substantial completion and startup, test and set switchgear and circuit breaker relays for proper coordination and operation.

7. The SD-462 Contractor shall obtain the services of a qualified "independent testing service", member of the National Electric Testing Association, to perform a thermographic survey on all switchgear buses, insulators and power connections when energized and under at least 20 percent load. Significant hot spots shall be further checked by infrared pyrometer for exact temperature rise. The Contractor shall troubleshoot and correct the thermographic hot spots. Correction shall be verified by repeating the thermographic survey at no additional cost to the Owner.

8. The SD-462 Contractor shall obtain the services of a qualified "independent testing service", member of the National Electric Testing Association, to inspect and test the protective relays and the 800-ampere and larger drawout breakers for proper installation, adjustment, and operation in accordance with the manufacturer recommendations.

9. The SD-462 Contractor shall obtain the services of a qualified "independent testing service", member of the National Electrical Testing Association, to perform DC high potential tests on all cables that will operate at more than 2,000 volts to ground.

10. Obtain local electrical inspector's approval where required.

11. Energize all substations, with approval of the Utility Company and the Engineer after completion of all electrical testing.

12. Prior to startup, perform tests and adjustments on all switchgear and motor control equipment to demonstrate proper operation and conformance to the Contract Documents and manufacturer's recommended settings.

13. Prior to startup, test installation of emergency power and lighting systems for proper operation, including light intensity.

14. Vacuum clean all electrical equipment prior to startup and acceptance.

C. Piping systems:

1. Provide the Engineer with three (3) day advance notification in writing of test schedule.

2. Hydrostatically or pneumatically test all piping as required by the codes and contract documents.

3. After successful testing of the piping, slowly drain the system and then flush the system. Orifice plates shall be installed after testing. If installed with the piping, they will be removed and replaced with spacers or pipe spools of equal length prior to the pressure test.

4. Dewater the system, remove blind flanges, and perform tightness tests, as required by the Engineer.

5. Insulate or paint piping, flanges, threaded joints, or field welds after the specified testing of each item has been completed unless instructed otherwise by the Engineer.

6. Leave exposed all welded joints (longitudinal, girth, and nozzle) in underground piping that have not been shop tested until the specified testing has been completed. After final testing of these joints, cover the system.

7. Prior to substantial completion and startup, check pipehangers, supports, guides, and pipe specialties for the removal of all shipping and erection stops and for the correctness of the cold and hot settings for the design service, make adjustments as necessary to obtain proper installation. Provide the Engineer with instructions for the hot settings.

8. As necessary during equipment testing and at the end of substantial completion and startup, clean or replace the screens and filter elements as appropriate for the filter type and service.

9. Prior to startup, verify, to the extent required by the Engineer that specified valve packing has been provided on valves installed in the plant.

10. Prior to startup, install all of the valve and piping system identification labels.

11. Prior to startup, check and record the position of all process system valves.

12. Prior to startup, correct support, vibration, and thermal expansion problems detected during the preliminary equipment testing.

13. Prior to the startup, retorque all hot and cold service bolting as required to ensure a permanent and proper installation.

14. Prior to startup, demonstrate to the Engineer's satisfaction that each piping system (e.g., chemical, sample, utility, irrigation process, etc.) functions as designed and required by the contract documents.

D. Leak and pressure tests:

1. Provide the Engineer with three (3) day advance notification in writing of the schedule for nonoperating field leak tests or field pressure tests on piping and field fabricated equipment, unless otherwise directed by the Engineer.

2. Provide the water, air and any special media required for the test purposes.

3. Prior to startup, conduct all leak and pressure tests in accordance with applicable codes, regulations, and the Contract Documents, and as approved by the Engineer. The SD-462 Contractor is advised that the tests shall be witnessed by the Engineer, to be considered valid.

4. Dispose of the test media in a manner that is acceptable to and approved by the Owner and applicable regulatory agencies.

5. Isolate in-line equipment as necessary for protection against test pressure.

3.6 ADJUSTING AND CLEANING

A. The general work procedures listed below outline the work to be performed by the SD-462 Contractor. Additional procedures applicable to specific equipment items are specified elsewhere.

B. Mechanical equipment:

1. Level baseplates and soleplates and grout under all load bearing surfaces.

2. Install suitable supports and flexible connections to alleviate any piping stresses that may be imposed on pumps, compressors, and drivers.

3. In accordance with the manufacturer's recommendations, chemically clean lube oil, seal oil, and cooling systems. Dispose of waste and cleaning media in a manner that is acceptable to and approved by the District and applicable regulatory agencies.

4. In accordance with the manufacturer's recommendations, charge the lube oil, seal oil, and cooling systems with flushing media and circulate for cleaning purposes. Dispose of any flushing media in a manner that is acceptable to and approved by the District and applicable regulatory agencies.

5. Charge the lube oil systems, seal oil systems, and cooling systems with the amount and type of operating oil or coolant recommended by the manufacturer.

C. Removal of rust preventives:

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

D. Lubricants:

1. Flush systems and install the initial charge of all lubricants. Dispose of flushing oil in accordance with applicable regulations.

2. The Contractor shall lubricate the equipment in accordance with the manufacturer's recommendations until the equipment is accepted by the District.

3. Maintain a lubrication record for each item of equipment. The Contractor shall submit the lubrication records to the Engineer prior to equipment testing.

E. Packing and seals:

1. Install, adjust, and replace packing, mechanical seals, and accessories, as necessary, during the equipment testing and startup period.

2. Adjust seal water and flushing water flow rates in accordance with the equipment manufacturer's recommendations.

F. Rotation, alignment, and vibration:

1. Prior to equipment testing, check rotating machinery for correct direction of rotation and for freedom of moving parts before connecting the driver.

2. Prior to equipment testing, perform the cold alignment and hot alignment to the manufacturer's tolerances.

3. Prior to equipment testing, test equipment vibration and correct any vibration in excess of the manufacturer's recommendation.

G. Tie-ins at the contract limits:

1. Obtain approval and make the necessary tie-ins at the unit limits as required by the Contract Documents and as approved by the Engineer.

2. Prior to startup, remove the temporary blind flanges, plugs, bulkheads, seals, etc.

H. Pressure/vacuum safety relief devices:

1. Prior to equipment testing, test and adjust all safety devices as recommended by the equipment manufacturer.

2. Prior to plant startup, provide the Engineer with a list of all field or factory equipment settings.

I. Flushing and chemical/mechanical cleaning:

1. Prior to equipment operation, conduct all flushing, blowing, and chemical/mechanical cleaning operations without using the permanently installed equipment.

2. Provide any special media needed for flushing and/or cleaning purposes.

3. Dispose of all media in a manner that is acceptable to and approved by the District and the applicable regulatory agencies.

4. All systems shall be free of trash and construction debris before initiating startup.

J. Screens and strainers:

1. Provide and install temporary strainers and screens necessary to protect the equipment and to test the equipment and pipelines.

2. Prior to startup, remove all of the temporary blinds and temporary appurtenances.

3. Clean the screens and strainers as required during startup.

4. At the end of startup, clean all of the permanently installed screens and strainers.

K. Purging/inerting:

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

2. Install purge/inerting connections in accordance with the manufacturer's recommendations.

3. Provide purge or inerting materials and conduct the necessary operations as recommended by the equipment manufacturer.

L. Drying out:

1. Prior to startup, dry out the facilities as specified or recommended by the equipment manufacturer to prevent contamination of catalysts, operating materials, and/or product

2. Dry out systems, protective coatings, refractories, and linings as specified or recommended by the equipment manufacturers.

END OF SECTION

MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

This is to certify that the equipment supplied by (MANUFACTURER'S NAME) and described as AWWA Butterfly Valve has been installed in accordance with manufacturer's recommendations. The equipment was inspected by an authorized manufacturer's representative on (DATE) and has been serviced with the proper initial lubricants and is free from any undue stress imposed by piping or supports. Applicable safety equipment has been properly installed and proper electrical and mechanical connections have been made. Proper adjustments have been made and the equipment and or system is ready for operation. All reports have been submitted to the District and the equipment and or system is certified for field testing and startup in accordance with Specification SD-462 Secondary Reactors Rehabilitation, Phase 2, Section 01 75 17 Field Testing and Startup.

Authorized Manufacturer's Representative		SD-462 Contractor's Representative	
Title	Date	Title	Date

MANUFACTURER'S CERTIFICATE OF FUNCTIONAL TESTING ASSISTANCE

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

Authorized Manufacturer's Representative	
Title	Date

SECTION 05 05 24

SHOP AND FIELD WELDING

PART 1 - GENERAL

1.1 DESCRIPTION

A. The term “Manufacturer” used herein is synonymous with the term “Bidder” and “Supplier” used in other documents in this Request for Quote (RFQ) package.

1.2 SUMMARY

A. Section includes:

1. Shop and field welding of steel pipe, fittings, and appurtenances

2. Third-party independent inspection and examination of welds

B. Related Sections:

1. Section 01 33 00 – Submittal Procedures

2. Section 01 45 27 – Shop Inspection

3. Section 09 90 00 – Painting and Coatings

4. Section 33 12 16.15 – AWWA Butterfly Valves

5. Section 33 12 16.34 – Hydraulic and Pneumatic Valve Actuators

6. Section 40 05 57.23 – Electric Motor Valve Actuators

1.3 APPLICABLE CODES AND STANDARDS

A. ASME Boiler & Pressure Vessel Code, Section V, Nondestructive Examination, Latest Edition including addenda, supplements, and interpretations

B. ASME Boiler & Pressure Vessel Code, Section VIII, Rules for Construction of Pressure Vessels, Latest Edition including addenda, supplements, and interpretations

C. ASME Boiler & Pressure Vessel Code, Section IX, Qualification Standard for Welding and Brazing Procedures, Welders, Brazers, and Welding and Brazing Operators, Latest Edition including addenda, supplements, and interpretations

D. AWS D1.1 – Structural Welding Code – Steel, 2020 edition

E. AWS D1.2 – Structural Welding Code – Aluminum, latest edition

F. AWS D1.6 – Structural Welding Code – Stainless Steel, latest edition

G. AWS 3.0 – Standard Welding Terms and Definitions, latest edition

H. AWS A2.4 – Standard Symbols for Welding, Brazing and Nondestructive Examination, latest edition

1.4 TERMS AND DEFINITIONS

A. Certified Welding Inspector (CWI) – A person certified as a welding inspector as given in AWS QC1- Latest Edition, Standard for AWS Certification of Welding Inspectors.

B. Nondestructive Examination (NDE) – The act of determining the suitability of some material or component for its intended purpose using techniques that do not affect its serviceability.

C. NDE Level II Technician/Operator (NDE Level II): An individual certified at Level II as defined in American Society for Nondestructive Testing (ASNT) Recommended Practice SNT-TC-1A specific to the NDE method used.

D. Procedure Qualification Record (PQR) – A record of welding variables used to produce an acceptable test weldment and the results of tests conducted on the weldment to qualify a welding procedure specification.

E. Welding Procedure Specification (WPS) – A document providing the required welding variables for a specific application to assure repeatability by qualified welders and welding operators. WPSs that are not prequalified by Code shall be supported with a PQR.

F. Standard Welding Terms and Definitions: See AWS 3.0, Standard Welding Terms and Definitions.

1.5 SUBMITTALS

A. Manufacturer’s Field Welding Plan:

1. Submit a Field Welding Plan listing each WPS to be used on the project and indexing that WPS to the drawing and weld. All joints requiring radiographic testing per this section shall be clearly identified in the Field Welding Plan, and radiographic testing activities shall be shown on the Manufacturer’s three (3) week look ahead schedule.

2. Following the scheduling of radiographic testing by the Manufacturer, a pre-testing meeting shall be scheduled by the Manufacturer. Attendees shall at a minimum include the third-party CWI, representatives from the company performing the radiographic testing including the actual technicians that will perform the testing, the Manufacturer’s representative, and representatives from the District including the Plant Inspection Section. The meeting shall be

scheduled via a Plant Inspection Request per Section 01 45 27 – Shop Inspection.

B. Qualification of Welders and Welding Procedures:

1. For field welding for Structural Steel Framing, submit records consistent with Paragraph 1.6.D, requirements for welder and welding procedure qualifications.

2. For field welding for Metal Fabrications, submit records consistent with Paragraph 1.6.E, shop and field welding requirements.

3. For pipe welding submit records consistent with: Paragraph 1.6.A for procedure qualifications; Paragraph 1.6.B for shop welder qualifications; and, Paragraph 1.1.A for field welder qualifications.

C. Qualification of Inspectors and NDE Examiners:

1. Submit verifiable evidence of the current CWI certification of all third-party CWIs.

2. Submit verifiable evidence of the certification of all personnel performing NDE or interpreting the test results to ASNT-TC-1A Level II as a minimum.

D. Submit complete fabrication and erection drawings for the Engineer's approval prior to cutting or fabrication. Shop drawings shall show the details of fabrication with weld symbols in accordance with AWS A2.4 for all joints to be welded.

E. Provide all submittals to the Engineer consistent with the requirements of Section 01 33 00 with sufficient review time for approval prior to start of welding. Welding shall not proceed until the related submittals are approved by the Engineer.

1.6 QUALIFICATIONS AND INSPECTIONS

A. Welding Procedure Specifications:

1. All welds shall be completed in accordance with a qualified WPS.

   a. The Manufacturer may use a prequalified WPS conforming to the provisions of AWS D1.1 – Clause 5 or AWS D1.6 – Clause 5, Prequalification of WPSs.

2. All WPSs that are not prequalified as given above shall be qualified in accordance with one of the following:

   a. ASME Boiler & Pressure Vessel Code, Section IX

   b. AWS D1.1 – Clause 6

c. AWS D1.6 – Clause 6

3. A CWI shall review and stamp all WPSs and PQRs.

B. Welding, Shop:

1. Welders shall be qualified under ASME Boiler & Pressure Vessel Code, Section IX, Part QW, AWS D1.1 – Clause 6, or AWS D1.6 – Clause 6, for the welding processes, positions, and procedures to be used for this project.

2. Welders shall have verifiable evidence they have maintained their qualifications in accordance with AWS D1.1 – Clause 6, AWS D1.6 – Clause 6, or ASME Boiler & Pressure Vessel Code, Section IX, Part QW-322.

3. Welder Qualification(s) shall be witnessed and stamped indicating acceptance by a CWI.

C. Metal Fabrication Welding

1. Aluminum welding shall conform to ANSI/AWS D1.2 latest edition Structural Welding Code - Aluminum "Suggested Specifications for Structures of Aluminum Alloys 6061-T6" unless otherwise noted.

2. Stainless Steel welding shall conform to ANSI/AWS D1.6 latest edition – Structural Welding Code – Stainless Steel.

3. Carbon Steel welding shall conform to ANSI/AWS D1.1 latest edition – Structural Welding Code – Steel.

4. Certification of Welders:

a. Submit verifiable evidence of initial qualification for each welder.

b. Submit verifiable evidence each welder has maintained current qualification(s).

5. Submit WPSs with supporting PQRs for approval per 1.1.A above.

D. Testing and Inspection:

1. The Manufacturer shall provide independent inspection of all structural steel framing welds and nondestructive examination (NDE) as indicated on applicable Contract Drawings. The District will perform direct visual verification of these inspections and tests. Notify the District's Plant Inspection Section at (510) 287-1132 for all field testing and shop inspections and tests. Advanced notification requirements are specified in Section 01 45 27.

2. Welding inspection personnel shall be certified in accordance with AWS QC1 at the level of Certified Welding Inspector.

3. NDE personnel shall be certified in accordance with ASNT-TC-1A Level II as a minimum.

4. Inspections and test results shall comply with AWS D1.1 Clause 8 for the related inspection and test method.

5. The costs of all inspections and tests, including retests after repair, shall be borne by the Manufacturer.

E. Tolerances:

1. Dimensional tolerances and allowances for fit shall be in accordance with applicable AWS Standards unless shown otherwise. Tolerances and allowances shall be shown on the Manufacturer 's erection or working drawings.

1.7 RETESTING OF WELDERS BASED ON QUALITY OF WORK

A. When the quality of a welder's work appears to be below the requirements of this specification or referenced Codes, the Engineer may require that the welder demonstrate an ability to produce sound welds by requiring complete requalification in accordance with the latest edition of AWS D1.1, Clause 4; AWS D1.2, Clause 3; or, AWS D1.6, Clause 6. All re-qualifications will be at the Manufacturer's expense.

1.8 NONDESTRUCTIVE EXAMINATION-GENERAL

A. Types of NDE and Acceptance Criteria:

1. Radiographic Examination (RT) per Paragraph UW-51, Section VIII, ASME Boiler & Pressure Vessel Code

2. Liquid Penetrant (PT) per Section V, ASME Boiler & Pressure Vessel Code. Acceptance criteria shall be as given by AWS D1.1 – Clause 8, Part C

3. Magnetic Particle (MT) per Section V, ASME Boiler & Pressure Vessel Code. Acceptance criteria shall be as given by AWS D1.1 – Clause 8, Part C

B. Nondestructive Examination of Production Welds:

1. In addition to any NDE required by the Contract Documents, the Engineer may elect to perform additional NDE of in-process or completed shop or field welds to verify weld quality. Any additional NDE may be performed by District personnel or the Engineer may request the Manufacturer perform or subcontract these examinations.

2. Cost of Examinations:

a. The cost of NDE identified in the Contract Documents for specific welded connections shall be borne by the Manufacturer.

b. The cost of additional NDE requested by the District will be borne by the District in the event that all examined welds are found to be acceptable. In the event of a rejected weld, the Manufacturer shall bear the costs of all NDE, including NDE of weld seams found to be acceptable, as well as the costs of repairs, re-inspection and re-examination of the rejected weld.

c. The cost of NDE performed by District personnel will be borne by the District. The costs of repairs, re-inspection and re-examination resulting from a rejected weld shall be borne by the Manufacturer.

1.9 CLEANING AND PASSIVATING OF STAINLESS STEEL WELDMENTS

A. The Engineer will perform inspections and witness tests during all phases of pickling and passivation.

B. Pipe joints and structural steel, including the entire heat-affected zone (HAZ), shall be:

1. Cleaned in accordance with ASTM A380. The joints shall be visually inspected to be free of paint, oil, grease, welding flux, slag, heat-treating and hot-forming scale, dirt, trash, metal and abrasive particles and chips, and other gross contamination. Dust may be present on the exterior surfaces, but should not be on the interior surfaces.

2. De-scaled (pickled) with citric acid per in accordance with ASTM A380 Table 2.1, Part III. Perform intermittent scrubbing as required to assure a completely cleaned surface. Do not use a steel wire brush.

3. Passivated per ASTM A380 with final cleaning per ASTM A380 Table 2.1, Part II, and in accordance with ASTM A967. The finish shall be inspected to be free of contaminating iron particles, heat-tint oxides per AWWA C220, weld scale, and other impurities.

4. Follow immediately with a thorough rinse and water-jet spray to remove excess acid to prevent attack of the base metal.

5. Both the exterior and interior of the joint and HAZ shall be treated. Inaccessible interior joints, as approved by the Engineer, shall be omitted from this process.

C. The weld and HAZ shall be tested per ASTM A967 to be free of contaminating iron particles and other impurities. The ASTM A967 test method used shall be approved by the Engineer.

1.10 VERIFICATION

A. General Requirements:

1. All welds shall be visually inspected and accepted by the Manufacturer’s third-party CWI and the Engineer prior to performance of all NDE, including

hydrostatic and air tests. Final visual inspection shall be performed after the weld has cooled to ambient temperature.

2. In-process and final inspections shall be documented on the attached "Field Welding Inspection Form" by the Manufacturer's third-party CWI, and available for review by the Engineer. At a minimum, all applicable elements listed on the form are required.

3. All visual inspections and nondestructive examinations shall be completed and confirmed as acceptable by the Engineer prior to further processing that could interfere with access to the welded joint for repairs, inspection and NDE.

B. Radiograph Records:

1. All radiographs, including information only examinations, will become the property of the District.

a. The Fabricator shall provide to the District all hardware and software necessary to review the radiographs. The Fabricator shall provide one set of hardware and software to the District prior to the start of radiography for retention by the District.

b. The Manufacturer shall provide the District with one new film viewer as follows: LC NDT FV-2010-T-PLUS High Intensity Portable LCD Film Viewer with Built-in Densitometer and Electronic Masking, or equal as approved by the Engineer.

C. Field Inspection:

1. Responsibilities

a. The Manufacturer shall provide third-party CWIs and NDE Examiners. Third-party inspectors and examiners shall be independent from work production and schedule responsibilities. Third-party CWIs and NDE Examiners/Manufacturer shall provide daily reports, documented on the attached "Field Welding Inspection Form" to the Engineer for all work performed. The reports shall be signed and stamped and provide a clear summary of the inspection or NDE activities performed, direct traceability to the work, and a determination of acceptability.

b. The District will verify that the third-party independent inspections and NDE comply with these requirements, including referenced Codes and Standards, and will review and accept (or reject) the reports of the CWIs and Examiners. The Engineer may at any time verify by direct inspection or surveillance the acceptability of all phases of welding and third-party independent inspection and NDE activities.

1.11 CHARPY V-NOTCH (CVN) TESTING

A. For welding of steel pipe, specials and fittings with a thickness of 0.406-inch and greater, heat input control and CVN testing is required.

1. WPS for shop welding shall be qualified in accordance with ASME Boiler Pressure Vessel Code Section IX and shall include Supplementary Essential Variables.

2. WPS for field welding shall be qualified in accordance with AWS D1.1 – Clause 6, Part B.

3. PQRs shall be qualified for notch tough welding with consideration for thickness of steel, test temperature, and CVN values. Refer to AWS D1.1 – Clause 6, Part D, Requirements for CVN Testing.

4. The number of CVN test specimens shall be per AWS D1.1 – 6.27.2, Option 1 – 3 specimens.

5. As required to be specified by AWS D1.1 – 6.27.5, the CVN test temperature shall be 40-degF unless otherwise specifically called out on the drawings.

PART 2 - NOT USED

PART 3 - EXECUTION

3.1 GENERAL PROCEDURES

A. Use Shielded Metal Arc Welding (SMAW), Flux Cored Arc Welding (FCAW), Gas Tungsten Arc Welding (GTAW), or Gas Metal Arc Welding (GMAW-Spray or Globular modes only), unless the Engineer approves another process prior to use.

1. Gas Metal Arc Welding (Short-Circuit) is not allowed.

B. All welds shall be made according to an approved WPS.

C. Each step of the welding process will be inspected and approved before proceeding to the next step.

D. Welding shall be performed in at least two layers. Passes shall not exceed 1/4 inch in throat dimension.

E. Welds shall be thoroughly cleaned after each pass.

F. Welds shall be fully fused with base metal, uniform in appearance, free from cracks and reasonably free from irregularities. Weld shall blend smoothly and gradually into the base material

G. Restart in weld zone on clean and sound metal.

H. Remove defective welds by chipping, grinding, flame gouging, or air-arc gouging and repair by re-welding.

I. No undercut is allowed.

J. Use procedures or welding sequences that will minimize eccentric stresses, shear or distortion in the weld.

K. Butt welds, where authorized, shall have complete penetration and fusion.

L. Finished weld bead shall be central to the seam.

M. Artificial or forced cooling of welded joints is not permitted.

N. Low hydrogen electrode storage shall be in accordance with AWS D1.1 – 5.3.2.1.

O. See District Standard Drawings 323-EA, 324-EA, and 325-EA for welding of flanges.

P. Joining Dissimilar Metals

1. When joining carbon steel to various stainless steels, the following filler material shall be used unless otherwise called out on the drawings:

    a. Carbon steel to stainless steel: 309L filler material

    b. Carbon steel to type 316 or 316L stainless steel: 309L or 316L filler material

3.2 SUPPLEMENTS

A. The following supplements follow END OF SECTION and are a part of this section:

1. Field Welding Inspection Form

2. Field Welding Submittal Checklist

END OF SECTION

Spec. Number		**Date**	
General Contractor		**Welding Subcontractor**	
Inspection Co		**CWI NAME & #**	

WELDING INSPECTION RECORD

LOCATION DESCRIPTION	*STATION*	*PC MKS*	*DWG DETAIL REF.*	*WELDER ID*	*WPS*	*JOINT FIT-UP AND FIELD TOP*	*ROOT PASS (GROOVE) *FIRST PASS (FILLET)*	*BACK GOUGE VISUAL/NDT*	*FINAL VISUAL*

DESCRIBE ALL IN-PROCESS REWORK: _____

_____

_____

_____

ALL WORK AS LISTED IS IN CONFORMANCE WITH THE CONTRACT DOCUMENTS

FINAL ACCEPTANCE : STAMP / DATE /SIGNATURE	

Sketches:

Field Welding Submittal Checklist

SUBMITTALS TO BE APPROVED PRIOR TO START OF WELDING

Field Pipe Welding (1.6.C) and Structural Welding (1.6.D)	
Description	**Paragraph Reference**
Field Welding Plan	1.5.A
Welding Procedure Specifications for all processes and positions on plan	1.6.A
Procedure Qualification Records (as applicable for above WPS)	1.5.B
Request to witness welder qualification and weld coupon testing (Separate Submittal)	1.6.D
CWI certifications (Separate submittal)	1.5C.1
NDE certifications (Separate submittal)	1.5C.2
Resulting welder/procedure qualification record	1.5.B
Miscellaneous Metals per (1.6.E)	
Description	**Paragraph Reference**
Field Welding Plan	1.5.A
Welder qualification records for all processes and positions on plan including qualification maintenance records for each welding process	1.6C.4
Welding Procedure Specifications for all processes and positions on plan	1.6C.5
Procedure Qualification Records (as applicable)	1.6C.5
CWI certifications (Separate submittal)	1.5C.1
NDE certifications (Separate submittal)	1.5C.2

Notes:

1. Check List is being provided for informational purposes only.

SECTION 09 96 56.10

FUSION-BONDED EPOXY COATINGS

PART 1 - GENERAL

1.1 DESCRIPTION

A. The term “Manufacturer” used herein is synonymous with the term “Bidder” and “Supplier” used in other documents in this Request for Quote (RFQ) package.

1.2 SUMMARY

A. Section includes: Provide fusion-bonded epoxy coatings and lining for valves listed in Valve Schedule of Exhibit E – Drawings.

B. Related sections:

1. Section 01 33 00 – Submittal Procedures

2. Section 01 45 27 – Shop Inspection

C. Special requirements:

1. Either electrostatic spray method or fluidized bed method of application may be used for shop coating of fabricated piping or miscellaneous metal.

a. Depth of fluidized bed shall be a minimum of one foot greater than the longest pipe section.

1.3 REFERENCES

A. SSPC-1 – Solvent Cleaning

B. SSPC-SP 5 – White Metal Blast Cleaning

C. SSPC-SP 11 – Power Tool Cleaning to Bare Metal

D. SSPC-PA 2 – Procedure for determining conformance to dry coating thickness requirements

E. AWWA C116-15 – Protective Fusion-Bonded Epoxy Coating for the Interior and Exterior Surfaces of Ductile-Iron and Gray-Iron Fittings

F. AWWA C213-07 – Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines

G. AWWA C550-17 – Protective Interior Coatings for Valves and Hydrants

1.4 SUBMITTALS

A. Product data: Submit manufacturer's current specifications or technical information that proves compliance with the specified requirements.

B. Manufacturer's instructions: Submit manufacturer's written instructions and recommendations for field coating and repair of coating system.

C. Submit list of all coatings proposed for use.

1. Identify each coating by brand name and manufacturer, and indicate what items will be painted with the coating.

1.5 QUALITY ASSURANCE

A. Qualifications:

1. Applicator: Regularly engaged in application of similar coatings for at least two years immediately prior to this work.

2. Workers: Experienced and knowledgeable in preparation for and application of fusion-bonded epoxy coatings.

1.6 JOB CONDITIONS

A. Environnemental conditions:

1. Do not abrasive blast when ambient temperature is less than 5 degrees F above dew point.

2. Apply coatings only when conditions are within the limits prescribe by the manufacturer but, in any case, do not apply coatings when:

a. Metal temperature is less than 425 degrees F for fluidized bed

b. Metal temperature is below 55 degrees F for repair work

c. Relative humidity is greater than 70 percent for fluidized bed

d. Relative humidity is greater than 85 percent for repair work

3. The cleaned pipe surface shall be protected from conditions of high humidity, rainfall, and surface moisture. The pipe surface shall not be allowed to flash rust before coating.

B. Safety:

1. Comply with the applicable safety recommendations of SSPC-PA-Guide 3 and Good Painting Practice, Chapters 2.4 and 5.3.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Coating: 100% solids, fusion-bonded, thermo-setting resin powder in accordance with AWWA C116, C213, and C550.

B. Approved products:

1. Electrostatic spray: Scotchkote No. 134 (green), 3M

2. Fluidized bed: Scotchkote No. 203 or No. 206N, 3M

3. Or equal as approved by the Engineer

2.2 APPROVED APPLICATORS

A. California Pipe Fabricators, Dixon, CA, (707) 678-3069

B. U.S. Pipe Fabrication, Inc., Marysville, CA, (530) 742-5171

C. Reliable Powder Coating, San Leandro, CA, (510) 895-5551

D. Or equal that is certified by the manufacturer and approved by the Engineer

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. Prepare surfaces to be coated in accordance with manufacturer's written instructions, but not less than specified herein.

B. Grind smooth all surface irregularities, welds, and weld spatter.

C. Grind smooth and round all sharp metal edges.

D. Abrasive blast surfaces to white metal in accordance with SSPC-SP 5.

E. Surface anchor profile: 1.5 to 4.0 mils

F. Oxidation of the steel prior to coating in the form of “blueing” or other apparent oxide formation is not acceptable. If such oxidation occurs, the pipe shall be cooled to ambient temperature and re-cleaned.

G. The heat surface shall not leave a residue or contamination on the pipe surface. Graduated “Tempilstik” crayons shall be used and supplied to the District by the Contractor to measure the temperature. Only a small spot of pipe shall be touched with the “Tempilstik”. Optical pyrometers may be used in addition to, or in lieu of “Tempilstik”. The calibration of the optical pyrometer shall be checked at least twice daily.

3.2 COATING APPLICATION

A. Preheating, coating application, and post-curing shall be in accordance with the coating manufacturer's instructions and AWWA C213.

B. Dry film thickness of cured coating shall be 12 mils minimum (but not less than the coating manufacturer’s recommendations), unless otherwise shown.

C. Coating shall be free of holidays and pinholes.

D. Finished coating shall be well bonded and have no sags and runs.

3.3 QUALITY CONTROL

A. District may inspect surface preparation and application of the coating system. Provide notification for Engineer to be present for abrasive blasting. See Section 01 45 27 – Shop Inspection, for inspection advance notification requirements and District travel expenses.

B. The finished coating shall be inspected and tested at the coating plant by the applicator for holidays and for coating thickness. All testing shall be done in the presence of the Engineer.

C. Thickness shall be measured with a non-destructive paint film thickness gauge such as Mikrotest and in accordance with SSPC-PA 2, Procedure for determining conformance to dry coating thickness requirements.

D. As directed by the Engineer, test using either a low voltage wet sponge holiday detector or a high voltage holiday detector.

1. Low voltage wet sponge holiday detector, for coatings to 20 mils dry film thickness, shall be equal as approved by the Engineer to K-D Bird Dog or Tinker-Rasor M-1. Add a non-sudsing wetting agent, such as Eastman Kodak Photo-Flo to the water used to saturate the sponge.

2. High voltage holiday detector, for coatings more than 20 mils dry film thickness, shall be equal as approved by the Engineer to Tinker-Rasor AP-W or D. E. Stearns Model 14/20. Use in accordance with coating manufacturer’s recommendations except use voltage of 125 volts per mil of coating.

E. The finished coating shall have the following physical properties:

1. Adhesion test: 3,000 psi minimum when pulling the appropriate sized dolly from surface coating to which it has been adhered using a DeFelsko PosiTest Automatic Adhesion Tester Model AT-A, or equal as approved by the Engineer.

F. Any work found deficient shall be repaired and brought to full compliance with these specifications. Retest after coating repairs.

3.4 FIELD REPAIR OF COATINGS

A. After installation of coated items, repair damaged areas and any gaps in shop-applied coatings. Gaps are typically from coating hold-back areas for field welds.

B. Bare Metal: Prior to coating, prepare the bare metal surface per SSPC-SP3 by removing all loose mill scale, loose rust, loose paint, and other loose detrimental foreign matter by power wire brushing, power sanding, power grinding, power tool chipping, and power tool descaling.

C. Feathered Coating Overlap: Prepare the shop applied coating next to the bare metal by using 80-grit sandpaper to roughen the coating and also uniformly feather the coating from full thickness at 1” minimum from the metal edge to bare metal at the metal edge.

D. Debris left from power tool and sanding preparation shall be removed by compressed air blast.

E. After preparation by power tool, then prepare surface per SSPC-SP1, by removing all visible oil, grease, soil, drawing and cutting compounds, and other soluble contaminants from steel surfaces with solvent, vapor, cleaning compound, alkali, emulsifying agent, or steam.

F. In cold weather, uniformly preheat the bare steel area prior to application as required by the coating manufacturer. The steel surface area temperature shall be measured to be at least 5 deg-F higher than the measured air dew-point temperature in the work area.

G. Coat the bare metal and tapered coating overlap areas with the shop coating manufacturer's recommended field repair material. Apply the number of coats as required to obtain a dry film thickness of 12 mils minimum, using brush or spray. Brush shall only be used for touch-up work of less than 3 sq-ft.

H. Comply with recommendations of the coating manufacturer.

END OF SECTION

SECTION 33 12 16.15

AWWA BUTTERFLY VALVES

PART 1 - GENERAL

1.1 DESCRIPTION

A. The term “Manufacturer” used herein is synonymous with the term “Bidder” and “Supplier” used in this Request for Quote (RFQ) package.

B. Work included: Furnish AWWA butterfly valves and associated actuators. The total number of butterfly valves required shall be fifteen (15). See the Exhibit E – Drawings for Valve Schedule and location.

C. This Purchase Contract shall include design, fabrication, delivery, inspection, startup services and certification of new butterfly valves to replace existing valves at the Main Wastewater Treatment Plant (MWWTP) as specified in this RFQ.

D. The supplied butterfly valves will be installed by the SD-462 Contractor who is awarded the SD-462 (Secondary Reactors Rehabilitation – Phase 2) project.

1. The award to the SD-462 Contractor (Contractor) is anticipated at the end of 2026. Installation of the butterfly valves will occur in the dry seasons (typically between April 15th and October 1st) of 2027 and 2028.

E. This Purchase Contract will also require multiple site visits from the Manufacturer prior to design, prior to fabrication, and during the construction period.

F. The new butterfly valves shall meet or exceed the performance specified herein. The manufacturer shall visit the site, document the existing system, where applicable, and provide new compatible design. Details provided on the Drawings and these Specifications are considered minimum requirements.

G. This Purchase Contract will also require District inspection of the Manufacturer’s production and assembly. The cost associated with inspection shall be included in this Manufacturer's bid per Section 01 45 27 – Shop Inspection.

H. Related sections:

1. Section 01 33 00 – Submittal Procedures (Exhibit F1)

2. Section 01 45 27 – Shop Inspection (Exhibit F2)

3. Section 01 79 00 – Demonstration and Training (Exhibit F3)

4. Section 01 75 17 – Field Testing and Startup ((Exhibit F4)

5. Section 05 05 24 – Shop and Field Welding ((Exhibit F5)

6. Section 09 96 56.10 – Fusion Bonded Epoxy Coatings (Exhibit F6)

7. Section 33 12 16.34 – Hydraulic and Pneumatic Valve Actuators (Exhibit F8)

8. Section 40 05 57.23 – Electric Motor Valve Actuators (Exhibit F9)

I. Related work specified elsewhere:

1. Request for Quote (RFQ) 2607

2. Exhibit I – Partial Assignment of Equipment

1.2 DELIVERY, STORAGE AND HANDLING

A. Equipment shall be delivered by the date set forth in the RFQ/Calendar of Events. This date is set to allow time for the SD-462 Contractor to install the systems within the dry weather construction window.

B. Manufacturer shall provide advanced notice of delivery date.

C. Delivery shall fall between the hours from 8:00 a.m. to 2:00 p.m.

D. Manufacturer shall protect the equipment during shipment.

E. Manufacturer shall include prior to delivery any unloading, handling, and weather-proof storage instructions as related to this Contract. The storage location is outdoors, with exposure to excessive heat, moisture, dust, and other adverse environmental conditions.

F. The SD-462 Contractor shall be responsible for unloading the equipment; however, Manufacturer shall also include in bid the cost to provide unloading assistance. See Part 3 below for additional requirements.

G. Following successful delivery and unloading, the SD-462 Contractor shall assume responsibility for storage and handling of equipment.

H. The SD-462 Contractor shall inspect the equipment and note any defects. Any defects found will be reported to the Manufacturer within five (5) business days of delivery.

1.3 QUALITY ASSURANCE

A. Coordination:

1. The Manufacturer shall coordinate dimensions of valves and actuators so there are no interferences with existing infrastructure.

2. The Manufacturer shall verify and confirm new valves match the existing.

3. The Manufacturer shall verify and confirm end connections of valves are compatible with mating/adjacent pipe.

4. The Manufacturer shall confirm sizing and actuator type and orientation at submittal preparation site visit.

5. The Manufacturer shall coordinate length of valve stem extensions, based on actual field measurements of existing dimensions and District staff access needs.

B. Warranty: Manufacturer shall warrant the manufacturer-furnished butterfly valves from the date the Engineer approves completion of butterfly valves startup and testing. Manufacturer shall note that the installation of valves will be staggered for over a two (2) year construction period.

1.4 DISTRICT SHOP INSPECTION

A. The District will send inspectors to the manufacturer's fabrication shop. See Section 01 45 27 – Shop Inspection

B. If the required notification is not given, the District may schedule the inspection at its convenience and the activity to be witnessed shall not proceed until the District or its representative arrives. The activity to be witnessed shall not proceed until the District or its representative arrives or the District notifies the Manufacturer that it is choosing to waive its inspections. Expenses incurred by delays, repeat of work, or correcting unacceptable work, shall be borne by the Manufacturer.

C. Anticipated shop inspections of fabrication process will include the following:

1. Start of production – During the first week of fabrication/production District inspectors will be onsite and to review quality control procedures and observe start of production process.

2. Inspection during mid-production – The District will make periodic visits, as needed, to inspect production activities.

3. Inspection during assembly, prior to shipping.

D. See Article 1.4 of Section 01 45 27 – Shop Inspection for full witness schedule.

E. Manufacturer is responsible for quality control and ensuring that the equipment meets the requirements of this Contract. District shop inspections will not serve as a substitute for manufacturer's quality control.

F. Failure by the Engineer to inspect or witness tests at the manufacturer's plant shall not be construed as waiving inspection upon delivery.

1.5 MANUFACTURER'S FIELD SERVICES

A. The Manufacturer shall provide technical field staff to perform duties discussed herein.

B. All costs associated with these field services, including travel and accommodations, shall be included in Bid Amount.

C. The factory representative shall be trained by the manufacturer and familiar with the butterfly valve equipment.

D. The manufacturer shall submit to the District the qualifications of the proposed field representative in accordance with Section 01 33 00, Submittal Procedures.

E. The submittal shall include an anticipated schedule for each site visit.

F. All site visits shall require coordination between the Manufacturer, District, and/or Contractor. Advanced notification of at least four (4) weeks is required to ensure proper arrangements of travel, accommodations, and facility outages.

G. Anticipated field visits purpose, quantity, and durations are estimated below. These estimates shall be used for bidding purposes. Field visit are anticipated each year of the SD-462 project's duration. Each day shall include a minimum of 8 hours onsite, and shall be in addition to travel time.

1. Year 1 (2026)

    a. Submittal Preparation Site Visit: (for field measurements) — 2 trips, 3 days per trip

    b. Submittal Review Site Visit: — 1 trip, 2 days per trip

2. Year 2 (2027)

    a. Unloading Assistance: — 2 trips, 1 day per trip

    b. Pre-installation Site Visit: — 1 trip, 3 days per trip

    c. Startup, Testing and Training: — 2 trips, 3 days per trip

3. Year 2 (2028)

    a. Pre-installation Site Visit: — 1 trip, 3 days per trip

    b. Startup, Testing and Training: — 2 trips, 3 days per trip

H. Submittal Preparation Site Visit (for field measurements)

1. These visits shall be initiated by the Manufacturer. Manufacturer shall notify the District at least four (4) weeks in advance for the visits.

2. These site visits will provide the Manufacturer access to the existing butterfly valves and equipment for field measurements, which are needed to prepare the submittal.

3. Initial submittal will incorporate all field verified information from the site visit. Required initial submittal deadline is noted on the Calendar of Events in Article II of the Main RFQ No. 2607 document.

4. Submittal Schedule:

   a. Submittal Preparation – 5 weeks

I. Submittal Review Site Visit

1. This visit shall be initiated by the Manufacturer.

2. Manufacturer shall notify the District at least four (4) weeks in advance of meeting to better ensure appropriate District staff is available to attend.

3. After the initial submittal (shop drawings, design details) have been submitted and reviewed by the District, and prior to the start of fabrication, the Manufacturer's staff shall visit the MWWTP to review shop drawing questions or comments the shop drawings with the District prior to finalizing.

4. Submittal schedule:

   a. Submittal Review – 6 weeks

J. Unloading Assistance

1. These visits shall be initiated by the Manufacturer.

2. Manufacturer shall notify the District and SD-462 Contractor at least two (2) weeks in advance of equipment delivery to ensure the SD-462 Contractor has the proper equipment to perform the unloading work.

3. Unloading assistance may be provided by Manufacturer or a Manufacturer's representative acting on the Manufacturer's behalf.

K. Pre-Installation Site Visit

1. These visits will be initiated by the SD-462 Contractor through the District.

2. Advanced notice of at least three (3) weeks will be provided to the Manufacturer to schedule appropriate field staff for these visits.

3. SD-462 Contractor shall notify the District and Manufacturer when installation of the butterfly valves is to occur. Manufacturer will visit the

jobsite prior to the installation to review Contractor's installation plan and assist the Contractor with any installation questions.

4. Manufacturer shall notify the District if there are any concerns with the proposed installation plan.

L. Startup and Testing Site Visits

1. These visits will be initiated by the SD-462 Contractor through the District.

2. Advanced notice of at least three (3) weeks will be provided to the Manufacturer to schedule appropriate field staff for these visits.

3. The Manufacturer shall be on site for Functional and Performance Testing for each butterfly valve. Multiple butterfly valves may be tested in a single site visit.

4. See Part 3 of this specification for additional testing information and requirements.

M. Training Site Visits

1. This task is anticipated to occur concurrently with startup and testing.

2. Manufacturer shall be present to provide training to District Operations and Maintenance Staff.

3. See Part 3 of this specification for additional training information and requirements.

1.6 SUBMITTALS

A. Within 30 calendar days after Contract Start Date, Supplier shall submit procurement schedule showing dates/date ranges for the following activities:

1. Submittal Preparation Site visit

2. Initial Submittal

3. Submittal Review Site visit

4. Final submittal/Release for fabrication

5. Fabrication period

6. Factory Testing

7. Delivery

B. All submittals shall be submitted per milestone date on RFQ Section II – Calendar of Events.

C. Submittals shall be in accordance with Section 01 33 00 – Submittal Procedures.

D. All butterfly valves furnished for this contract shall be by same manufacturer, unless approved in writing by the Engineer prior to submittals or manufacture.

E. Submit prior to fabrication:

1. Detail drawings and specifications for the following:

   a. Scaled system layout

   b. Components of equipment showing all dimensions, parts, construction details, and materials

2. Design calculations for items covered by the shop drawings. Calculations shall show design stresses in structural members and connections for loading combinations; stamped by a Professional Engineer.

3. End connections to the butterfly valves

4. Handwheel, chainwheel, actuator orientation

5. Source quality control test report.

6. See the submittal content requirements listed in "AWWA Butterfly Valve Technical Submittal Checklist" attached at the end of this section.

7. Each page of the submittal shall have a unique sequential page number (hand-written is acceptable, but must be completely legible).

8. The first page of the submittal shall include the "AWWA Butterfly Valve Technical Submittal Checklist" completed by the manufacturer's representative. Each submittal requirement listed in the checklist shall include the corresponding submittal page number(s).

9. If the "AWWA Butterfly Valve Technical Submittal Checklist" is not included with the submittal or if all portions of the checklist are not completed accurately by the manufacturer's representative, the submittal will be returned without review.

F. For Substitutions or Change Proposals to equipment or design as described in this RFQ package, Manufacturer shall submit request for District approval by providing the items listed below.

1. Manufacturer shall submit the following with the initial request:

a. Written Request for Change Proposal noting the following: reasons for change proposal, components affected by change, advantages and disadvantages of change (for current construction and future maintenance), and cost and schedule impacts.

b. Calculations, as needed.

c. Conceptual drawings, as needed.

2. See also Exhibit F1 – Specification Section 01 33 00 Submittal Procedures.

G. Submit the following prior to shipping:

1. The Manufacturer shall submit detailed information and instruction necessary for the proper installation of the equipment.

2. Operating and Maintenance (O&M) Manuals:

a. In addition to the requirements of section 01 33 00 – Submittal Procedures, O&M manuals shall include a section for field installation certification (if required) and field test results. The Contractor shall furnish the required number of copies for insertion into the final O&M Manuals.

3. Certified copies of all manufacturer tests made under the lastest AWWA Standard C504 depending on which size applies:

1) Performance Test

2) Leakage Test

3) Hydrostatic Test

4) Proof-of-Design Test: for each basic valve type provided by the manufacturer.

4. Coating Report:

a. Surface Preparation: Type of blast media used, surface cleanliness achieved (e.g. SSPC-SP-10), and surface profile

b. Coatings: Type (High solids epoxy, fusion bonded epoxy), brand or trade name, lot or batch number, color for each layer of coating, mixing parameters (if required) amounts mixed for each component and dwell “soak” time

c. Environmental Conditions at Time of Application: Air temperature, substrate temperature, dew point

d. Date and Time of Application: For each layer

e. Application Method (electrostatic, flock, airless, conventional, brush, roller)

f. Coating thickness achieved

5. Special shipping, unloading, handling, storage and protection instructions.

6. Manufacturer's printed installation instructions.

7. Manufacturer's test reports – Factory test report and certificate

8. Source quality control test report.

9. Manufacturer's instructions:

a. Include manufacturer's instructions, description of system operation, start-up data and troubleshooting checklists.

H. Submit following successful operational completion

1. Manufacturer's Certificate of Proper Installation.

1.7 REFERENCES

A. Existing Equipment Reference Documents can be found in Exhibit G – Reference Documents of this RFQ and include the following:

1. The following documents are provided to give the Manufacturer an idea of what was previously designed or supplied. Since the butterfly valves' installation, undocumented modifications may have been performed on the system; so, reference drawings may not accurately reflect field or as-built conditions and field verification by the Manufacturer is important.

a. Exhibit G1 - SD120 – Secondary Treatment Facilities Drawing

b. Exhibit G2 – SD120 – Butterfly Valve Specification, starting page 5

B. Photos and sketches of Existing system shown in Exhibit E – Drawings: These documents are provided to give the Manufacturer an idea of current equipment layout and condition.

C. Standards

1. ANSI / AWWA C504-23, Rubber-Seated Butterfly Valves

2. ANSI/AWWA C207, AWWA Standard for Steel Pipe Flanges for Waterworks Service, Sizes 4" Through 144" (for Valve Class E flange bolt drilling dimensions).

PART 2 - PRODUCTS

2.1 RUBBER SEATED BUTTERFLY VALVES

A. General

1. Butterfly valves shall comply with the latest AWWA Standard C504, depending on which size applies, except as modified in this section. In cases where the requirements of this section conflict with the AWWA requirements, the requirements of this section shall govern.

2. See Valve Schedule (Drawing RFQ#2607-M301) in Exhibit E – Drawings for end-connections required on the valves.

a. Where valves are specified to have Victaulic Style 44 coupling end connections, the Manufacturer shall verify shoulder joint type and locations needed to mate with existing adjacent piping.

b. Where valves are specified to have flanged end connection, all flanges shall be flat faced.

3. All valves specified in this section shall be suitable for operation with maximum pressure, designated by number, and flow velocity, designated by letter of Class 150B (per AWWA C504). Actuators shall be sized to operate the valve at this combined flow velocity and maximum differential pressure condition given by the valve pressure class.

4. Valves shall be tagged with the tag number shown on the Valve Schedule in Exhibit E – Drawings.

B. Materials

1. Valve bodies and flanges shall be integral single castings of gray or ductile iron, or cast steel. Fabricated steel bodies are not acceptable.

2. Any bronze that is in contact with water shall contain no more than 2 percent lead unless the valve is NSF 61 certified. If NSF 61 certified before January 4, 2014, the valve shall also be NSF/ANSI 61 Annex G or NSF/ANSI 372 certified.

3. The manufacturer shall certify that valve components made in conformance with ASTM or other standards specified herein have been tested in accordance with those standards

4. Bolts, nuts and washers shall be stainless steel.

C. General Design:

1. Machined surfaces: Bearing and packing surfaces shall be finished to 125 micro inches or better.

2. Valve Discs:

a. Fabricated steel discs are not acceptable.

b. Cast discs of flow-thru type design are acceptable.

c. Disc edges shall be of corrosion resistant material such as stainless steel, Monel, chrome, bronze or nickel.

d. Discs, except for edges, shall have coating per Section 09 96 56.10 – Fusion Bonded Epoxy Coatings.

3. Valve Seats:

a. Rubber seats shall conform to the latest AWWA C504 and shall be peroxide-cured EPDM or Buna-N, as specified on the Valve Schedule in Exhibit E – Drawings.

b. Rubber seats shall not mate with cast iron, alloy ductile iron, or alloy cast iron seating surfaces. All other surfaces listed in latest AWWA C504 are acceptable.

c. All metal-to-rubber seating metallic surfaces shall be finished to 125 micro inches or better.

D. Valve Actuators:

1. Type of actuator shall be as shown on the Valve Schedule in Exhibit E – Drawings.

2. Mechanical Stop-Limiting Devices: Set and locked in the valve factory prior to the seat leakage test. If necessary, field adjustments may be made by the valve manufacturer's authorized representative.

3. Position Indicators:

a. Required on the gearbox enclosure for all exposed actuators (when actuator is above ground or in a vault).

b. Position indicators shall be located such that the valve position is visible at operator’s or ground level.

4. All valves shall be furnished with means for being locked with padlock, or padlock and chain, or other secure means approved by the Engineer.

E. Manual Actuators:

1. Manual actuators shall be sized and installed in the factory prior to shipment.

2. Valve actuators shall be sized to operate the valve in any position from full open to full closed with the design pressure and 16 feet/sec velocity, including seating and unseating torque, with 150% multiplier allowance and with 100 foot pounds maximum applied (input) torque to actuator.

3. The rated torque capability of each actuator shall be sufficient to seat, unseat and rigidly hold, in any intermediate position, the valve disc it controls under the conditions shown on the Exhibit E – Drawings.

4. In addition to the requirements of the latest AWWA C504, depending on which size applies, nut operated, buried service valve actuators that include worm gearing and have mechanical stops that bear directly on the worm gear shall be furnished with:

   a. A positive input shaft stop or other torque-limiting device, or

   b. Gear operators capable of withstanding 450 ft-lbs of input torque without damage.

5. Handwheels:

   a. Surfaces shall be smooth with no rough edges to cut or abrade the person operating the valve.

   b. The maximum handwheel diameter shall be 24".

   c. The maximum rim pull shall not exceed 40 lbs under any operating condition including breakaway.

   d. Handwheel shall be located to allow for clear operating access.

6. Chainwheels:

   a. The maximum rim pull on chainwheel shall not exceed 40 lbs under any operating condition including breakaway.

   b. Chain shall be galvanized steel.

   c. Chainwheel shall be located to allow for clear operating access.

F. Motor/Electric Actuators

1. Where valves are specified to have electric motor actuators, see Specification Section 40 05 57.23, Electric Motor Valve Actuators.

G. Pneumatic Valve Actuators

1. Where valves are specified to have pneumatic valve actuators, see Specification Section 33 12 16.34, Hydraulic and Pneumatic Valve Actuators.

H. Workmanship:

1. All labor, materials, and transportation necessary to replace or repair any valve or portion thereof which fails to meet the requirements of either this section or the latest AWWA C504, shall be at the expense of the Supplier.

I. Painting

1. All ferrous metal parts of the valve assembly including actuator (except those made of stainless steel), excluding the seating edge of the disc, flange faces, and finished surfaces, shall be coated and lined with the coatings listed in Exhibit E – Drawings or Specification Section 09 96 56.10 – Fusion Bonded Epoxy Coatings.

2. Flange faces shall be coated with a rust inhibitor (LPS Laboratories LPS-3 or equal as approved by the Engineer) or other easily removable protective coating after application and curing of all other coatings.

3. All defects in film thickness or continuity shall be repaired at the expense of the Supplier. The extent of the repair work required to correct defects found upon inspection after delivery will be determined by the Engineer. Application of the repair coating, including surface preparation, shall be the same as that specified by the coating manufacturer for over-coating an old or fully-cured coating.

J. Inspection, Testing and Rejection

1. Factory tests may be witnessed by the District, unless otherwise noted. See Section 01 45 27 for shop inspection requirements.

2. Valves shall be tested for leak tightness in both directions per AWWA Standard C504 or AWWA C516 as applicable.

3. Manufacturer shall provide test reports per Part 1 herein.

2.2 EQUIPMENT TAGS

A. Equipment tags shall be provided by the SD-462 Contractor.

B. For the purpose of identification, the butterfly valves tags shall match Valve Schedule in Exhibit E – Drawings.

2.3 ACCEPTABLE MANUFACTURERS

A. Manufacturers shall be as listed in Article I.C – Specific Requirements of the RFQ No. 2607.

PART 3 - EXECUTION

3.1 VERIFICATION OF FIELD DIMENSIONS

A. Manufacturer shall take measurements of the existing dimensions of the butterfly valves and equipment at Submittal Preparation Site Visit as needed to prepare accurate shop drawings.

B. Manufacturer coordinate with the District to schedule and complete field verification work for all fifteen (15) butterfly valves prior to preparation of the initial shop drawings. Any discrepancies requiring design modifications shall be notified to the District immediately.

3.2 FACTORY INSPECTION

A. For factory inspection, refer to Section 01 45 27 – Shop Inspection .

3.3 SHIPPING AND HANDLING

A. Equipment shipment and unloading is discussed in Part 1 of these specifications. Refer to Part 1 of this specification for delivery, unloading, and storage requirements.

B. Manufacturer shall provide the District with advanced notice of delivery dates.

C. Manufacturer shall provide instructions and procedures on proper storage.

D. Valves shall be shipped with full face flange protectors in place. Flange protectors shall be replaced after any inspections.

E. If stored outdoors, valves shall be covered with tarpaulins, or plastic sheeting, etc., to protect them from sunlight and ozone damage.

F. All valves will be inspected upon delivery for compliance with these specifications. Any valve found not to comply with the contract documents will not be accepted until deficiencies are corrected.

3.4 INSTALLATION

A. The equipment shall be installed by the SD-462 Contractor in accordance with manufacturer's printed instructions.

B. Following successful installation, Manufacturer shall complete the Manufacturer’s Certificate of Proper Installation for each valve (see Exhibit H - Forms)

C. The valve mechanical stops shall be properly set for zero leakage.

D. Valve Position Indicator and "Open" and "Closed" markings shall be painted a contrasting color. If valves have no "Open-Closed" markings, marks shall be hand painted.

E. NOT USED

3.5 OPERATION AND MAINTENANCE MANUALS

A. Manufacturer shall provide Operation and Maintenance (O&M) manuals in accordance with Section 01 33 00, Submittal Procedures. O&M manuals shall be acceptable to the Engineer as a condition for performing training.

B. O&M manuals shall be updated following Operational Tests to reflect any adjustments made during the testing.

3.6 TRAINING OF DISTRICT PERSONNEL

A. General

1. Manufacturer shall coordinate with Contractor and the District to provide training to District Operations and Maintenance personnel per Spec Section 01 79 00 – Demonstration and Training. O&M manuals shall be reviewed and approved by the Engineer two (2) weeks prior to the start of training so that operations and maintenance personnel have time to review manuals ahead of training.

2. Upon Contractor’s notice, Manufacturer shall develop a lesson plan and work with both the SD-462 Contractor and the District to schedule site visits to conduct training.

3. Training shall be conducted by Manufacturer’s technical staff or representatives who are certified by the manufacturer to be thoroughly familiar with the subject matter as well as instructional methods.

4. Training materials shall be submitted to the District (see Paragraph C below) through the SD-462 Contractor for review. Acceptance of training materials is required prior to start of training.

5. All training shall be completed prior to beginning operational testing.

6. Training shall ensure measurable and observable means that District personnel are qualified to perform equipment task requirements, including essential knowledge, skills, and abilities. If the Contractor or the manufacturer's representative fails to provide training which qualifies the District personnel to perform equipment task requirements, the Contractor hereby agrees to provide remedial training to ensure District personnel proficiency at no additional cost to the District.

7. The Contractor shall require that all training instructors prepare and utilize an attendance list. The Manufacturer shall submit the completed list to the

SD-462 Contractor within one (1) working day following completion of each training session.

B. Training Schedule

1. Equipment shall be deemed suitable for use in training upon satisfactory completion of functional testing.

2. All training with regards to a unit process or part thereof shall be completed prior to the start of operational testing.

3. See Spec Section 01 79 00 - Demonstration and Training for additional schedule requirements.

3.7 EQUIPMENT TESTING

A. Manufacturer shall provide field services during the testing of each butterfly valve following installation completion.

B. Testing shall be conducted by the SD-462 Contractor in coordination with the Manufacturer. Testing for each butterfly valve shall include: Functional Test, Performance Test, and Operational Test. Tests for multiple butterfly valves may be grouped together. Tests shall be conducted in the presence of the Engineer.

C. See Spec Section 01 75 17 - Field Testing and Startup for additional startup and testing requirements.

3.8 SEE FIELD FUNCTIONAL TEST DATA FORM SUPPLEMENTS

A. The following supplements beyond END OF SECTION are a part of this section:

1. AWWA Butterfly Valve Technical Submittal Checklist.

2. Field Functional Test Data Form.

END OF SECTION

AWWA BUTTERFLY VALVE TECHNICAL SUBMITTAL CHECKLIST
(Manufacturer's Representative to complete one form per type of valve)

SPEC. SECTION TITLE & NO.:	
Valve Tag No:	

SUBMITTAL CONTENT REQUIREMENTS	**Page Number(s)**
1. Affidavit of compliance that the valves furnished comply with the applicable provisions of AWWA Standard C504-10 or AWWA Standard C516-10 (as applicable based on size) and this specification.	
2. Certified manufacturers' drawings shall show dimensions, construction details, and materials used for all parts of valves including:	
a. Outline and principal dimensions of each assembled valve with its actuator attached.	
b. Details of the following:	
1) Disc and body seats, including provisions for clamping and adjusting if provided.	
2) Attachment of disc to shaft.	
3) All bearings and stuffing boxes.	
4) Finish thickness (where applicable), given in microinches.	
5) Actuator extension stem supports (when required)	
c. Dimensions of the following:	
1) Body shell thickness, flange thickness and drilling, face-to-face length, and valve supports.	
2) Shaft diameter at all sections, and fillets at changes in shaft diameter.	
3) Disc details at section on shaft centerline and at attachment of disc to shaft.	
4) Main shaft bearing length and diameter.	
5) The clearance required for the valve disc.	
6) The minimum inside diameter required on adjoining pipe for the valve disc to clear. Supplier shall coordinate both O.D. of the valve disc (with his valve supplier) and inside diameter of the adjoining pipe internal lining so that interferences do not occur.	
d. Number of turns to open.	
e. Direction of handwheel or nut rotation to open valve, for each valve.	
3. Submit for valves 78" and larger:	
a. Body shell minimum thickness calculations in accordance with AWWA C516-10, paragraph 4.3.1.3 shall be submitted for approval. Design pressure shall be 250 psi, unless other wise noted in Valve Schedule in Exhibit E - Drawings.	
b. Calculations for minimum valve shaft diameter, in accordance with AWWA C516-10, paragraph 4.3.2, shall be submitted for approval. Design pressure shall be 250 psi, unless otherwise noted in Valve Schedule in Exhibit E - Drawings.	
4. Net weight of each valve complete assembly.	
5. Specific coating materials and thickness to be used. Submit proof that the coating applicator is currently certified by the coating manufacturer to be competent in the preparation and application of the coating to be used. Refer to sections 09 96 56.05 and 09 96 56.10 for specific requirements.	
6. Illustrations of the proposed actuator mounting orientation for each valve as shipped from the factory. This shall conform to the drawings. Assume that the valve will be installed with the seat side facing upstream, unless otherwise shown	
7. Torque calculations for submitted valve. Include the complete equations and the basis and references for any coefficients used. Calculations shall be verifiable with AWWA M49. The flow velocity shall and the differential pressure conditions shall be per "Pressure Class" in Valve Schedule in Exhibit E - Drawings.	
a. Valve bearing torque =	

SPEC. SECTION TITLE & NO.:	
Valve Tag No:	

SUBMITTAL CONTENT REQUIREMENTS		**Page Number(s)**
	(e.g. 100 ft-lbs)	
b. Valve hydrostatic torque =	(e.g. 100 ft-lbs)	
c. Valve seating/unseating torque =	(e.g. 100 ft-lbs)	
d. Valve dynamic torque =	(e.g. 100 ft-lbs)	
e. Valve total torque =	(e.g. 100 ft-lbs)	
8. Manual valve actuators. Calculations shall be verifiable with AWWA M49. For Electric, Hydraulic and Pneumatic Valve Actuators, see Specification Sections 33 12 16.34 & 40 05 57.23.		
a. Data sheet for actuator including torque output capability and gear ratio, open direction, position indicator and limit switches (if applicable).		
b. Net output torque of actuator assembly (including gear box, if applicable) confirming a minimum of 150 percent of the total valve torque requirement =	(e.g. 150 ft-lbs)	
c. Handwheel diameter =	(e.g 18”)	
d. Actuator Mechanical Advantage =	(e.g 24.9)	
e. Handwheel rimpull/ AWWA nut input =	(e.g. 35 lbs)	
9. NSF/ANSI 61 certification for each size and type of valve or all materials in contact with potable water.		

FIELD FUNCTIONAL TEST DATA FORM

EBMUD Project Title: **RFQ No. 2607 (for SD-462)** Test Date(s): _____

Equipment Name: **AWWA Butterfly Valves** Section No.: **33 12 16.15**

Tag No.: _____ P&ID No. _____

I. Pretest Documentation/Setup

Documents:	Yes	No	NA	Comments:
a) Interconnection & Loop diagrams provided	☐	☐	☒	
b) Mfr Cert of Proper Installation provided	☐	☐	☐	
c) Technical Submittal complete (Supplier show EDOCs record)	☐	☐	☐	
d) Spare Parts provided	☐	☐	☒	
e) Final O&Ms provided (Supplier show final O&Ms)	☐	☐	☐	
f) Pipe pressure tests completed for adjacent piping (Supplier to show test records).	☐	☐	☐	

Field Test Setup (Identify any test instrument, special setups like tanks, hoses, etc)**:**

II. Field Functional Test

1. Calibration/Loop/Electrical	Yes	No	NA	Comments:
	☐	☐	☒	

2. Installation Check	Pass	Fail	NA	Comments:
2.1 Correct equipment tags have been installed (tags shall match P&IDs). Valve pots for buried services shall be properly tagged.	☐	☐	☐	
2.2 All fields on Asset List Spreadsheet completed for device (Supplier shall show inspector at the time of the test that the asset list is complete and accurate for this system)	☐	☐	☐	

FIELD FUNCTIONAL TEST DATA FORM

EBMUD Project Title: **RFQ No. 2607 (for SD-462)** Test Date(s): _____

Equipment Name: **AWWA Butterfly Valves** Section No.: **33 12 16.15**

Tag No.: _____ P&ID No. _____

3. Operations Check	Pass	Fail	NA	Comments:
3.1 Verify valve opens in the correct direction (indicate opening direction, CW or CCW, in comments).	☐	☐	☐	
3.2 Verify valve opens and closes smoothly with valves under operating pressure.	☐	☐	☐	
3.3 Count and record the number of turns of the nut, or handwheel required needed to fully open and close the valve. Account for any discrepancies between actual number turns and the number of turns identified by the manufacturer.	☐	☐	☐	
3.4 Handwheel Rim Pull / Nut Torque Test: For handwheels, verify the maximum rim pull is less than 40 lbs under any operating condition including breakaway. For buried valves, verify the maximum input torque applied to the 2" nut 100 ft-lbs, or less.	☐	☐	☐	
3.5 Leakage Test: Close the valve and apply the corresponding system test pressure given in the Mechanical Piping Schedule in Section 40 20 20 to one side of the valve and atmospheric pressure to the other. Test duration shall be a minimum of 30 minutes. Verify that the valve seat leakage is drop tight. Open a drain, or loosening a nearby flange as necessary to verify the valve is leak tight. If there are any signs of leakage, the valves shall be adjusted, or replaced, and the valves shall then be retested until they are leak tight.	☐	☐	☐	
4. Controls Check	Pass	Fail	NA	Comments:
	☐	☐	☒	
5. Alarms Check	Pass	Fail	NA	Comments:
	☐	☐	☒	
6. Run Check	Pass	Fail	NA	Comments:
	☐	☐	☒	
7. Other Tests and Checks	Pass	Fail	NA	Comments:
	☐	☐	☒	

FIELD FUNCTIONAL TEST DATA FORM

EBMUD Project Title: **RFQ No. 2607 (for SD-462)** Test Date(s): _____

Equipment Name: **AWWA Butterfly Valves** Section No.: **33 12 16.15**

Tag No.: _____ P&ID No. _____

III. Participants/Witness

Test conducted:

By (signature): _____ Date: _____

Title: _____ Company Name: _____

By (signature): _____ Date: _____

Title: _____ Company Name: _____

EBMUD Witness:

By (signature): _____ Date: _____

Title: _____

SECTION 33 12 16.34

HYDRAULIC AND PNEUMATIC VALVE ACTUATORS

PART 1 - GENERAL

1.1 SUMMARY

A. The term “Manufacturer” used herein is synonymous with the term “Bidder” and “Supplier” used in this Request for Quote (RFQ) package.

B. Work includes: Furnish pneumatic actuators for the new butterfly valves listed in Valve Schedule of Exhibit E – Drawings.

C. This Purchase Contract shall include design, fabrication, delivery, inspection, startup services (training) and certification of new motorized valves to replace existing motorized valves at the Main Wastewater Treatment Plant (MWWTP). New pneumatic valve actuators will connect to existing air supply and control system as specified herein, shown on the Drawings, and as specified in the RFQ language. See Appendix E – Drawings for existing pneumatic actuators.

D. The supplied pneumatic valve actuators will be installed by the SD-462 Contractor (Contractor) who is awarded the SD-462 (Secondary Reactors Rehabilitation – Phase 2) project.

1. The award to the SD-462 project is anticipated at the end of 2026. Installation of the pneumatic actuators for the new butterfly valves will occur in the dry seasons (typically between April 15th and October 1st) of 2027 and 2028.

2. Reassigned responsibilities include, but are not limited to, equipment loading, storage and handling, installation, and coordinating the Supplier’s field services.

3. The manufacturer shall work with the District and the SD-462 contractor as part of this Contract.

E. This Contract will also require multiple site visits from the Manufacturer prior to design, prior to fabrication, and during the construction period.

F. The new pneumatic actuators shall meet or exceed the performance of the existing system. The manufacturer shall visit the site, document the existing system and provide new design. Details provided on the Drawings and these Specifications are considered minimum requirements.

G. Related sections:

1. Section 01 33 00 – Submittal Procedures

2. Section 01 45 27 – Shop Inspection

3. Section 01 79 00 – Demonstration and Training

4. Section 01 75 17 – Field Testing and Startup

5. Section 05 05 24 – Shop and Field Welding

6. Section 09 96 56.10 – Fusion Bonded Epoxy Coatings

7. Section 33 12 16.15 – AWWA Butterfly Valves

8. Section 40 05 57.23 – Electric Motor Valve Actuators

H. Related work specified elsewhere:

1. Request for Quote (RFQ) 2607

2. Associated Exhibits

1.2 DELIVERY, STORAGE AND HANDLING

A. Equipment shall be delivered by the date set forth in the RFQ/Calendar of Events. This date is set to allow time for the SD-462 Contractor to install the systems within the dry weather construction window.

B. Delivery shall fall between the hours from 8:00 a.m. to 2:00 p.m.

C. Manufacturer shall protect the equipment during shipment.

D. Manufacturer shall include prior to delivery any unloading, handling, and weather-proof storage instructions as related to this Contract. The storage location is outdoors, with exposure to excessive heat, moisture, dust, and other adverse environmental conditions.

E. The SD-462 Contractor shall be responsible for unloading the equipment; however, Manufacturer shall also include in bid the cost to provide unloading assistance. See Part 3 below for additional requirements.

F. Following successful delivery and unloading, the SD-462 Contractor shall assume responsibility for storage and handling of equipment.

G. The SD-462 Contractor shall inspect the equipment and note any defects. Any defects found will be reported to the Manufacturer within five (5) days of delivery.

1.3 QUALITY ASSURANCE

A. Coordination

1. The Manufacturer shall coordinate dimensions of piping and valves so there are no interferences.

2. The Manufacturer shall verify and confirm new valves match the existing.

3. The Manufacturer shall verify and confirm end connections for valves greater than 18-inch diameter are compatible with mating/adjacent pipe, and valve dimensions do not conflict with existing piping and other utilities.

4. The Manufacturer shall ensure the new pneumatic motor actuators connect to the existing utility.

5. The Manufacturer shall confirm sizing and actuator type at submittal preparation sit visit.

B. Warranty: Manufacturer shall warrant the manufacturer-furnished butterfly valves from the date the Engineer approves completion of butterfly valves startup and testing.

1.4 DISTRICT SHOP INSPECTIONS

A. All pneumatic valve actuators will be inspected upon delivery for compliance with these specifications by the SD-462 Contractor. Any actuator found not to comply will not be accepted until deficiencies are corrected.

B. Any actuator found not to comply will not be accepted until deficiencies are corrected. At the discretion of the Engineer, the District will have a representative at the shop to witness the testing of the actuators. See Section 01 45 27 – Shop Inspection for inspection advance notification requirements and travel expenses. Failure by the Engineer to inspect or witness tests at the shop or factory shall not be construed as waiving inspection upon delivery.

C. The Manufacturer shall repair all coating defects in accordance with the coating manufacturer's instructions.

D. The District will provide factory inspectors to observe quality of the fabrication as detailed in this specification. District inspectors may make periodic visits or may remain onsite continuously. The District and Manufacturer shall coordinate to schedule and facilitate shop inspection. The District requires a minimum of four (4) weeks advance notice of factory activity to schedule personnel and accommodations. The Manufacturer shall accommodate District’s factory inspection.

E. If the required notification is not given, the District may schedule the inspection at its convenience and the activity to be witnessed shall not proceed until the District or its representative arrives. The activity to be witnessed shall not proceed until the District or its representative arrives or the District notifies the Manufacturer that it is

choosing to waive its inspections. Expenses incurred by delays, repeat of work, or correcting unacceptable work, shall be borne by the Manufacturer.

F. Butterfly valve and pneumatic valve actuators shall be shop-tested together as a system at the butterfly valve manufacturer's location.

G. Each actuator shall be performance-tested at the factory per AWWA C541. Position switches, torque switches and mechanical stops shall be set for the test. During factory testing, the actuators shall operate without any intermittent or continuous tapping sounds. Operator exhibiting any noises other than a quiet and continuous motor noise during operation shall be repaired, or replaced, and then retested prior to shipping.

1. At the discretion of the District, the District will have a representative at the shop to witness the testing of the actuators. Failure by the Engineer to inspect or witness tests at the shop or factory shall not be construed as waiving inspection upon delivery.

H. Anticipated shop inspections will include:

1. Start of production – During the first week of fabrication/production District inspectors will be onsite and to review quality control procedures and observe start of production process.

2. Inspection during mid-production – The District will make periodic visits, as needed, to inspect production activities.

3. Inspection during assembly, prior to shipping.

I. Manufacturer shall identify in writing the person at the factory responsible for coordinating all inspection communications and activities.

J. Manufacturer shall also have a quality control representative to the District at all times during the course of inspections.

K. Factory accommodations:

1. Manufacturer shall ensure that there are adequate lighting, ventilation, and safety procedures in place to permit safe and thorough inspection at all times.

2. All inspection and measurement tools and equipment employed by Manufacturer shall be made available to the District and remain in the area for inspection and shall be properly calibrated, tuned, and operable.

L. Manufacturer is responsible for quality control and ensuring that the equipment meets the requirements of this Contract. District shop inspections will not serve as a substitute for manufacturer's quality control.

1.5 MANUFACTURER'S FIELD SERVICES

A. The Manufacturer shall provide technical field staff to perform duties discussed herein.

B. All costs associated with these field services, including travel and accommodations, shall be included in Bid Amount.

C. The factory representative shall be trained by the manufacturer and familiar with pneumatic valve actuator equipment.

D. The manufacturer shall submit to the District the qualifications of the proposed field representative in accordance with Section 01 33 00, Submittal Procedures. The submittal shall include an anticipated schedule for each site visit.

E. All site visits shall require coordination between the Manufacturer, District, and/or Contractor. Advanced notification of at least four (4) weeks is required to ensure proper arrangements of travel, accommodations, and facility outages.

F. Submittal Preparation Site Visit (for field measurements)

1. These visits shall be initiated by the Manufacturer. Manufacturer shall notify the District at least four (4) weeks in advance for the visits.

2. These site visits will provide the Manufacturer access to the existing butterfly valves and equipment for field measurements, which are needed to prepare the submittal.

3. After the initial submittal (shop drawings, design details) have been submitted and reviewed by the District, and prior to the start of fabrication, the Manufacturer's staff shall visit the MWWTP to review shop drawing questions or comments the shop drawings with the District prior to finalizing.

4. Recommended completion date of site visit is noted on the Calendar of Events in Article II of the Main RFQ No. 2607 document.

G. Submittal Review Site Visit

1. This visit shall be initiated by the Manufacturer.

2. Manufacturer shall notify the District at least four (4) weeks in advance of meeting to better ensure appropriate District staff is available to attend.

3. After the initial submittal (shop drawings, design details) have been submitted and reviewed by the District, and prior to the start of fabrication, the Manufacturer's staff shall visit the MWWTP to review shop drawing questions or comments the shop drawings with the District prior to finalizing.

4. Submittal schedule:

    a. Submittal Preparation – 4 weeks

    b. Submittal Review – 5 weeks

H. Unloading Assistance

1. These visits shall be initiated by the Manufacturer.

2. Manufacturer shall notify the District and SD-462 Contractor at least two (2) weeks in advance of equipment delivery to ensure the SD-462 Contractor has the proper equipment to perform the unloading work.

3. Unloading assistance may be provided by Manufacturer or a Manufacturer's representative acting on the Manufacturer's behalf.

I. Pre-Installation Site Visit

1. These visits will be initiated by the SD-462 Contractor through the District.

2. Advanced notice of at least three (3) weeks will be provided to the Manufacturer to schedule appropriate field staff for these visits.

3. SD-462 Contractor shall notify the District and Manufacturer when installation of the pneumatic valve actuators is to occur. Manufacturer will visit the jobsite prior to the installation to review Contractor's installation plan and assist the Contractor with any installation questions.

4. Manufacturer shall notify the District if there are any concerns with the proposed installation plan.

J. Startup and Testing Site Visits

1. These visits will be initiated by the SD-462 Contractor through the District.

2. Advanced notice of at least three (3) weeks will be provided to the Manufacturer to schedule appropriate field staff for these visits.

3. The Manufacturer shall be on site for Functional and Performance Testing for each the pneumatic valve actuators. Multiple pneumatic valve actuators may be tested in a single site visit.

4. See Part 3 of this specification for additional testing information and requirements.

K. Training

1. This task is anticipated to occur concurrently with startup and testing.

2. Manufacturer shall be present to provide training to District Operations and Maintenance Staff.

3. See Part 3 of this specification for additional training information and requirements.

1.6 SUBMITTALS

A. Submittals shall be in accordance with Section 01 33 00 – Submittal Procedures.

B. All pneumatic valve actuators furnished for this contract shall be by same manufacturer, unless approved in writing by the Engineer prior to submittals or manufacture.

C. Submittals in this section shall be submitted as a complete system with their respective valve submittals.

D. It is the responsibility of the Manufacturer to coordinate the valve and actuator requirements.

E. Submit the following prior to assembly:

1. Detail drawings and specifications for the following:

a. Scaled system layout

b. Components of equipment showing all dimensions, parts, construction details, and materials

c. Fabricated items, equipment structural supports, and associated items.

2. Design calculations for items covered by the shop drawings. Calculations shall show design stresses in structural members and connections for loading combinations; stamped by a Professional Engineer.

3. End connections

4. Source quality control test report.

5. See the submittal content requirements listed in “Hydraulic and Pneumatic Valve Actuator Technical Submittal Checklist” and “Hydraulic and Pneumatic Valve Actuator Sizing Calculation Datasheet” attached at the end of this section.

6. Each page of the submittal shall have a unique sequential page number (hand-written is acceptable, but must be completely legible).

7. The first page of the submittal shall include the “Hydraulic and Pneumatic Valve Actuator Technical Submittal Checklist” completed by the

manufacturer's representative. Each submittal requirement listed in the checklist shall include the corresponding submittal page number(s).

8. If the "Hydraulic and Pneumatic Valve Actuator Technical Submittal Checklist" and "Hydraulic and Pneumatic Valve Actuator Sizing Calculation Datasheet" is not included with the submittal or if all portions of the checklist and datasheet are not completed accurately by the manufacturer's representative, the submittal will be returned without review.

F. For Substitutions or Change Proposals to equipment or design as described in this RFQ package, Manufacturer shall submit request for District approval by providing the items listed below.

1. Manufacturer shall submit the following with the initial request:

a. Written Request for Change Proposal noting the following: reasons for change proposal, components affected by change, advantages and disadvantages of change (for current construction and future maintenance), and cost and schedule impacts.

b. Calculations, as needed.

c. Conceptual drawings, as needed.

2. See also Exhibit F1 – Specification Section 01 33 00 Submittal Procedures.

G. Submit the following prior to shipping:

1. The Manufacturer shall submit detailed information and instruction necessary for the proper installation of the equipment.

2. Manufacturer's test reports – Factory test report and certificate

3. Special shipping, unloading, handling, storage and protection instructions.

4. Manufacturer's printed installation instructions.

5. Field test procedures

6. Manufacturer's instructions:

a. Include manufacturer's instructions, description of system operation, start-up data and troubleshooting checklists.

H. Submit following successful operational completion and field testing:

1. Manufacturer's Certificate of Proper Installation (copy to be inserted by the Contractor in the final O&M Manuals).

2. Field Functional Test Reports and Logs (copy to be inserted by the Contractor in the final O&M Manuals).

3. Operations and Maintenance (O&M) Manual:

    a. Provide submittals for each type of actuator in accordance with Section 01 33 00 – Submittal Procedures.

4. Copies of all final technical submittals

5. Operations and maintenance data:

    a. Include manufacturer's literature; cleaning procedures, replacement part lists, wiring diagrams, and repair data.

    b. Include a list of all configurable parameters, and the final values for each.

    c. List of recommended spare parts.

    d. List of special tools necessary for proper operation and/or maintenance.

    e. Exploded view drawings that illustrate all assemblies, sub-assemblies, and components.

    f. Routine test procedures for all electronic and electrical circuits.

    g. Troubleshooting chart covering the complete valve and controls/electrical power systems, showing description of trouble, probable cause, and suggested remedy.

    h. Certified factory and field-test results.

1.7 REFERENCES:

A. Existing Equipment Reference Documents can be found in Exhibit G – Reference Documents of the RFQ documents and include the following:

1. The following documents are provided to give the Manufacturer an idea of what was previously designed or supplied. Since the pneumatic valve actuators' installation, additional, undocumented modifications may have been performed on the system; so, reference drawings may not accurately reflect field or as-built conditions and field verification by the Manufacturer is required.

    a. SD120 – Secondary Treatment Facilities

B. Photos and sketches of Existing system shown in Exhibit E – Drawings: These documents are provided to give the Manufacturer an idea of current equipment layout and condition.

C. Standards

1. ANSI / AWWA C504-23 – Rubber-Seated Butterfly Valves

2. ANSI/AWWA C519-18 – AWWA Standard for High Performance Waterworks Butterfly Valves

3. ANSI/AWWA C541-16 – AWWA Standard for Hydraulic and Pneumatic Cylinder and Vane-Type Actuators for Valves and Slide Gates

1.8 OPERATING CONDITIONS

A. Valve actuators will be installed in the basement of the Operation Center where there is no heating or air conditioning.

B. Valve actuators shall be installed indoors with unheated and unconditioned air conditions. Room temperature will vary from 35 Deg F to 104 Deg F. Because these are wastewater facilities humidity levels can be high. Typical humidity ranges are 60 percent to 97 percent.

PART 2 - PRODUCTS

2.1 GENERAL

A. Actuator shall be pneumatic vane style.

B. Supplier shall ensure actuators will meet the needs of the system as described herein, on the Drawings (Exhibit E) and control system per Reference Documents (Exhibit G).

C. Actuators shall be factory-mounted on the valve or gate and provided as a unit. Each valve body or actuator shall have cast thereon the word "OPEN," an arrow indicating the direction to open, and flow direction arrows.

D. Torque:

1. The rated torque capability of each actuator assembly shall at a minimum meet the Actuator Sizing Torque (AST). The actuator sizing torque (AST) shall be calculated by the manufacturer and based on the minimum required sizing torque (MRST) times the application factor (AF).

2. AST = AF x MRST

3. The application factor (AF) is defined per AWWA C519 Table 2 . The valve's required torque shall be as defined in AWWA C519: minimum required shaft torque (MRST). The minimum required shaft torque (MRST) shall be provided by the manufacturer. The actuator shall produce the required torque using the maximum available air pressure shown in Table A.

E. All actuators will be equipped with manual gear override in case of loss of air. See Article 2.4.

F. Provide solenoid valves to provide open/close operation of valves. See Article 2.5.

G. Provide proximity/limit switches mounted to the actuator housing to indicate valve positions as shown on the reference drawings. See Article 2.6.

2.2 NOT USED

2.3 PNEUMATIC VANE ACTUATOR

A. Unless otherwise specified, pneumatic rotary vane actuators shall be provided in accordance with the actuator specification sheets and the following requirements.

B. Pneumatic actuators shall be the vane type design with only one moving part.

C. Materials of Construction

1. Housing shall be pressure die cast and LM24 pressure die cast and LM25 sand cast aluminum with epoxy powder coat.

2. All threaded fittings shall have a locking and sealing compound designed for metal tapered threads and fittings. All actuators shall be tested after assembly. Actuators shall not require more than three psig to be cycled a complete stroke in each direction before they are connected to the valve. Test report documenting zero cross vane leakage shall be submitted prior to shipment.

3. Vane/output shaft shall be ASTM A148 steel per AWWA C541, Grade 115-95 heat treated with electro less nickel plated finish.

4. Vane seals shall be either of the following:

a. HBNR highly saturated Buna Nitrile, rated -5 to +300 degrees F.

b. Polyurethane lip seals rated at -40 to +180 degrees F

D. Actuator shall be provided with a visual indicator of valve position visible at the Operator's standing level.

E. Manufacturer

1. Kinetrol

2. Or Equal.

2.4 MANUAL OVERRIDE

A. When specified in the purchase documents pneumatic vane actuators are to be equipped with direct mount (utilizing no external brackets or couplings) de-clutchable worm gear overrides with handwheels to operate the valve assembly manually, for instance, in the case of loss of plant air.

B. Manual gear overrides shall be designed with the gear mechanism totally enclosed and with an external mechanism that allows the gear to be engaged and disengaged. When the manual gear override is in the disengaged mode, it will have no effect on the performance of the pneumatic actuator. The handwheel of the manual gear override will not rotate during operation of the pneumatic actuator.

C. When an actuator assembly is supplied with a manual gear override, provisions shall be made to exhaust the pressure medium from the pneumatic actuator before operating it manually. It should be noted in the purchase documents whether the actuator manufacturer is to supply the necessary equipment with each pneumatic actuator.

D. Manual gear overrides shall be designed to produce the required operating torque, plus an appropriate safety factor (1.25 minimum), with a maximum rim pull of 80 lb. on the rim of the handwheel for the valve seating or unseating load and a maximum rim pull of 80 lb. on the rim of the handwheel at any point through the travel for the valve running load, unless otherwise specified in the purchase documents.

E. Adjustable stop-limiting devices shall be provided in the manual override for the open and closed positions. The components between the input and these stops shall be designed to withstand, without damage, a rim pull of 200 lbs. on the handwheel.

F. Manual gear overrides shall be self-locking and designed to transmit twice the rated output torque without damage to the faces of the gear teeth.

G. Manual gear overrides shall have bronze or ductile iron worm gears and hardened steel worms that operate in grease or lubricant.

H. Manual gear overrides shall be properly sized to overcome the required torque of the valve / pneumatic actuator assembly plus and appropriate safety factor (1.25 minimum.)

I. The handwheel shall operate in the clockwise rotation to close the valve, unless otherwise specified.

J. Manual gear override housings will be painted with a suitable primer unless otherwise noted in the purchase documents.

2.5 SOLENOID VALVES

A. Solenoid pilot valves shall be factory mounted directly over the actuator ports with no external tubing. Lapped-spool, floating-sleeve type, suitable for continuous service on dry, non-lubricated instrument quality air, and suitable for supply pressures between 25 and 125 psig. A supply air filter regulator with a gage shall be provided with each pilot solenoid valve.

B. Solenoid pilot valves shall be four-way, five-port, direct-acting with integral speed control needle valves and mufflers on each exhaust port and suitable for three-way operation by blocking the unused vane port.

C. Solenoid pilot valves shall be provided with non-locking recessed manual override and shall comply with JIC P-1, except that NEMA 7D cases shall be provided in hazardous areas.

D. Solenoid pilot valves and supply air piping shall be sized to provide full stroking of the actuator and connected control valve within 3 seconds, with speed control needles fully open.

2.6 LIMIT SWITCHES

A. Provide SPDT limit switches mounted to the actuator housing to indicate valve positions as shown on the reference drawings.

B. The SPDT limit switches shall be housed in a NEMA 4X nickel plated aluminum enclosure with transparent polycarbonate lid.

C. The switch shall be suitable for physical and environmental abuse of harsh environments.

D. The unit shall be of modular type with plug-in components (head and switch body).

2.7 TABLE A

TABLE A

PNEUMATIC ACTUATORS FOR VALVES

Valve Tag #	Actuator Type	Valve Spec Section	Valve Size	Modulating Service (Yes/No)	Acceptable Stroke Time (sec)	Maximum Differential Pressure (psid)	Maximum Flow Velocity (ft/s)	Minimum Available Pressure to the Actuator (psig)	Failure Mode on power loss
W54-RAS-AOV-301	Pneumatic	33 12 16.15	30"	No	30-60	Per Valve's Pressure Class[1]	16	30	Closed
W54-RAS-AOV-401	Pneumatic	33 12 16.15	30"	No	30-60	Per Valve's Pressure Class[1]	16	30	Closed

Note 1: Per AWWA C519 Article 4.2.8.2.2: Manufacturer shall size actuator based on the valve's pressure class except where prior approval has been granted in writing by the Engineer

PART 3 - EXECUTION

3.1 VERIFICATION OF FIELD DIMENSIONS

A. Manufacturer shall take measurements of the existing pneumatic valve actuators and components as needed to prepare accurate shop drawings.

B. Manufacturer coordinate with the District to schedule and complete field verification work in all pneumatic valve actuators prior to preparation of the initial shop drawings. Any discrepancies requiring design modifications shall be notified to the District immediately.

3.2 SHIPPING AND HANDLING

A. Equipment shipment and unloading is discussed in Part 1 of these specifications. Refer to Part 1 of this specification for delivery, unloading, and storage requirements.

B. Manufacturer shall provide the Engineer with advanced notice of delivery dates.

C. Manufacturer shall provide instructions and procedures on proper storage.

D. Pneumatic valve actuators shall be stored per the manufacturer's instructions.

E. If stored outdoors, pneumatic valve actuators shall be covered with tarpaulins, or plastic sheeting, etc., to protect them from sunlight and ozone damage.

F. All pneumatic valve actuators will be inspected upon delivery for compliance with these specifications. Any pneumatic valve actuators found not to comply with the contract documents will not be accepted until deficiencies are corrected

3.3 INSTALLATION

A. Prior to installation, Manufacturer shall provide pre-installation field services to review the SD-462 Contractor's installation plan and methods. See Part 1 for additional field visit requirements.

B. The equipment shall be installed by the SD-462 Contractor in accordance with manufacturer's printed instructions.

C. All pneumatic actuators shall be sized and installed by an authorized representative of the actuator manufacturer.

D. All actuators shall be installed with good access to local and manual controls. Installation shall include adequate clearances with walls or other obstacles to remove enclosure covers, and to maintain safe work clearances.

E. All valve and actuator assemblies shall be shop or factory assembled. All mechanical end travel (stops), settings shall be shop or factory adjusted and tested. Assembled units shall be fully stroked (open-closed-open or closed-open-closed) in the shop or factory at least three (3) times.

F. Following successful installation, Manufacturer shall coordinate with the SD-462 Contractor to complete the Manufacturer's Certificate of Proper Installation (see Exhibit H - Forms).

3.4 OPERATION AND MAINTENANCE MANUALS

A. Manufacturer shall provide Operation and Maintenance (O&M) manuals in accordance with Section 01 33 00, Submittal Procedures. O&M manuals shall be acceptable to the Engineer as a condition for performing training.

B. O&M manuals shall be updated at the end of the Operational Test to reflect any adjustments made during the testing

3.5 FIELD TESTING/EQUIPMENT TESTING

A. Manufacturer shall provide field services during the testing of each pneumatic valve actuators following installation completion.

B. Valve actuators shall be tested with the valve during the Field Functional Test and in accordance with Section 01 75 17 – Field Testing and Startup.

C. Valve and actuator and all appurtenances shall be tested together as a system.

D. Testing shall be conducted by the SD-462 Contractor in coordination with the Manufacturer. Testing for each pneumatic valve actuator shall include: Functional Test, Performance Test, and Operational Test. Tests shall be conducted in the presence of the Engineer.

1. Functional Test: The field testing required to determine if installed equipment or system will operate in a satisfactory manner and as specified. The Functional Test is a point-by-point test to confirm that all components associated with the equipment or system, are operating properly. Functional testing is not intended to measure efficiency and performance. Functionally test each valve using the Field Functional Test Data Form.

2. Performance Test: The field testing required to demonstrate the individual pneumatic valve actuator meets all of the specified performance requirements.

3. Startup Operational Test: A test of all pneumatic valve actuators operating together to demonstrate satisfactory performance of the facility as a whole for a continuous period.

E. Demonstrate smooth and quiet operation of all actuators without any intermittent or continuous tapping sounds. Operator exhibiting any noises other than a quiet and continuous motor noise during operation shall be repaired, or replaced, and then retested at the sole expense of the Contractor.

F. Pneumatic Actuators: Complete the field functional tests in accordance with the Field Functional Test Form at the end of this Section, and as directed by the Engineer.

3.6 TRAINING OF DISTRICT PERSONNEL

A. Manufacturer shall coordinate with Contractor and the District to provide training to District Operations and Maintenance personnel per Spec Section 01 79 00 – Demonstration and Training.

B. All training shall be completed prior to beginning operational testing.

3.7 FIELD FUNCTIONAL TEST DATA FORM SUPPLEMENTS

A. The following supplements follow END OF SECTION and are a part of this section:

1. Hydraulic and Pneumatic Valve Actuator Technical Submittal Checklist (for High-Performance Butterfly Valve or AWWA Butterfly Valve).

2. Hydraulic and Pneumatic Valve Actuator Sizing Calculation Datasheet.

END OF SECTION

HYDRAULIC AND PNEUMATIC VALVE ACTUATOR TECHNICAL SUBMITTAL CHECKLIST

(Manufacturer's Representative shall complete one form per submittal)

SPEC. SECTION TITLE & NO:	
SUBMITTAL CONTENT REQUIREMENTS	**Page Number(s)**
1. Certified manufacturers' drawings shall include:	
a. Actuator dimensions, construction details and materials.	
b. General arrangement of control piping and associated equipment, valves and instruments	
c. A Hydraulic/Pneumatic schematic showing control piping and associated equipment, valves and instruments	
d. An outline drawing showing proposed orientation and mounting on the valve, with overall dimensions.	
e. A drawing showing the proposed valve/actuator orientation and relationship to nearby structures or obstacles. The drawing should also show floor/ platform location and any wall within 6 feet.	
f. Provide net weight of each actuator.	
g. Coating materials to be used.	
2. A data sheet summarizing all pertinent data for the actuator and the valve, including valve and actuator torques, actuator nameplate data, weights, valve pressure rating, speed range capability, factory set open and closing times, pressure used for determining valve required torque, etc.	
3. All actuator commissioning settings, including limit switch settings.	
4. Drawing and calculation requirements shall meet the requirements of Section 33 12 01 – Basic Mechanical Materials and Methods.	
5. Affidavit of Compliance.	
Submit the Hydraulic and Pneumatic Valve Actuator Technical Submittal Checklist with the valve technical submittal checklist.	

HYDRAULIC AND PNEUMATIC VALVE ACTUATOR Sizing Calculation Datasheet

(Manufacturer's Representative shall complete one calculation datasheet for each type of valve and hydraulic/pneumatic actuator combination)

SPEC. SECTION TITLE & NO:	
TAG NO(s):	
Valve Size and Model	
Hydraulic/Pneumatic Actuator Model	

SUBMITTAL CONTENT REQUIREMENTS	**Page Number(s)**
Instructions: Hydraulic and Pneumatic Actuator Calculations for sizing the actuators meeting all the requirements at the maximum differential pressure and velocity conditions listed in Tables A. Include any referring calculations and/or literature in the reference pages.	
1. Minimum Required Shaft Torque (MRST). The minimum required shaft torque (MRST) shall be calculated by the manufacturer. The torque at both the seated position (seating and unseating) and the midstroke maximum (5° through 90°) total dynamic run (opening or closing) shall be evaluated	
a. Total seating torque: (AWWA M49-3rd Edition, equation 3-1)	
b. Total unseating (break) torque: (AWWA M49-3rd Edition, equation 3-2)	
c. Total Opening (run) torque: (AWWA M49-3rd Edition, equation 3-3)	
d. Total unseating (break) torque: (AWWA M49-3rd Edition, equation 3-2)	
2. Actuator Sizing Torque (AST). The actuator sizing torque (AST) shall be calculated by the manufacturer and based on the minimum required sizing torque (MRST) times the application factor (AF)	
a. Application Factor (AF): (AWWA C519 Table 2)	
b. Actuator Sizing Torque: (AST = AF x MRST)	
3. Hydraulic and Pneumatic Valve Actuator Sizing Calculations	
a. Selected hydraulic or pneumatic actuator rated torque	
b. Calculated operation time	
Submit the Hydraulic and Pneumatic Valve Actuator Sizing Calculation Datasheet with the valve technical submittal checklist.	

SECTION 40 05 57.23

ELECTRIC MOTOR VALVE ACTUATORS

PART 1 - GENERAL

1.1 SUMMARY

A. The term “Manufacturer” used herein is synonymous with the term “Bidder” and “Supplier” used in this Request for Quote (RFQ) package.

B. Work includes: Furnish Electric Motor Actuators for the new butterfly valves listed in Valve Schedule of Exhibit E – Drawings and Table A.

C. This Purchase Contract shall include design, fabrication, delivery, inspection, startup services (training) and certification of new motorized valves to replace existing motorized valves at the Main Wastewater Treatment Plant (MWWTP). New motorized valves will connect to existing power and control system as specified herein, shown on the Drawings, and as specified in the RFQ language. See Appendix E – Drawings for existing control description and Reference Drawings for existing wiring.

D. The supplied motorized valves will be installed by the SD-462 Contractor (Contractor) who is awarded the SD-462 (Secondary Reactors Rehabilitation – Phase 2) project.

1. The award for the SD-462 project is anticipated at the end of 2026. Installation of the electric motor actuators for the new butterfly valves will occur in the dry seasons (typically between April 15th and October 1st) of 2027 and 2028.

2. Reassigned responsibilities include, but are not limited to, equipment loading, storage and handling, installation, and coordinating the Supplier’s field services.

3. The manufacturer shall work with the District and the SD-462 contractor as part of this Contract.

E. This Contract will also require multiple site visits from the Manufacturer prior to design, prior to fabrication, and during the construction period.

F. The new motorized valves shall meet or exceed the performance of the existing system. The manufacturer shall visit the site, document the existing system and provide new design. Details provided on the Drawings and these Specifications are considered minimum requirements

G. Related sections:

1. Section 01 33 00 – Submittal Procedures

2. Section 01 45 27 – Shop Inspection

3. Section 01 75 17 – Field Testing and Startup

4. Section 05 05 24 – Shop and Field Welding

5. Section 09 90 00 – Painting and Coatings

6. Section 33 12 16.15 – AWWA Butterfly Valves

H. Related work specified elsewhere:

1. Request for Quote (RFQ) 2607

2. Associated Exhibits

1.2 DELIVERY, STORAGE AND HANDLING

A. Equipment shall be delivered by the date set forth in the RFQ/Calendar of Events. This date is set to allow time for the SD-462 Contractor to install the systems within the dry weather construction window.

B. Delivery shall fall between the hours from 8:00 a.m. to 2:00 p.m.

C. Manufacturer shall protect the equipment during shipment.

D. Manufacturer shall include prior to delivery any unloading, handling, and weather-proof storage instructions as related to this Contract. The storage location is outdoors, with exposure to excessive heat, moisture, dust, and other adverse environmental conditions.

E. The SD-462 Contractor shall be responsible for unloading the equipment; however, Manufacturer shall also include in bid the cost to provide unloading assistance. See Part 3 below for additional requirements.

F. Following successful delivery and unloading, the SD-462 Contractor shall assume responsibility for storage and handling of equipment.

G. The SD-462 Contractor shall inspect the equipment and note any defects. Any defects found will be reported to the Manufacturer within five (5) days of delivery.

1.3 QUALITY ASSURANCE

A. Coordination:

1. The Manufacturer shall coordinate dimensions of piping and valves so there are no interferences.

2. The Manufacturer shall verify and confirm new valves match the existing.

3. The Manufacturer shall verify and confirm end connections for valves greater than 18-inch diameter are compatible with mating/adjacent pipe, and valve dimensions do not conflict with existing piping and other utilities.

4. The Manufacturer shall ensure the new electric motor actuators connect to the existing power and control system.

5. The Manufacturer shall confirm sizing and actuator type at submittal preparation sit visit.

B. Warranty: Manufacturer shall warrant the manufacturer-furnished butterfly valves from the date the Engineer approves completion of butterfly valves startup and testing.

1.4 DISTRICT SHOP INSPECTION

A. All electric motor actuators will be inspected upon delivery for compliance with these specifications. Any actuator found not to comply will not be accepted until deficiencies are corrected. At the discretion of the Engineer, the District will have a representative at the shop to witness the testing of the actuators. See Section 01 45 27 – Shop Inspection for inspection advance notification requirements and travel expenses. Failure by the Engineer to inspect or witness tests at the shop or factory shall not be construed as waiving inspection upon delivery.

B. Manufacturer shall repair all coating defects in accordance with the coating manufacturer's instructions.

C. District Shop Inspection

1. The District will send inspectors to the manufacturer’s fabrication shop. The District and Manufacturer shall coordinate to schedule and facilitate shop inspection. The District requires a minimum of four (4) weeks advance notice of factory activity to schedule personnel and accommodations.

2. If the required notification is not given, the District may schedule the inspection at its convenience and the activity to be witnessed shall not proceed until the District or its representative arrives. The activity to be witnessed shall not proceed until the District or its representative arrives or the District notifies the Manufacturer that it is choosing to waive its inspections. Expenses incurred by delays, repeat of work, or correcting unacceptable work, shall be borne by the Manufacturer.

3. Anticipated shop inspections will include:

a. Start of production – During the first week of fabrication/production District inspectors will be onsite and to review quality control procedures and observe start of production process.

b. Inspection during mid-production – The District will make periodic visits, as needed, to inspect production activities.

c. Inspection during assembly, prior to shipping.

4. Manufacturer shall identify in writing the person at the factory responsible for coordinating all inspection communications and activities.

5. Manufacturer shall also have a quality control representative to the District at all times during the course of inspections.

6. Factory accommodations:

a. Manufacturer shall ensure that there are adequate lighting, ventilation, and safety procedures in place to permit safe and thorough inspection at all times.

b. All inspection and measurement tools and equipment employed by Manufacturer shall be made available to the District and remain in the area for inspection and shall be properly calibrated, tuned, and operable.

7. Manufacturer is responsible for quality control and ensuring that the equipment meets the requirements of this Contract. District shop inspections will not serve as a substitute for manufacturer's quality control.

8. Failure by the Engineer to inspect or witness tests at the manufacturer's plant shall not be construed as waiving inspection upon delivery.

1.5 MANUFACTURER'S FIELD SERVICES

A. The Manufacturer shall provide technical field staff to perform duties discussed herein.

B. All costs associated with these field services, including travel and accommodations, shall be included in Bid Amount.

C. The factory representative shall be training by the manufacturer and familiar with pneumatic valve actuator equipment.

D. The manufacturer shall submit to the District the qualifications of the proposed field representative in accordance with Section 01 33 00, Submittal Procedures. The submittal shall include an anticipated schedule for each site visit.

E. All site visits shall require coordination between the Manufacturer, District, and/or Contractor. Advanced notification of at least four (4) weeks is required to ensure proper arrangements of travel, accommodations, and facility outages.

F. Submittal Preparation Site Visit (for field measurements)

1. These visits shall be initiated by the Manufacturer.

2. Manufacturer shall notify the District at least four (4) weeks in advance for the visits.

3. These site visits will provide the Manufacturer access to the existing butterfly valves and equipment for field measurements, which are needed to prepare the submittal.

4. After the initial submittal (shop drawings, design details) have been submitted and reviewed by the District, and prior to the start of fabrication, the Manufacturer's staff shall visit the MWWTP to review shop drawing questions or comments the shop drawings with the District prior to finalizing.

5. Recommended completion date of site visit is noted on the Calendar of Events in Article II of the Main RFQ No. 2607 document.

G. Submittal Review Site Visit

1. This visit shall be initiated by the Manufacturer. Manufacturer shall notify the District at least four (4) weeks in advance of meeting to better ensure appropriate District staff is available to attend.

2. After the initial submittal (shop drawings, design details) have been submitted and reviewed by the District, and prior to the start of fabrication, the Manufacturer's staff shall visit the MWWTP to review shop drawing questions or comments the shop drawings with the District prior to finalizing.

3. Submittal schedule:

    a. Submittal Preparation – 4 weeks

    b. Submittal Review – 5 weeks

H. Unloading Assistance

1. These visits shall be initiated by the Manufacturer.

2. Manufacturer shall notify the District and SD-462 Contractor at least two (2) weeks in advance of equipment delivery to ensure the SD-462 Contractor has the proper equipment to perform the unloading work.

3. Unloading assistance may be provided by Manufacturer or a Manufacturer's representative acting on the Manufacturer's behalf.

I. Pre-Installation Site Visit

1. These visits will be initiated by the SD-462 Contractor through the District.

2. Advanced notice of at least three (3) weeks will be provided to the Manufacturer to schedule appropriate field staff for these visits.

3. SD-462 Contractor shall notify the District and Manufacturer when installation of the butterfly valves is to occur. Manufacturer will visit the jobsite prior to the installation to review Contractor's installation plan and assist the Contractor with any installation questions.

4. Manufacturer shall notify the District if there are any concerns with the proposed installation plan.

J. Startup and Testing Site Visits

1. These visits will be initiated by the SD-462 Contractor through the District.

2. Advanced notice of at least three (3) weeks will be provided to the Manufacturer to schedule appropriate field staff for these visits.

3. The Manufacturer shall be on site for Functional and Performance Testing for the valves and actuators. Multiple valves and actuators may be tested in a single site visit.

4. See Part 3 of this specification for additional testing information and requirements.

K. Training

1. This task is anticipated to occur concurrently with startup and testing.

2. Manufacturer shall be present to provide training to District Operations and Maintenance Staff.

3. See Part 3 of this specification for additional training information and requirements

1.6 SUBMITTALS

A. All electric motor valve actuators shall be of one manufacturer and shall be furnished as part of the respective valve purchase.

B. All electric motor actuators furnished for this contract shall be by same manufacturer, unless approved in writing by the Engineer prior to submittals or manufacture.

C. Submittals in this section shall be submitted as a complete system with their respective valve submittals.

D. It is the responsibility of the Manufacturer to coordinate the valve and actuator requirements.

E. Submit the following prior to fabrication:

1. Calculations: Submit the following for each valve/gate size and class:

    a. Operating torque calculations.

    b. Maximum torque calculations for seating and unseating.

    c. Maximum operating torque at starting and normal operation.

2. Product Data:

    a. Electrical ratings

        1) Voltage and number of phases.

        2) Starting and running current.

        3) Voltage levels and source for control and status.

    b. Description of integral control interface.

    c. Remote control station components.

    d. Environmental ratings, including NEMA enclosure rating and submergence capabilities.

    e. Gear ratios for both manual and motorized actuation.

    f. Opening and closing directions.

    g. Allowable starts per hour.

    h. List of all included options and accessories.

    i. Full travel times.

    j. Gearbox data including gear ratio, and gearbox efficiency.

    k. Affidavit in accordance with AWWA C540

3. Shop drawings:

    a. Wiring diagrams:

        1) Include all options and expansion cards furnished with each actuator.

    b. Detailed drawings and specifications for the following

1) Dimensioned drawings of each valve and actuator combination.

2) Dimensioned drawings of each valve gearbox.

3) Orientation of the actuator

c. Electric motor data

4. See the submittal content requirements listed in "Electric Motor Valve Actuator Technical Submittal Checklist" and "Electric Motor and Gearbox Actuator Sizing Calculation Datasheet" attached at the end of this section.

5. Each page of the submittal shall have a unique sequential page number (hand-written is acceptable, but must be completely legible).

6. The first page of the submittal shall include the "Electric Motor Valve Actuator Technical Submittal Checklist" completed by the manufacturer's representative. Each submittal requirement listed in the checklist shall include the corresponding submittal page number(s).

7. If the "Electric Motor Valve Actuator Technical Submittal Checklist" and "Electric Motor and Gearbox Actuator Sizing Calculation Datasheet" is not included with the submittal or if all portions of the checklist and datasheet are not completed accurately by the manufacturer's representative, the submittal will be returned without review.

F. For Substitutions or Change Proposals to equipment or design as described in this RFQ package, Manufacturer shall submit request for District approval by providing the items listed below.

1. Manufacturer shall submit the following with the initial request:

a. Written Request for Change Proposal noting the following: reasons for change proposal, components affected by change, advantages and disadvantages of change (for current construction and future maintenance), and cost and schedule impacts.

b. Calculations, as needed.

c. Conceptual drawings, as needed.

2. See also Exhibit F1 – Specification Section 01 33 00 Submittal Procedures.

G. Submit the following prior to shipping:

1. The Manufacturer shall submit detailed information and instruction necessary for the proper installation of the equipment.

2. Special shipping, unloading, handling, storage and protection instructions.

3. Manufacturer's printed installation instructions.

4. Manufacturer’s test reports – Factory test report and certificate.

5. Source quality control test report.

6. Manufacturer's instructions:

    a. Include manufacturer's instructions, description of system operation, start-up data and troubleshooting checklists.

H. Submit prior to operation completion and field testing

1. Manufacturer’s Certificate of Proper Installation (copy to be inserted by the Contractor in the final O&M Manuals).

2. Field Functional Test Reports and Logs (copy to be inserted by the Contractor in the final O&M Manuals).

3. Operations and Maintenance (O&M) Manual:

    a. Provide submittals for each type of actuator in accordance with Section 01 33 00 – Submittal Procedures.

4. Copies of all final technical submittals

5. As-built actuator wiring diagrams

6. A section for field installation, certification and field test results. The Manufacturer shall furnish the required number of copies for insertion into the final O&M Manuals.

7. Certified copies of all tests made under AWWA Standard C542, Performance Tests shall be furnished by the Contractor whether or not the tests are witnessed by the Engineer.

8. O&M manual materials shall be included with the manual for the corresponding valve and submitted as a single valve and actuator system O&M manual.

9. Operations and maintenance data:

    a. Include manufacturer's literature; cleaning procedures, replacement part lists, wiring diagrams, and repair data.

    b. Include a list of all configurable parameters, and the final values for each.

c. List of recommended spare parts.

d. List of special tools necessary for proper operation and/or maintenance.

e. Exploded view drawings that illustrate all assemblies, sub-assemblies, and components.

f. Routine test procedures for all electronic and electrical circuits.

g. Troubleshooting chart covering the complete valve and controls/electrical power systems, showing description of trouble, probable cause, and suggested remedy.

h. Certified factory and field-test results.

1.7 REFERENCES:

A. Existing Equipment Reference Documents can be found in Exhibit G – Reference Documents of the RFQ documents and include the following:

1. The following documents are provided to give the Manufacturer an idea of what was previously designed or supplied. Since the butterfly valves' installation, additional, undocumented modifications may have been performed on the system; so, reference drawings may not accurately reflect field or as-built conditions and field verification by the Manufacturer is important.

a. SD120 – Secondary Treatment Facilities

B. Photos and sketches of Existing system shown in Exhibit E – Drawings: These documents are provided to give the Manufacturer an idea of current equipment layout and condition.

C. Standards

1. ANSI/AWWA C5000 – AWWA Standard for Metal-Seated Gate Valves

2. ANSI / AWWA C504-23, Rubber-Seated Butterfly Valves

3. ANSI/AWWA C542-16 – AWWA Standard for Electric Motor Actuators for Valves and Slide Gates

4. NEMA MG-1 – National Electric Manufacturers Association Standard for Motors and Generators

1.8 OPERATING CONDITIONS

A. Valve actuators will be installed in the Pipe Gallery where there is no heating or air conditioning.

B. The environment is considered corrosive due to the humidity and potential risks of sewage leaks in the structure and piping. The valve actuator housing shall be designed for such an environment.

PART 2 - PRODUCTS

2.1 ELECTRIC MOTOR ACTUATORS FOR VALVES

A. General Requirements:

1. Electric motor actuators shall comply with AWWA Standard C542 except as modified in this specification. In cases where the requirements of this specification conflict with the AWWA requirements, the requirements of this specification shall govern.

2. Each actuator shall include a control module, motor, gearing, limit and torque switches, a handwheel for manual operation on emergency, and a position indicator, all as specified herein.

3. Each actuator shall be designed for continuous operation.

4. All electric motor actuators provided under this specification shall be made by the same manufacturer.

5. All electric valve actuators shall include an intermediate reduction gear (worm gear, helical or spur gear type or combinations thereof) in a separate gear box located between the valve and the electric actuator.

6. The power gearing shall consist of generated helical gears of heat treated steel and worm gearing. The worm shall be carbonized and hardened alloy steel with the threads ground after heat treating. The worm gearing shall be alloy bronze accurately cut with a hobbing machine. All power gearing shall be lubricated. Anti-friction (ball or roller) bearings shall be used throughout.

7. The Manufacturer shall provide the Engineer with an affidavit of compliance from the manufacturer or the manufacturer's authorized representative that the motor operators furnished comply with the applicable provisions of AWWA Standard C542 and this specification (see AWWA Standard C542, Affidavit of Compliance).

8. All motor starters shall be solid state reversing type.

9. The unit shall be designed to maintain existing valve position on loss of signal or power.

10. Torque:

    a. The rated torque capability of each actuator assembly (motor and gear) shall at a minimum meet the Actuator Sizing Torque (AST).

The actuator sizing torque (AST) shall be calculated by the manufacturer and based on the minimum required sizing torque (MRST) times the application factor (AF).

AST = AF x MRST

b. The application factor (AF) is defined per AWWA C519 Table 2. The valve's required torque shall be as defined in AWWA C519: minimum required shaft torque (MRST). The minimum required shaft torque (MRST) shall be provided by the manufacturer. The torque at both the seated position (seating and unseating) and the mid-stroke maximum (5 degrees to 90 degrees) total dynamic run (opening or closing) shall be evaluated using the valve under the differential pressure and pipeline velocity shown in Table A.

c. Unless the referenced valve section (See Table A) requires that the valve be designed to isolate flow in both directions, the valve's required torque shall be for installation in the preferred direction.

11. If adjustable mechanical stop-limiting devices are used, they shall be accurately set and locked by the valve manufacturer.

12. Motor actuators shall be able to operate the valve from fully open to fully closed position, or the reverse, within the range of allowable stroke times shown in Table A.

13. Use only copper wiring inside the actuator, the use of aluminum wiring is not acceptable.

14. All terminal connections for District use shall be located in a sealed terminal compartment that is separated from control components.

15. If a handheld remote control unit is required for actuator setup and calibration, one unit shall be furnished for each actuator.

16. The motor and controls enclosures shall have space heaters, 120 volt AC.

B. Motors:

1. The actuator motors shall meet the requirements of AWWA C542 – Electric-Motor Actuators. General design and shall be totally enclosed, ball-bearing, squirrel-cage, single-phase, induction motors, Class "F" insulated or higher, for operation at the voltage specified in Table A. Motors shall be provided with solid state thermistors to prevent damage due to temperature overloads.

2. Starts per hour: Motors and controls shall be suitable for 1,200 starts per hour when actuators are shown as modulating in Table A. Other motors and controls shall be suitable for 60 starts per hour minimum unless otherwise noted. Duty cycle time must be a minimum of twice stroke time as listed in Table A.

3. The actuator shall include a DC motor operating from a 208 volt AC and shall be designed for maximum proportional gate control over the entire torque range.

C. Position Sensing and Indication:

1. Position sensing circuits shall be solid state with no electro-mechanical contacts.

2. Actuators shall have a local position indicator digital readout in percent open units.

3. Remote position indication shall be provided via a 4-20 mA output signal.

D. Torque Sensing:

1. The actuator shall include adjustable torque sensing to limit actuator output torque in both the opening and closing directions.

2. The torque sensing feature shall be factory set to be 110 percent of the maximum torque required by the valve or as otherwise determined to be appropriate by the manufacturer and approved by the Engineer.

E. Contacts for District Use:

1. Four (4) contacts for District use shall be wired to the terminal block that can be configured to perform any of the following functions:

a. Normally-open contact shall close when valve is 100 percent closed (valve closed status).

b. Normally-open contact shall close when valve is 100 percent open (valve open status).

c. Normally-open contact shall close at a field adjustable point when valve is from 2 percent to 100 percent open. This switch shall be factory-set to close when valve is 3 percent open (this switch shall actuate controls to turn off main pumps).

d. Normally-open contact shall close when the actuator's selector switch is in the "remote" position.

2. One (1) monitor relay for District use shall be wired to the terminal block. The monitoring relay can be configured to perform any of the following functions:

a. Available: Monitors remote control and faults. If actuator is in remote and healthy, the relay is energized.

b. Fault: Monitors faults. If actuator is healthy, the relay is energized.

F. Electric Controls:

1. All control components shall be enclosed in a sealed compartment separated from the external connection terminal compartment.

2. Actuator calibration shall be "non-intrusive" such that no electrical compartments need to be opened to set position limits or torque limits.

3. Limit sensing, three-phase reversing starter, and other required controls shall be mounted in a NEMA 4X weatherproof enclosure which shall also contain a space heater powered from the actuator. Enclosure shall be supplied complete with 120 VAC control transformer unless the power supply is 120 VAC.

4. Reversing starter shall be electrically and mechanically interlocked, complete with overload relay and automatic reset. In addition each starter shall be provided with one normally open auxiliary run status contact wired to terminal strip for district use.

5. The reversing starters for modulating service valves shall be of a solid state design.

6. A 4-20 mA input signal shall be used for position control of modulating service valves , as noted in Table “A” of this Section.

7. The solid state control shall be capable of accepting a 4-20 mA DC current signal transmitted from an existing metering and instrumentation panel through existing multi-conductor cables that were connected to the actuator being replaced.

8. The error detection section of the solid state control shall compare the input signal to the feedback signal and if a difference is detected it shall cause the motor to move the valve to the appropriate position at a speed proportional to the amount of error. There shall be no bumping or hunting in the gate operation.

9. Local controls shall include one selector switch marked "remote-stop-local", controls for OPEN and CLOSE operation and indicator lights for OPEN and CLOSE positions. Controls shall be heavy-duty oil-tight, and contacts shall meet NEMA A300 or A600 standards.

10. All devices and controls in the limit switch compartment shall be factory wired. All connections to external or field devices must be wired to the terminal block in the terminal compartment. Refer to Project Drawings for elementary diagram.

11. Limit switches shall be an adjustable type capable of being adjusted to trip at any point between fully opened valve and fully closed valve.

12. The actuator shall be equipped with an optional interrupt timer that allows the stroke time to be adjusted by pulsing/stepping the motor.

    a. Actuator must also comply with stroke time in Table A without pulsing.

13. The actuator shall be equipped with a phase correction circuit that detects and corrects motor rotation faults.

G. Handwheels:

1. Surfaces shall be smooth with no rough edges to cut or abrade the person operating the valve.

2. The maximum handwheel diameter shall be 24".

3. The maximum rim pull shall not exceed 40 lbs under any operating condition including breakaway.

4. The handwheel shall not turn when power is applied to the motor.

5. Handwheel shall be located to allow for clear operating access.

H. Factory Finish:

1. Manufacturer's standard factory finish shall be used.

I. Inspection, Testing and Rejection

1. Factory tests may be witnessed by the District, unless otherwise noted. See Section 01 45 27 for shop inspection requirements.

2.2 EQUIPMENT TAGS

A. Equipment tags shall be provided by the SD-462 Contractor.

B. For the purpose of identification, the butterfly valves tags shall match Valve Schedule in Exhibit E – Drawings.

2.3 ACCEPTABLE MANUFACTURERS

1. Manufacturers shall be as listed in Article I.C – Specific Requirements of the RFQ No. 2607

(THIS SPACE LEFT INTENTIONALLY BLANK. SEE TABLE A ON NEXT PAGE)

TABLE A
ELECTRIC MOTOR ACTUATORS FOR NEW VALVES

Tag # and Location	Valve Spec Section	Valve Size (inch)	Modulating Service (Yes/No)	Power Supply Voltage (VAC)	Required Starts per Hour, minimum	Handwheel Rotation to Open[1]	Acceptable Stroke Time Range[2] (sec)	Maximum Differential Pressure Forward/Reverse (psi)	Maximum Flow Velocity[3] (ft/s)
W-45-PEF-MOV-502	33 12 16.15	42	Yes	208	Continuous Modulation	CCW	180	Per Valve's Pressure Class[4]	16 ft/s
W-45-RAS-MOV-504	33 12 16.15	42	Yes	208	Continuous Modulation	CCW	180	Per Valve's Pressure Class[4]	16 ft/s
W-45-PEF-MOV-602	33 12 16.15	18	Yes	208	Continuous Modulation	CCW	180	Per Valve's Pressure Class[4]	16 ft/s
W-45-RAS-MOV-604	33 12 16.15	18	Yes	208	Continuous Modulation	CCW	180	Per Valve's Pressure Class[4]	16 ft/s

Notes:

1. CW =Clockwise, CCW =Counterclockwise
2. Stroke time with continuous movement, without pulsing.
3. With the valve full open.
4. Per AWWA C519 Article 4.2.8.2.2: Manufacturer shall size actuator based on the valve's pressure class except where prior approval has been granted in writing by the Engineer

PART 3 - EXECUTION

3.1 VERIFICATION OF FIELD DIMENSIONS

A. Manufacturer shall take measurements of the existing butterfly valves, electric motor actuator and components as needed to prepare accurate shop drawings.

B. Manufacturer coordinate with the District to schedule and complete field verification work in all four (4) electric motor actuators for new butterfly valves prior to preparation of the initial shop drawings. Any discrepancies requiring design modifications shall be notified to the District immediately.

3.2 SHIPPING AND HANDLING

A. Equipment shipment and unloading is discussed in Part 1 of these specifications. Refer to Part 1 of this specification for delivery, unloading, and storage requirements.

B. Manufacturer shall provide the Engineer with advanced notice of delivery dates.

C. Electric motor actuators shall be stored per the manufacturer's instructions.

D. Electric motor actuators shall be stored inside a heated building or structure and shall have dust tight plastic coverings.

E. All electric motor actuators for the new butterfly valves will be inspected upon delivery for compliance with these specifications. Any electric motor actuators found not to comply with the contract documents will not be accepted until deficiencies are corrected.

3.3 INSTALLATION

A. Prior to installation, Manufacturer shall provide pre-installation field services to review the SD-462 Contractor’s installation plan and methods. See Part 1 for additional field visit requirements.

B. The equipment shall be installed by the SD-462 Contractor in accordance with manufacturer's printed instructions and as shown on drawings.

C. Following successful installation, Manufacturer shall coordinate with the SD-462 Contractor to complete the Manufacturer’s Certificate of Proper Installation (see Exhibit H - Forms)

D. All powered actuators shall be sized and installed by an authorized representative of the actuator manufacturer.

E. All actuators shall be installed with good access to pushbutton controls and the clutch lever and the manual overrihandwheel. Installation shall include adequate clearances with walls or other obstacles to remove enclosure covers, and motor, and to maintain safe electrical device work clearances.

F. All valve and actuator assemblies shall be shop or factory assembled. All mechanical end travel (stops), torque and limit settings shall be shop or factory adjusted and tested. Assembled units shall be fully stroked (open-closed-open or closed-open-closed) in the shop or factory at least three times.

3.4 INSPECTIONS

A. Factory inspection: The District will provide factory inspectors to observe quality of the fabrication as detailed in Part 1 of this specification. District inspectors may

make periodic visits or may remain onsite continuously. The Manufacturer shall accommodate District's factory inspection.

B. All electric motor operators will be inspected upon delivery for compliance with these specifications by the SD-462 Contractor. Any actuator found not to comply will not be accepted until deficiencies are corrected.

C. Each actuator shall be performance-tested at the factory per AWWA C542. Position switches, torque switches and mechanical stops shall be set for the test. During factory testing, the actuators shall operate without any intermittent or continuous tapping sounds. Operator exhibiting any noises other than a quiet and continuous motor noise during operation shall be repaired, or replaced, and then retested prior to shipping.

1. At the discretion of the District, the District will have a representative at the shop to witness the testing of the actuators. Failure by the Engineer to inspect or witness tests at the shop or factory shall not be construed as waiving inspection upon delivery.

D. Butterfly valve and electric motor actuator shall be shop-tested together as a system at the butterfly valve manufacturer's location.

E. The Manufacture shall repair all coating defects in accordance with the coating manufacturer's instructions. Stainless steel, brass or bronze items shall not be coated.

3.5 FIELD TESTING/EQUIPMENT TESTING

A. Manufacturer shall provide field services during the testing following installation completion.

B. Valve actuators shall be tested with the valve during the Field Functional Test and in accordance with Section 01 75 17 – Field Testing and Startup.

C. Valve and actuator and all appurtenances shall be tested together as a system.

D. Testing shall conducted by the SD-462 Contractor in coordination with the Manufacturer. Testing for each butterfly valve and actuator shall include: Functional Test, Performance Test, and Operational Test. Tests for multiple butterfly valves and actuators may be grouped together. Tests shall be conducted in the presence of the Engineer.

1. Functional Test: The field testing required to determine if installed equipment or system will operate in a satisfactory manner and as specified. The Functional Test is a point-by-point test to confirm that all components associated with the equipment or system, are operating properly. Functional testing is not intended to measure efficiency and performance. Functionally test each valve using the Field Functional Test Data Form.

2. Performance Test: The field testing required to demonstrate the individual butterfly valve meets all of the specified performance requirements.

3. Startup Operational Test: A test of all butterfly valves operating together to demonstrate satisfactory performance of the facility as a whole for a continuous period.

E. Demonstrate smooth and quiet operation of all actuators without any intermittent or continuous tapping sounds. Operator exhibiting any noises other than a quiet and continuous motor noise during operation shall be repaired, or replaced, and then retested at the sole expense of the Contractor.

F. Electric Motor Actuators: Complete the field functional tests in accordance with the Field Functional Test Form at the end of this Section, and as directed by the Engineer.

3.6 OPERATION AND MAINTENANCE MANUALS

A. Manufacturer shall provide Operation and Maintenance (O&M) manuals in accordance with Section 01 33 00, Submittal Procedures. O&M manuals shall be acceptable to the Engineer as a condition for performing training.

B. O&M manuals shall be updated at the end of the Operational Test to reflect any adjustments made during the testing

3.7 TRAINING OF DISTRICT PERSONNEL

A. Manufacturer shall coordinate with Contractor and the District to provide training to District Operations and Maintenance personnel per Spec Section 01 79 00 – Demonstration and Training.

B. All training shall be completed prior to beginning operational testing.

3.8 SUPPLEMENTS

A. The following supplements follow END OF SECTION and are a part of this section:

1. Electric Motor Valve Actuator Technical Submittal Checklist (for High-Performance Butterfly Valve or AWWA Butterfly Valve)

2. Electric Motor and Gearbox Actuator Sizing Calculation Datasheet

3. Field Functional Test Data Form

END OF SECTION

ELECTRIC MOTOR VALVE ACTUATOR
TECHNICAL SUBMITTAL CHECKLIST

(Manufacturer's Representative shall complete one form per type of valve and actuator combination)

SPEC. SECTION TITLE & NO:	
TAG NO(s):	

SUBMITTAL CONTENT REQUIREMENTS	**Page Number(s)**
1. Certified manufacturers' drawings shall include:	
a. Motor operator dimensions, construction details and materials.	
b. An outline drawing showing proposed orientation and mounting on the valve, with overall dimensions.	
c. A drawing showing the proposed valve/actuator orientation and relationship to nearby structures or obstacles. The drawing should also show floor/ platform location and any wall within 6 feet.	
d. Provide net weight of each actuator including required intermediate reduction gear.	
e. Coating materials to be used.	
2. For electric motor actuators, certified drawings shall also include:	
a. Electric wiring diagrams for position switches, power and control systems. These diagrams shall show the terminal designations for the control wiring.	
b. Number of handwheel turns to open the valve.	
c. Motor nameplate data.	
d. Weights of actuators and gearing assemblies.	
3. A data sheet summarizing all pertinent data for the actuator and the valve, including valve and actuator torques, motor and actuator nameplate data, starts per hour, motor duty time, total combined valve and actuator weights, valve pressure rating, speed range capability, factory set open and closing times, gear ratio for the electric actuator and the intermediate reduction gear, etc. **(SEE AWWA C542, APPENDIX A FOR EXAMPLE OF DATA SHEET)**	
4. All electric actuator commissioning settings, including torque and limit switch settings.	
5. Drawing and calculation requirements shall meet the requirements of Section 33 12 01 – Basic Mechanical Materials and Methods.	
6. All electric actuator commissioning settings, including torque and limit switch settings.	
7. Affidavit of Compliance.	
Append Electric Motor Valve Actuator Technical Submittal Checklist with the valve technical submittal checklist.	

ELECTRIC MOTOR AND GEARBOX ACTUATOR SIZING CALCULATION DATASHEET

(Manufacturer's Representative shall complete one calculation datasheet for each type of valve and electric actuator combination)

SPEC. SECTION TITLE & NO:	
TAG NO(s):	
Valve Size and Model	
Valve Gear Box Model	
Motorized Actuator Model	

SUBMITTAL CONTENT REQUIREMENTS	**Page Number(s)**
Instructions: Electric Motor Actuator Calculations for sizing the actuators meeting all the requirements at the maximum differential pressure and velocity conditions listed in Tables A. Include any referring calculations and/or literature in the reference pages.	
1. Minimum Required Shaft Torque (MRST). The minimum required shaft torque (MRST) shall be calculated by the manufacturer. The torque at both the seated position (seating and unseating) and the mid-stroke maximum (5° through 90°) total dynamic run (opening or closing) shall be evaluated	
a. Total seating torque: (AWWA M49-3rd Edition, equation 3-1)	
b. Total unseating (break) torque: (AWWA M49-3rd Edition, equation 3-2)	
c. Total Opening (run) torque: (AWWA M49-3rd Edition, equation 3-3)	
d. Total unseating (break) torque: (AWWA M49-3rd Edition, equation 3-2)	
2. Actuator Sizing Torque (AST). The actuator sizing torque (AST) shall be calculated by the manufacturer and based on the minimum required sizing torque (MRST) times the application factor (AF)	
a. Application Factor (AF): (AWWA C519 Table 2)	
b. Actuator Sizing Torque: (AST = AF × MRST)	
3. Electric Motor Actuator (Motor and Gear Box Sizing Calculations	
a. Selected electric motor and gearbox rated torque	
b. Calculated operation time	
c. Calculated handwheel rimpull	
Append Electric Motor and Gearbox Actuator Sizing Calculation Datasheet with the valve technical submittal checklist.	

FIELD FUNCTIONAL TEST DATA FORM

EBMUD Project Title: _____ Test Date(s): _____

Equipment Name: **Electric Motor Valve Actuators** Section No.: **40 05 57.23**

Tag No.: _____ P&ID No. _____

I. Pretest Documentation/Setup

Documents:

This test shall be conducted in conjunction with the valve functional test. Append these results to the valve test data sheet.

Field Test Setup (Identify any test instrument, special setups like tanks, hoses, etc)**:** amp meter, volt meter

II. Field Functional Test

1. Calibration/Loop/Electrical	Yes	No	NA	Comments:
1.1 Instrument commissioning complete	☐	☐	☐	
1.2 Loop Checks complete	☐	☐	☐	
1.3 Electrical commissioning complete	☐	☐	☐	

2. Installation Check	Pass	Fail	NA	Comments:
2.1 Correct equipment tags have been installed (tags shall match P&IDs)	☐	☐	☐	
2.2 All fields on Asset List Spreadsheet completed for device (Contractor shall show inspector at the time of the test that the asset list is complete and accurate for this system)	☐	☐	☐	
2.3 Verify O&M manual installation instructions have been completed.	☐	☐	☐	
2.4 Verify that the motor and actuator frame is electrically grounded.	☐	☐	☐	
2.5 Verify all position switches are properly adjusted and functional (see P&IDs for switch settings).	☐	☐	☐	

FIELD FUNCTIONAL TEST DATA FORM

EBMUD Project Title: _____ Test Date(s): _____

Equipment Name: **Electric Motor Valve Actuators** Section No.: **40 05 57.23**

Tag No.: _____ P&ID No. _____

3. Operations Check	Pass	Fail	NA	Comments:
3.1 Electrical Imbalance Test: Measure and record input voltage motor amperes on each phase at the terminals of the motor. Verify that there is no significant phase imbalance, and that adequate voltage levels are applied to the motor.	☐	☐	☐	
3.1 Actuator Stroke Time: Open and close each valve fully and measure and record stroke time in both directions. Stroke time shall be between __ – __ seconds.	☐	☐	☐	
3.2 Valve Closure Test: Close the valve with the actuator and verify that the valve is leak tight (this test should be done with the valve "Leakage Test"). Adjust the actuator and repeat the test as necessary so that the valve closes fully meeting the leakage requirements.	☐	☐	☐	
3.3 Actuator Operation Test: The actuator operates smoothly and quietly without any intermittent or continuous tapping sounds.	☐	☐	☐	
4. Controls Check	Pass	Fail	NA	Comments:
4.1 Local Check: Place the actuator in "LOCAL" control mode, manually opening and closing the valve at the actuator, and verifying that the local valve position indicator and remote position indication 4-20 mA output signal (if applicable) read the proper values.	☐	☐	☐	
4.2 Open/Close Service Valves: Simulate an open or close remote contact input signal and verify that the valve opens and closes.	☐	☐	☐	
4.3 Modulating Service Valves: Simulate a 4-20 mA remote position input signal and use the following values: 0, 25, 50, 75, and 100 percent open. Verify that the valve opens or closes to the correct position without overshooting the target position. Also, verify that the local valve position indicator and remote position indication 4-20 mA output signal read the proper values at each position.	☐	☐	☐	
4.4 Status Checks: Verify motor run status operates properly.	☐	☐	☐	

FIELD FUNCTIONAL TEST DATA FORM

EBMUD Project Title: _____ Test Date(s): _____

Equipment Name: **Electric Motor Valve Actuators** Section No.: **40 05 57.23**

Tag No.: _____ P&ID No. _____

	Pass	Fail	NA	Comments:
5. Alarms Check				
none	☐	☐	☒	
6. Run Check				
none	☐	☐	☒	
7. Other Tests and Checks				
7.1 Field Calibration Tag: Attach to the valve actuator at the conclusion of the functional test. Tag shall include valve tag number, type of valve service (OPEN/CLOSE, or MODULATING), actuator stroke time (recorded above), and position switch settings (including switch tag numbers).	☐	☐	☐	
7.2 Cover and seal the actuator to protect it from dust and water prior to operation (covers shall be removed prior to startup test).	☐	☐	☐	

III. Participants/Witness

Test conducted:

By (signature): _____ Date: _____

Title: _____ Company Name: _____

By (signature): _____ Date: _____

Title: _____ Company Name: _____

EBMUD Witness:

By (signature): _____ Date: _____

Title: _____

EXHIBIT G

Reference Documents

The following reference documents provide additional information about requirements in this Agreement.

Exhibit	Reference Documents Title
G1	SD120 - Secondary Treatment Facilities Drawing
G2	SD120 - Specifications - BFV
G3	SD120 - Specifications - Piping System

SEE SHEET NO. G-231

G-222A

NORTH

10"Waste Sludge
℄ EL. 101.75

℄ EL. 101.75

14'-0"

4'-0" 3'-3" 3'-6" 4'-5" 3'-6"

For Continuation Of Piping See Sheet G-235

2½" ø 3 H 2.0 TO OP CENTER LOOP

G-222C

18"Drainage Pump Discharge ℄ Elev. 99.00

GATE VALVE

G-222B

G-222B

Drainage Pump

Exp. Joint

12'-0"

1'-8"

21'-9"

10"Waste Sludge ℄ Elev 98.05

NORTH GALLERY

18"Drainage

6'-6"

6"No.3 Water ℄ Elev. 99.5

8"No.3 Water ℄ Elev. 96.30

42"Return Sludge ℄ Elev. 96.50

48"Return Sludge ℄ Elev. 96.25

℄ Elev. 91.31

18"Drainage ℄ El. 99.50

SEE SHEET NO. G-217

16"No.3 Water

TUNNEL

18"

18"

OXYGENATION TANK NO. 1

OXYGENATION TANK NO. 2

G-222C

G-222A

G-221C

88'-8"

OXYGENATION TANK NO. 1

OXYGENATION TANK NO. 2

4'-9" 7'-3"

4'-9" 7'-3"

4'-2"

16"No.3 Water ℄ Elev. 96.30

42"Return Sludge

48"Return Sludge

Motorized Butterfly Valve

5'-6"

48"

48" 42" 42" 48"

42"Magnetic Meter

73'-0"

18"Magnetic Meter

42"Magnetic Meter

Motorized Butterfly Valve

5'-6"

48"

48" 42" 42" 48"

18"Magnetic Meter

3'-0" 3'-0"

18" 18" 18" 20" 20"

20" 20"

36"

RELIEF VALVE

36"

RELIEF VALVE

36"

30"

30"

30"

30"

56" Offset

SOUTH GALLERY

20"Return Sludge ℄ Elev. 98.30

MAIN LINE "A"

G-220A

G-220A

G-221C

SEE CT-G-208.1 DETAIL B.

REGISTERED PROFESSIONAL ENGINEER FREDERICK H. VAN HIGH No. C13235 CIVIL ENGINEER STATE OF CALIFORNIA

NO.	DATE	DESCRIPTION	BY	APPR'D
3	8-79	AS BUILT	F.E.	
2	2/77	ADDED 8"GATE VALVE	RD	JEB
1				

REVISIONS

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CT&A Frederick H. Van High PARTNER
EBMUD E E Owen MGR. WPCD

DESIGNED E.T.D. & R.P.B.
DRAWN H.F.K.
CHECKED E.T.D.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

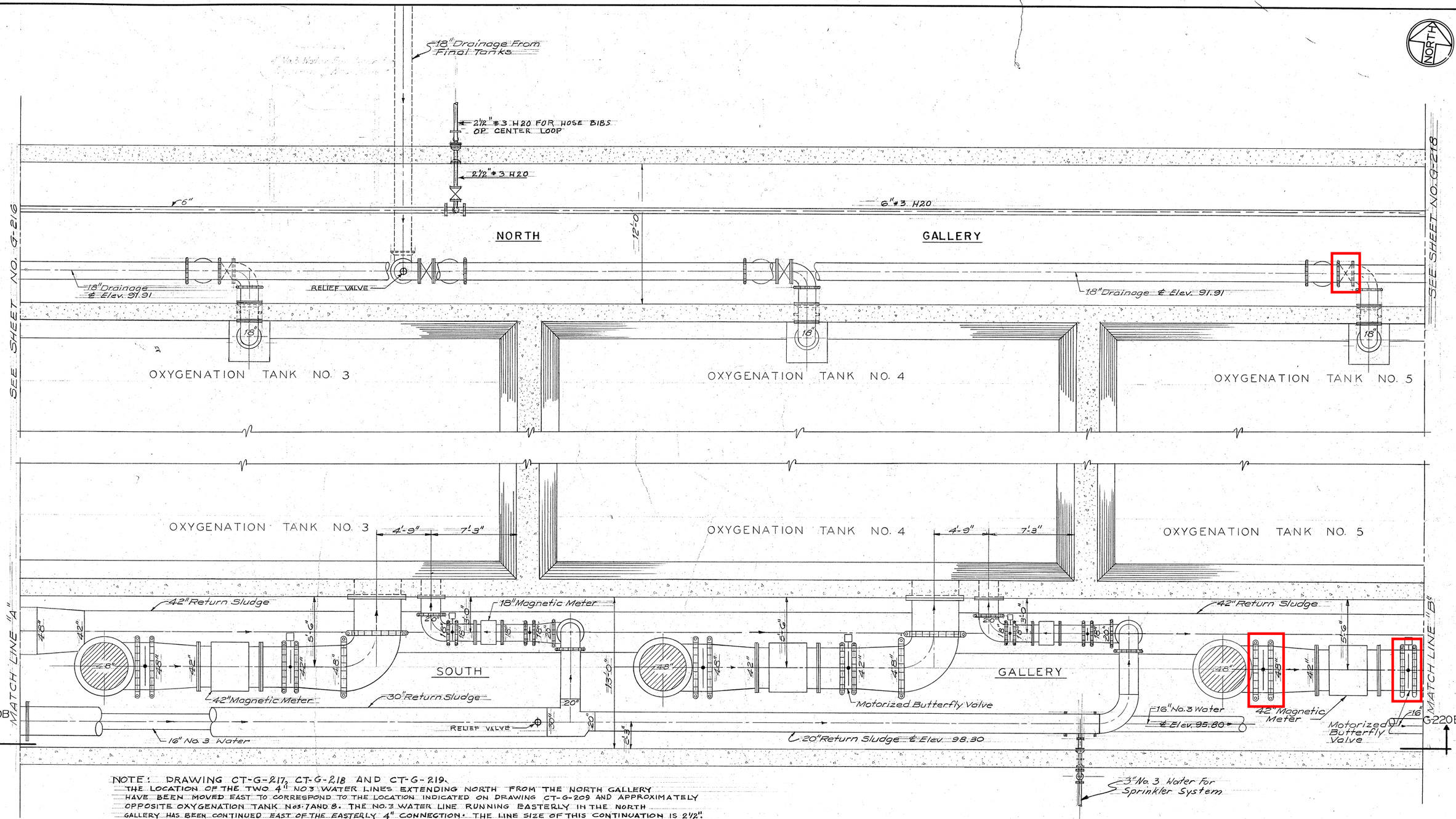
SPECIFICATION NO. SD 120

OXYGENATION TANK GALLERIES
PLAN

DATE Jan. 1973 SCALE 1/4"=1'-0"

DRWG. NO.
CT-G-216

71100



NOTE: DRAWING CT-G-217, CT-G-218 AND CT-G-219.
THE LOCATION OF THE TWO 4" NO.3 WATER LINES EXTENDING NORTH FROM THE NORTH GALLERY HAVE BEEN MOVED EAST TO CORRESPOND TO THE LOCATION INDICATED ON DRAWING CT-G-209 AND APPROXIMATELY OPPOSITE OXYGENATION TANK Nos. 7 AND 8. THE NO.3 WATER LINE RUNNING EASTERLY IN THE NORTH GALLERY HAS BEEN CONTINUED EAST OF THE EASTERLY 4" CONNECTION. THE LINE SIZE OF THIS CONTINUATION IS 2½". THIS 2½" LINE CONTINUES THROUGH THE EAST WALL OF THE GALLERY TO THE LOCATION OF THE 2½" LINE PROCEEDING NORTH AT APROXIMATELY COORDINATE W370 AS INDICATED ON DRAWING CT-G-209.
EACH OF THE THREE ABOVE MENTIONED NO.3 WATER LINES LEAVING THE GALLERY HAS BEEN PROVIDED WITH A LINE SIZE GLOBE VALVE LOCATED AND INSTALLED INSIDE THE GALLERY.

NOTE:
A 3" GLOBE VALVE HAS BEEN INSTALED INSIDE THE GALLERY IN THE 3" NO. 3 WATER LINE LOCATED OPPOSITE OXYGENATION TANKS NO. 4 AND 5, AND PROCEEDING SOUTH FROM THE SOUTH GALLERY.

REGISTERED PROFESSIONAL ENGINEER — FREDERICK H. VAN RONK — No. C13235 — CIVIL ENGINEER — STATE OF CALIFORNIA

NO.	DATE	DESCRIPTION	BY	APPR'D
1	6-79	AS BUILT	E.E	

REVISIONS

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CT&A Frederick H. Van Ronk PARTNER
EBMUD EBOwen MGR. WPCD

DESIGNED ETO/RPB
DRAWN H.F.K.
CHECKED E.T.D.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

SPECIFICATION NO. SD 120
OXYGENATION TANK GALLERIES
PLAN

DATE Jan. 1973 SCALE 1/4"=1'-0"
DRWG. NO.
CT-G-217

71100

NORTH

TO MIXED LIQUOR CHANNEL
SEE SHT. G 226 FOR CONTINUATION

4"#3 H20 TO HORSESHOE CHANNEL
HOSE BIBS AND SPRINKLER SYSTEM

4"#3 H20

6"#3 H20

6"#3 H20

18" DRAINAGE
PUMP DISCHARGE
℄ ELEV. 99.00

18"Drainage

18"Drainage

18"Drainage ℄ Elev 91.91

18"Drainage

12'-0"

NORTH

GALLERY

SEE SHEET NO. G-211

SEE SHEET NO. G-219

18"

18"

OXYGENATION TANK NO. 5

OXYGENATION TANK NO. 6

OXYGENATION TANK NO. 7

MATCH LINE "B"

MATCH LINE "C"

OXYGENATION TANK NO. 5

OXYGENATION TANK NO. 6

OXYGENATION TANK NO. 7

4'-9" 7'-3"

4'-9" 7'-3"

4'-9" 7'-3"

18"Magnetic Meter

36"Return Sludge

18"Magnetic Meter

30"Return Sludge

18"Magnetic Meter

20" 16" 18" 20"

20" 16" 18" 20"

20" 16" 18" 20"

42" 36"

36" 30"

48" 48" 45" 42" 42" 42" 48"

48" 48" 42" 42" 48"

13'-0"

SOUTH

GALLERY

16"No.3 Water

Motorized Butterfly Valve

Motorized Butterfly Valve

16"No.3 Water

G-221A

G-221A

REGISTERED PROFESSIONAL ENGINEER
FREDERICK N. VAN KIRK
No. C 18235
CIVIL ENGINEER
STATE OF CALIFORNIA

NO.	DATE	DESCRIPTION	BY	APPR'D
1	8-79	AS BUILT	E.E	

REVISIONS

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CT&A Frederick N. Van Kirk PARTNER
EBMUD E.E. Rose MGR. WPCD

DESIGNED ETD & RPB
DRAWN H.F.K.
CHECKED E.T.D.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

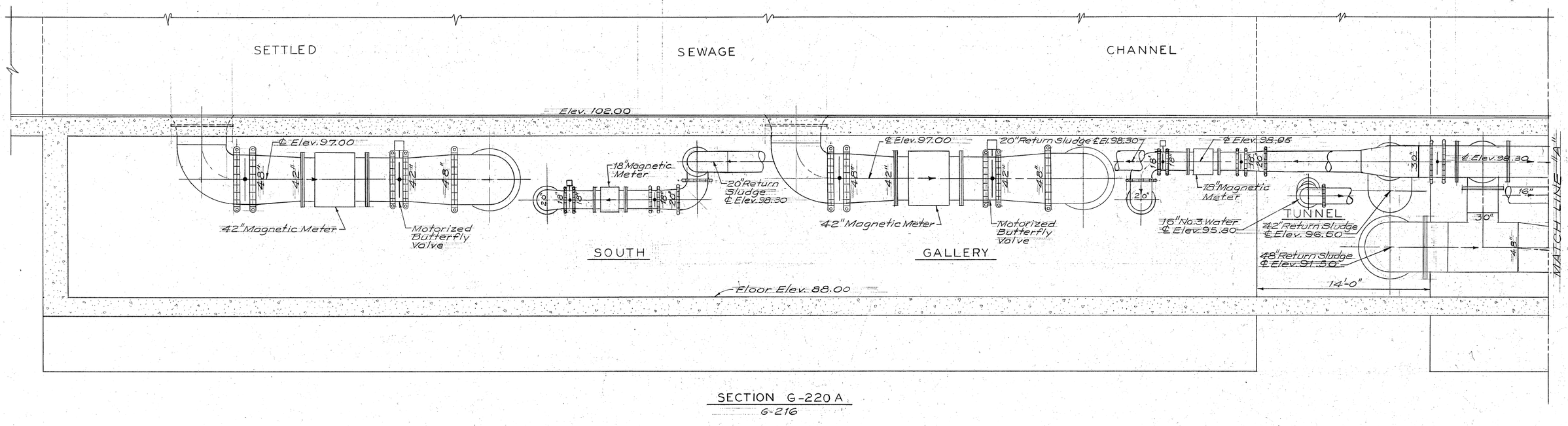
SPECIFICATION NO. SD 120

OXYGENATION TANK GALLERIES
PLAN

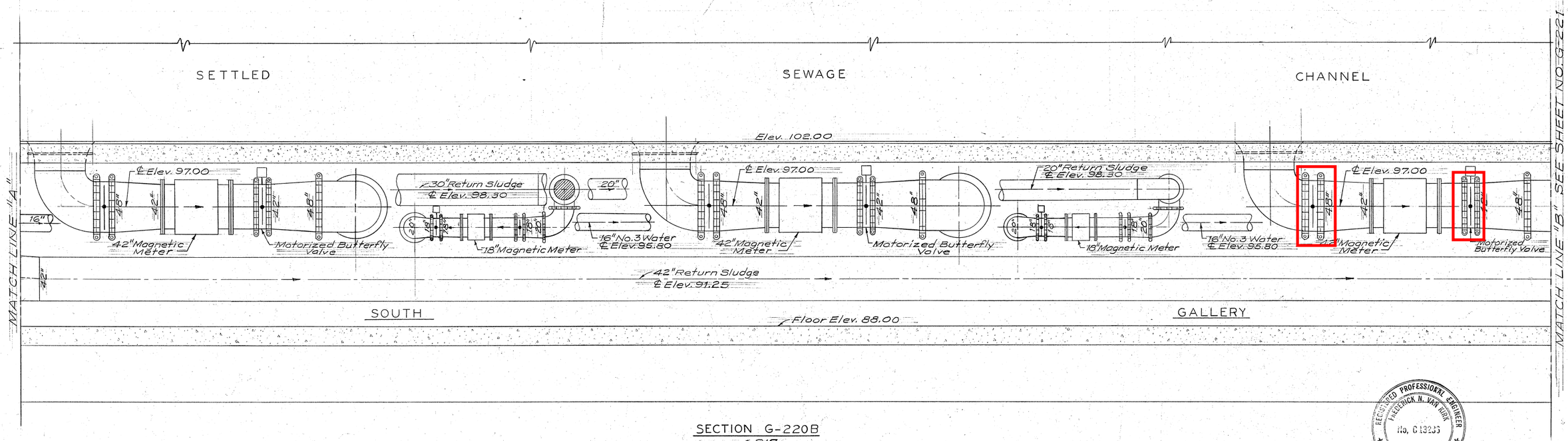
DATE Jan. 1973 SCALE 1/4"=1'-0"

DRWG. NO.
CT-G-218

71100



SECTION G-220 A
G-216



SECTION G-220B
G-217

REGISTERED PROFESSIONAL ENGINEER
FREDERICK N. VAN KIRK
No. C 13235
CIVIL ENGINEER
STATE OF CALIFORNIA

NO.	DATE	REVISIONS	BY	APPR'D
6	6-79	AS BUILT	E.E.	

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CT&A Frederick N. Van Kirk PARTNER
EBMUD E E Roos MGR. WPCD

DESIGNED ETD & RPB
DRAWN H.F.K.
CHECKED E.T.D.

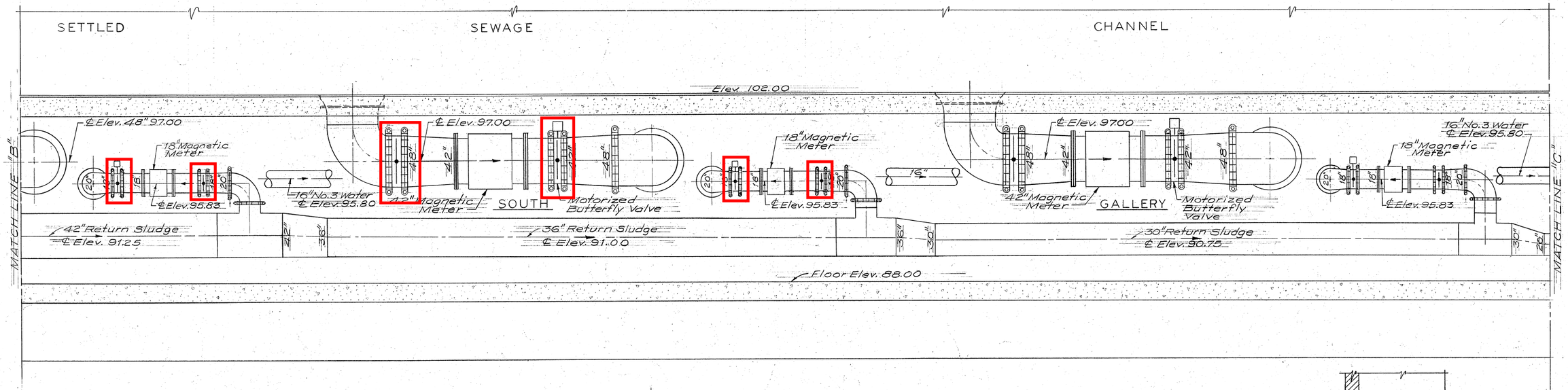
EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

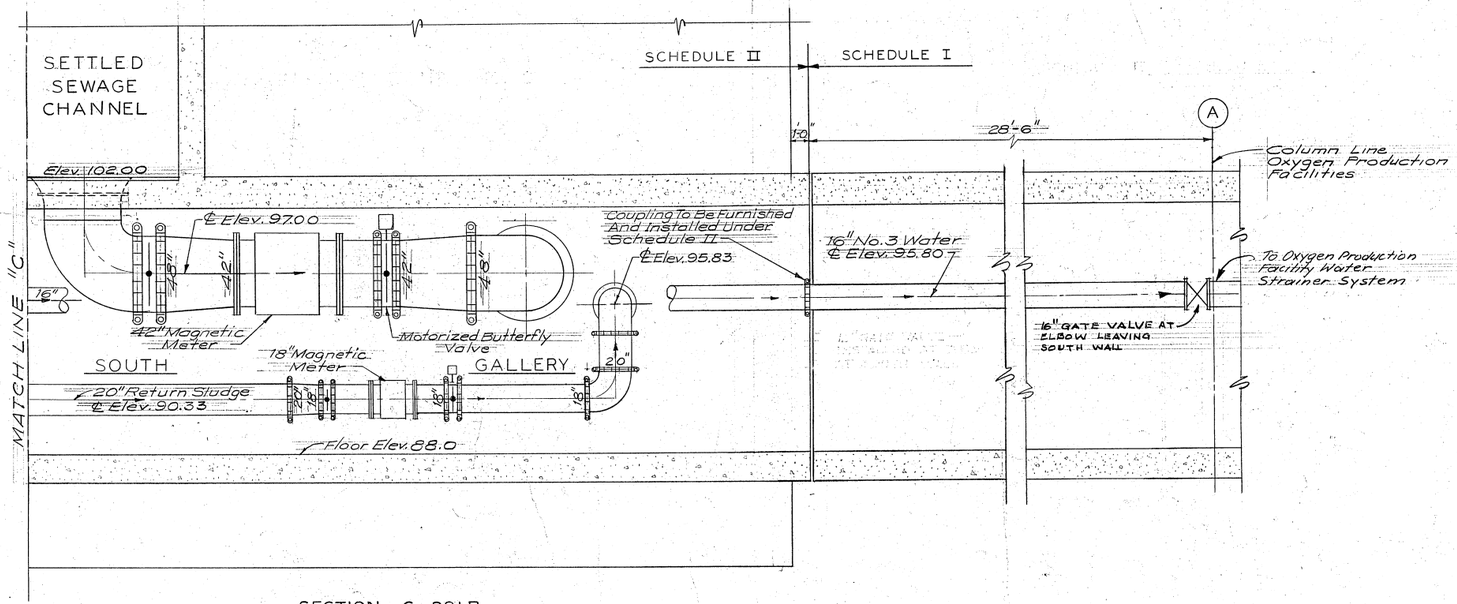
SPECIFICATION NO. SD 120
OXYGENATION TANK
SOUTH GALLERY
SECTIONS

DATE Jan. 1973 SCALE 1/4"=1'-0"
DRWG. NO.
CT-G-220

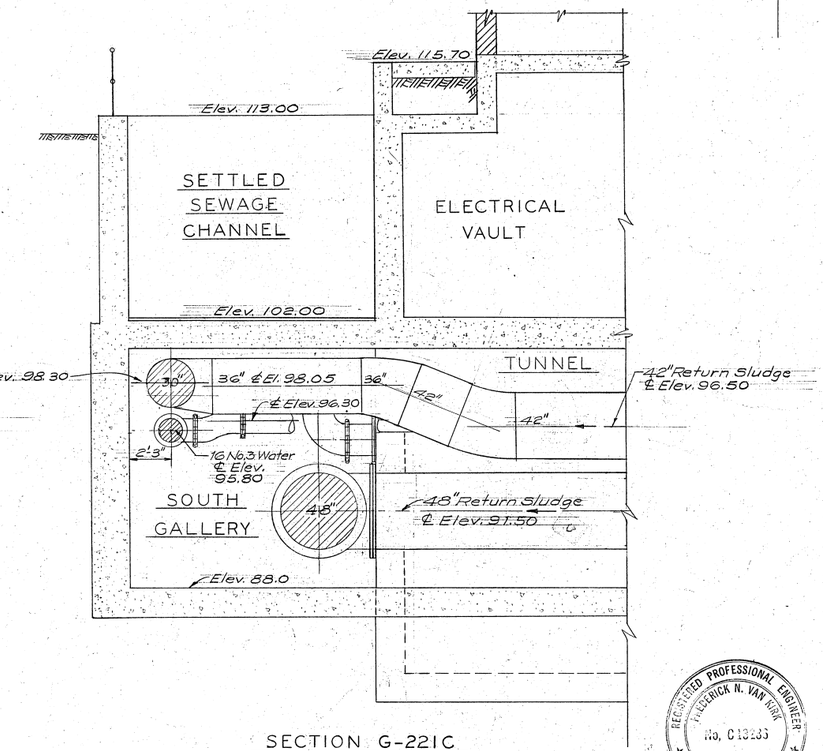
71100



SECTION G-221A
G-218



SECTION G-221B
G-219



SECTION G-221C
G-216

REGISTERED PROFESSIONAL ENGINEER
FREDERICK N. VAN VLECK
No. C 13833
CIVIL ENGINEER
STATE OF CALIFORNIA

NO.	DATE	DESCRIPTION	BY	APPR'D
1	6-75	AS BUILT	E.E	

REVISIONS

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CT&A Frederick N. Van Vleck PARTNER
EBMUD E. E. Rosen MGR. WPCD

DESIGNED E.T.D.&R.P.B.
DRAWN H.F.K.
CHECKED E.T.D.

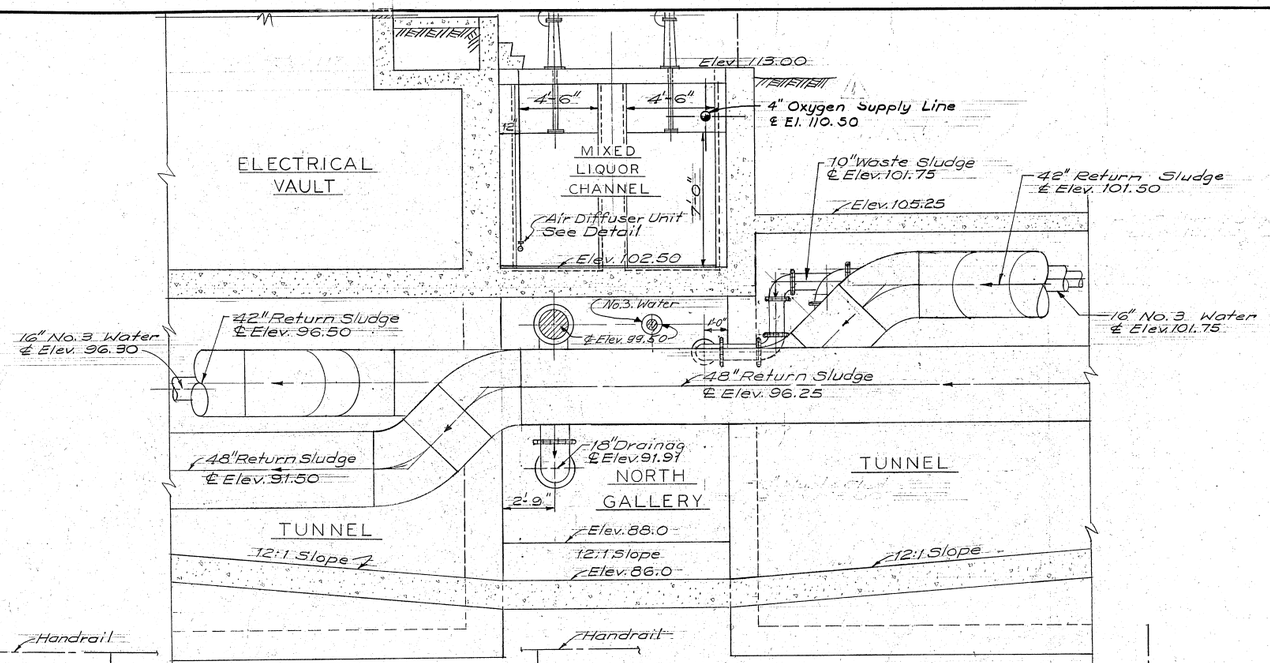
EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

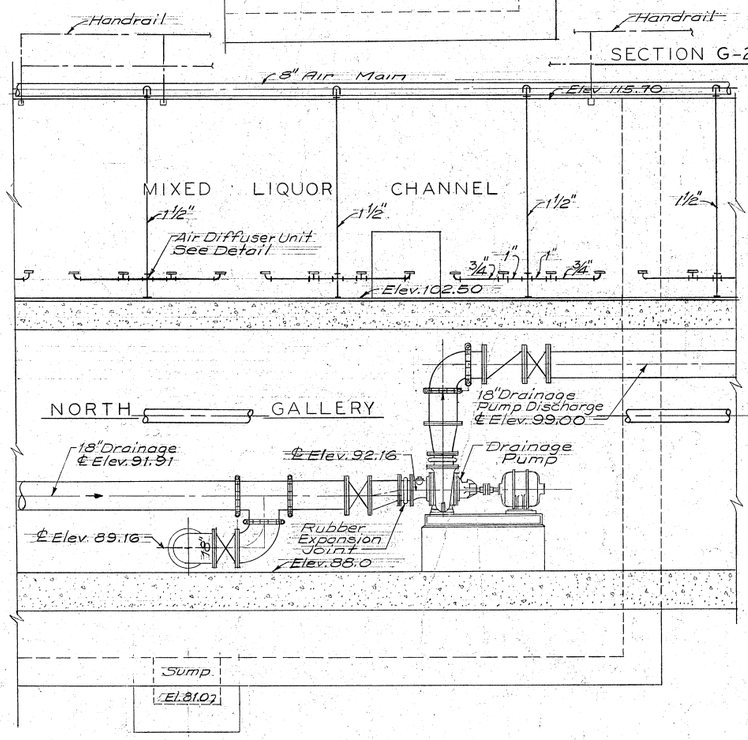
SPECIFICATION NO. SD 120
OXYGENATION TANK
SOUTH GALLERY
SECTIONS

DATE Jan. 1973 SCALE 1/4"=1-0"
DRWG. NO.
CT-G-221

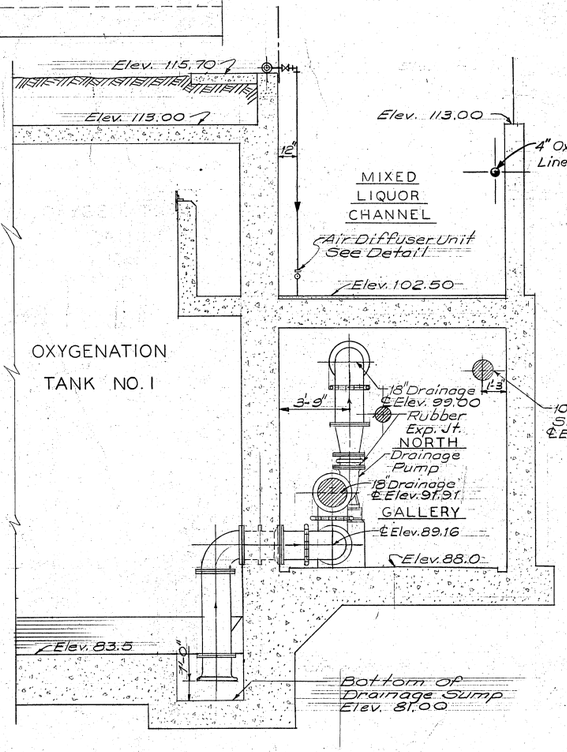
7110.0



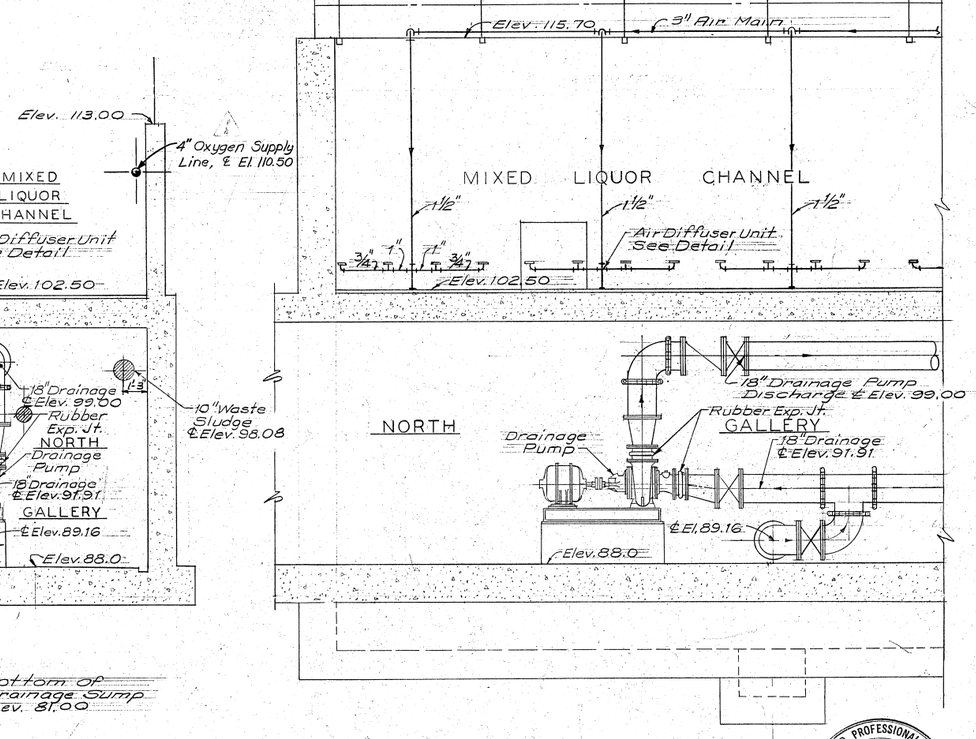
SECTION G-222A
G216



SECTION G-222B
G-216



SECTION G-222C
G-216



SECTION G-222D
G-219

NO.	DATE	DESCRIPTION	BY	APPR'D
2	8-79	AS BUILT	E.E.	
1	7/76	Add 4" Oxygen Supply Line	JB	

REVISIONS

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CT&A Frederick N. Van Kirk PARTNER
EBMUD E.E. Owen MGR. WPCD

DESIGNED F.T.D. & R.P.B.
DRAWN H.F.K.
CHECKED E.T.D.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

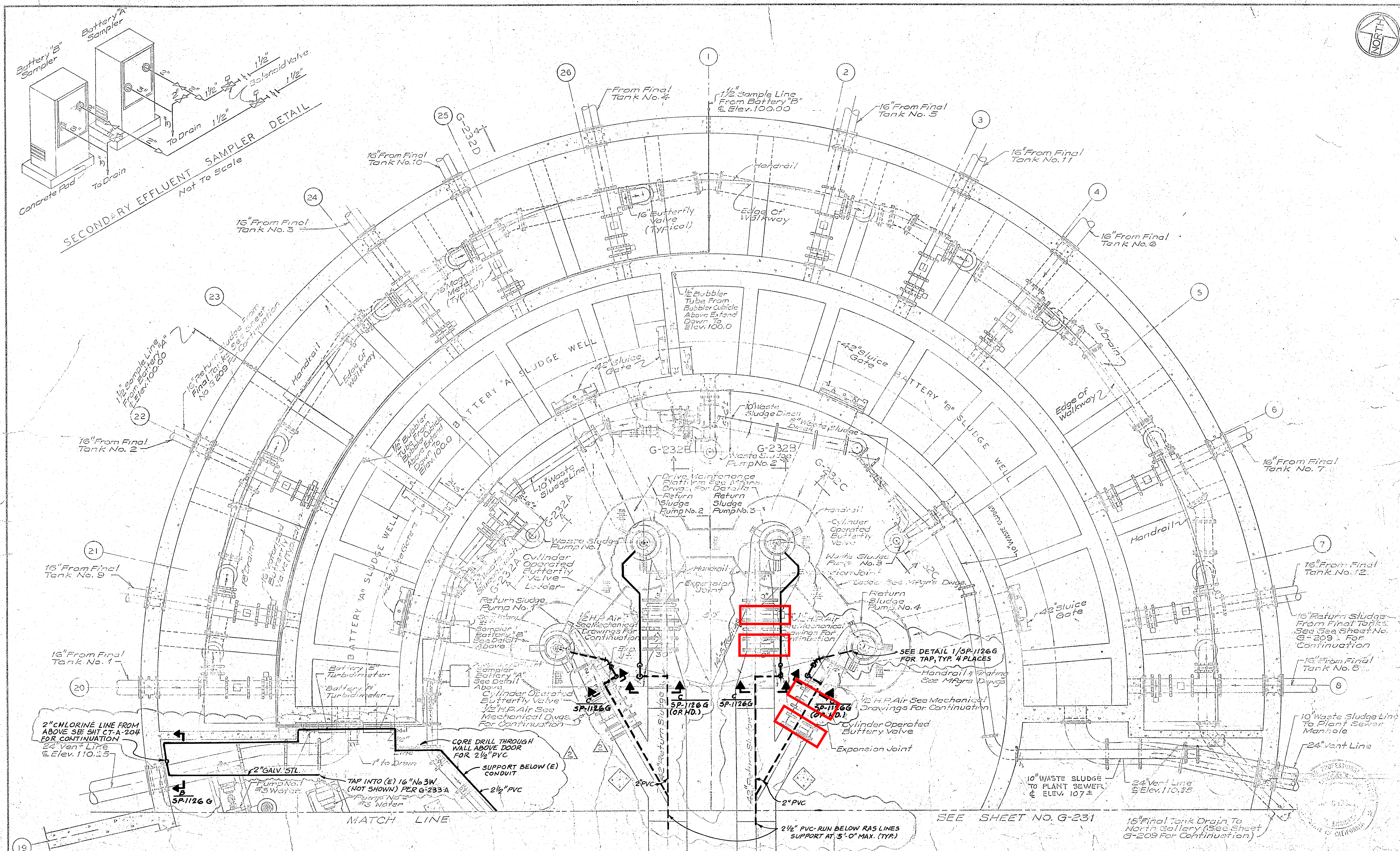
WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

SPECIFICATION NO. SD 120

OXYGENATION TANK GALLERIES
SECTIONS

DATE Jan. 1973 SCALE 1/4"=1'-0"
DRWG. NO.
CT-G-222

71100


SECONDARY EFFLUENT SAMPLER DETAIL
Not To Scale
Battery "A" Sampler
Battery "B" Sampler
Solenoid Valve
To Drain
Concrete Pad
NORTH
16" From Final Tank No. 4
1½" Sample Line From Battery "B" ℄ Elev. 100.00
16" From Final Tank No. 5
16" From Final Tank No. 10
16" From Final Tank No. 11
16" From Final Tank No. 3
16" From Final Tank No. 6
16" Butterfly Valve (Typical)
Edge Of Walkway
Handrail
16" Magnetic Meter (Typical)
½" Bubbler Tube From Bubbler Cubicle Above Extend Down To Elev. 100.0
42" Sluice Gate
BATTERY "A" SLUDGE WELL
BATTERY "B" SLUDGE WELL
18" Drain
Edge Of Walkway
1½" Sample Line From Battery "A" ℄ Elev. 100.00
16" Return Sludge From Final Tanks See Sheet No. G-209 For Continuation
16" From Final Tank No. 2
16" From Final Tank No. 7
10" Waste Sludge Disch.
G-232B
Waste Sludge Pump No. 2
Drive Maintenance Platform See Mfgrs. Dwgs. For Details
Return Sludge Pump No. 2
Return Sludge Pump No. 3
Waste Sludge Pump No. 1
Cylinder Operated Butterfly Valve
Waste Sludge Pump No. 3
16" From Final Tank No. 9
16" From Final Tank No. 12
Return Sludge Pump No. 1
Return Sludge Pump No. 4
½ H.P. Air See Mechanical Drawings For Continuation
Expansion Joint
16" From Final Tank No. 1
16" From Final Tank No. 8
SEE DETAIL 1/SP-1126G FOR TAP, TYP. 4 PLACES
Battery "B" Turbidimeter
Battery "A" Turbidimeter
Cylinder Operated Butterfly Valve
SP-1126G
SP-1126G (OR HD.)
2" CHLORINE LINE FROM ABOVE SEE SHT CT-A-204 FOR CONTINUATION
24" Vent Line ℄ Elev. 110.25
2" GALV. STL.
CORE DRILL THROUGH WALL ABOVE DOOR FOR 2½" PVC
SUPPORT BELOW (E) CONDUIT
TAP INTO (E) 16" No 3W (NOT SHOWN) PER G-233 A
2½" PVC
2" PVC
2½" PVC - RUN BELOW RAS LINES SUPPORT AT 5'-0" MAX. (TYP.)
10" Waste Sludge Line To Plant Sewer Manhole
24" Vent Line
10" WASTE SLUDGE TO PLANT SEWER ℄ ELEV. 107±
24" Vent Line ℄ Elev. 110.25
18" Final Tank Drain To North Gallery (See Sheet G-209 For Continuation)
MATCH LINE
SEE SHEET NO. G-231

NO.	DATE	DESCRIPTION	BY	APPR'D
2	8AUG90	ADDED CHLORINE LINES	RMB	
1	9-79	AS BUILT	E.B.	

REVISIONS

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS — SAN JOSE, CALIFORNIA

APPROVED
CT&A — PARTNER
EBMUD — MGR. WPCD

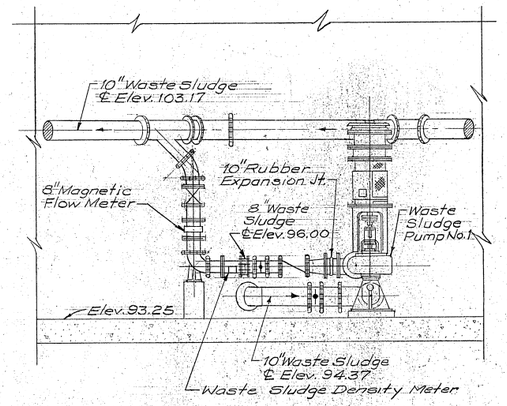
DESIGNED E.T.D.&R.R.B.
DRAWN H.F.K.
CHECKED E.T.D.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

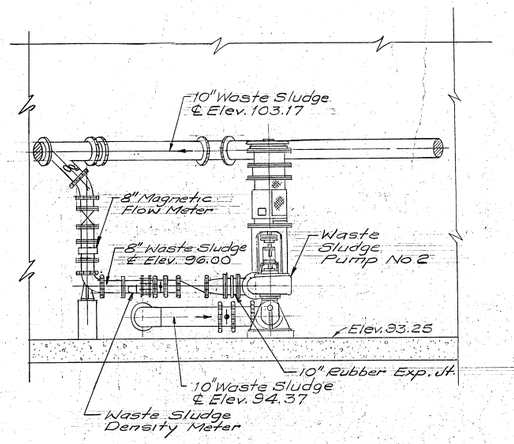
SPECIFICATION NO. SD 120
OPERATIONS CENTER - BASEMENT
FLOOR PLAN - NORTH SECTION

DATE JAN 1975 SCALE 1/4"=1'-0"
DRWG. NO. CT-G-230



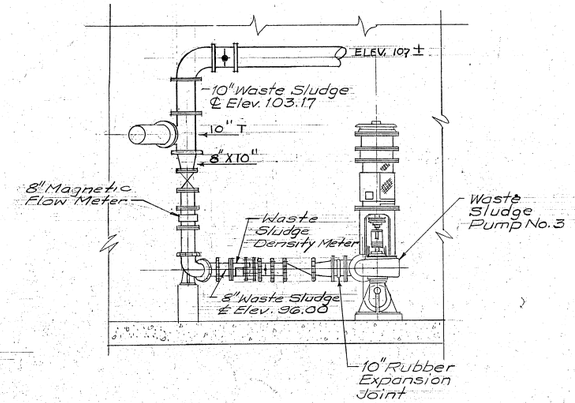
SECTION G-232 A

G-230



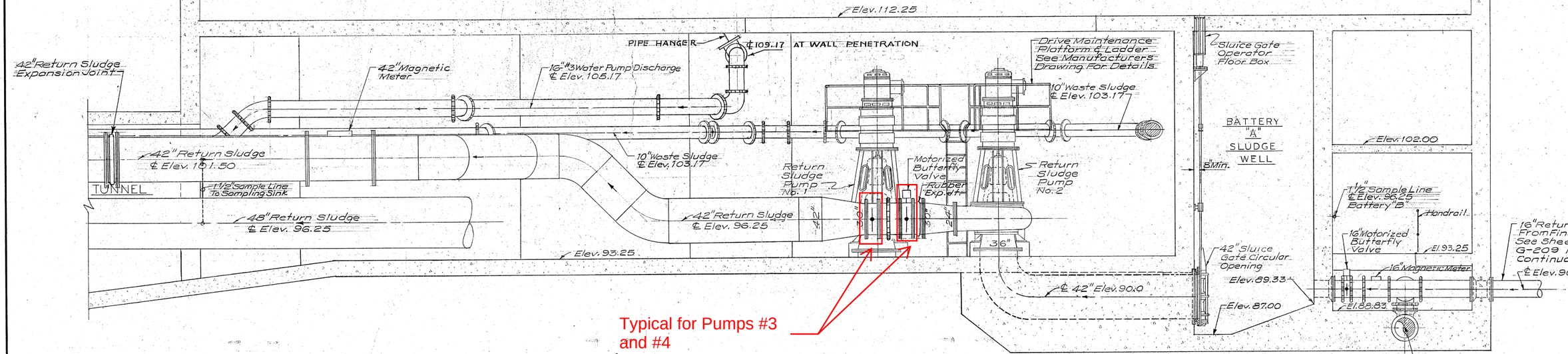
SECTION G-232 B

G-230



SECTION G-232 C

G-230



Typical for Pumps #3 and #4

SECTION G-232 D

G-230 & G-231

NOTE

SEE SHEET CT-G-238.1
FOR RETURN SLUDGE PUMP LAYOUT

REGISTERED PROFESSIONAL ENGINEER
ERICK N. VAN WIJK
No. C15285
CIVIL ENGINEER
STATE OF CALIFORNIA

3" ON ORIGINAL DOCUMENT

0 1 2 3

FOR REFERENCE ONLY

NO.	DATE	DESCRIPTION	BY	APPR'D
1	9-79	AS BUILT	E.E	

REVISIONS

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CT&A Frederick M. Van Wijk PARTNER
EBMUD E.E. Dan MGR. WPCD

DESIGNED R.P.B.
DRAWN H.F.K.
CHECKED E.T.D.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

SPECIFICATION NO. SD 120

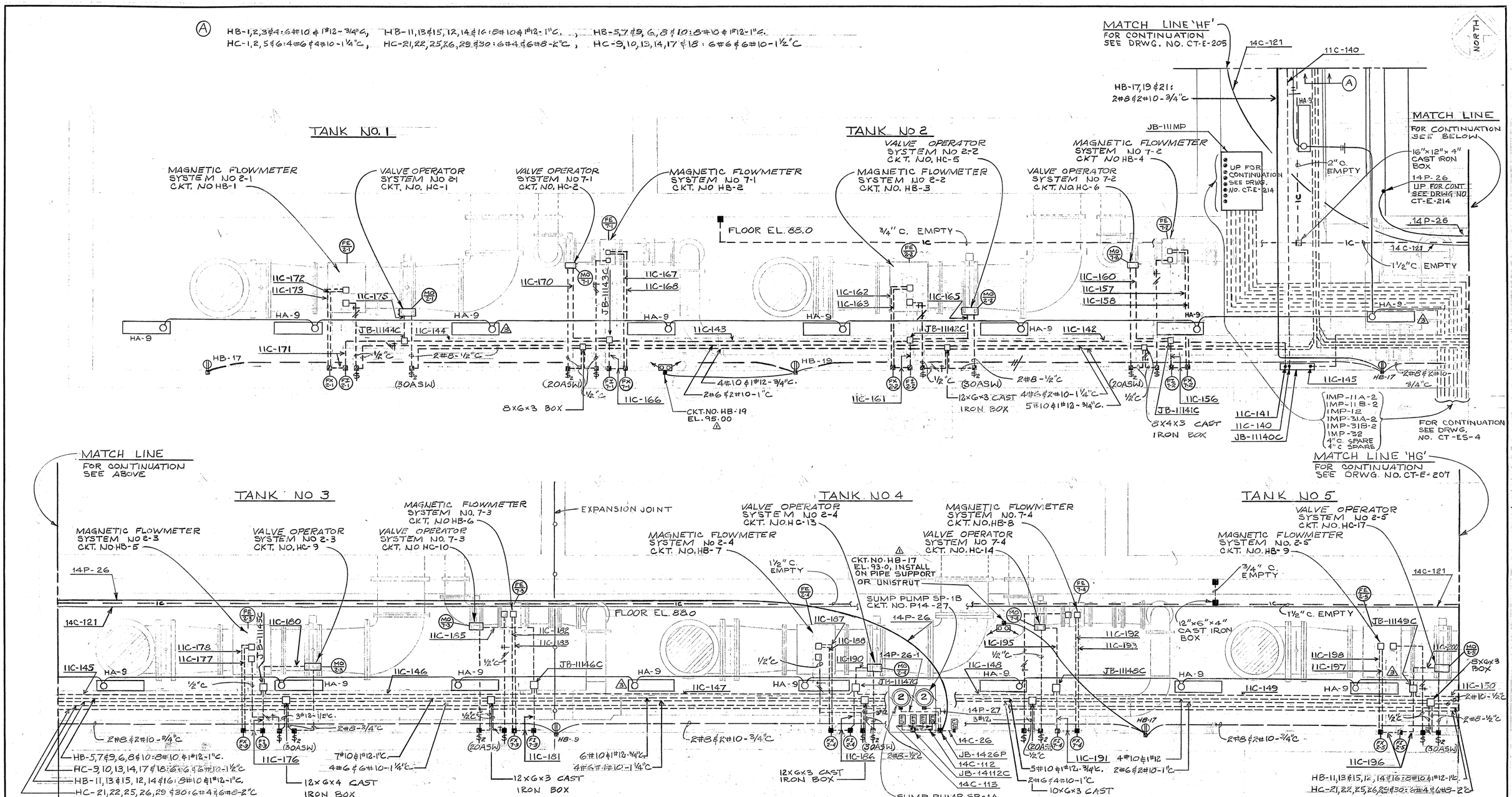
OPERATIONS CENTER - SECTIONS

DATE JAN 1972 SCALE 1/4"=1'-0"

DRWG. NO.
CT-G-232

71100

Ⓐ HB-1,2,3&4: 6#10 & 1#12 - 3/4"C, HB-11,13&15, 12, 14&16: 8#10 & 1#12 - 1"C., HB-5,7&9, 6, 8&10: 8#10 & 1#12 - 1"C.
HC-1,2,5&6: 4#6 & 4#10 - 1 1/4"C, HC-21,22,25,26,29&30: 6#4 & 6#8 - 2"C, HC-9,10,13,14,17&18: 6#6 & 6#10 - 1 1/2"C



NOTES

1. EXCEPT FOR FIXTURE OUTLET BOXES LOCATED IN THE CEILING AND WHERE OTHERWISE NOTED, ALL ENCLOSURES, BOXES, CONDUIT FITTINGS, AND COVERS SHALL BE OF CAST IRON WITH GASKETS, NEMA 4 WHEN AVAILABLE.
2. UNLESS OTHERWISE NOTED, ALL RECEPTACLES SHOWN ON THIS SHEET SHALL BE INSTALLED 52 INCHES ABOVE THE FINISHED FLOOR.
3. INSTALL EXPANSION FITTINGS IN ALL CONDUIT RUNS CROSSING EXPANSION JOINTS.
4. UNLESS OTHERWISE NOTED, ALL FLUORESCENT LIGHTING FIXTURES SHOWN ON THIS SHEET SHALL BE TYPE 'A' AND SHALL BE MOUNTED AT EL. 98.0

+ DESIGNATES GROUND WIRE

REGISTERED PROFESSIONAL ENGINEER ... STATE OF CALIFORNIA

NO.	DATE	DESCRIPTION	BY	APPR'D
3	1-21-77	RETROFIT EMERG. BALLASTS	RT	LH
2	4-16-74	INSTRUMENTATION CHANGES	DEE	
1	11-20-74	EMERGENCY LIGHTS	DEE	

REVISIONS

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CT&A Frederick W. Kavanaugh PARTNER
EBMUD E. E. Dow MGR. WPCD

DESIGNED PAT
DRAWN DAT
CHECKED JPG-JGC

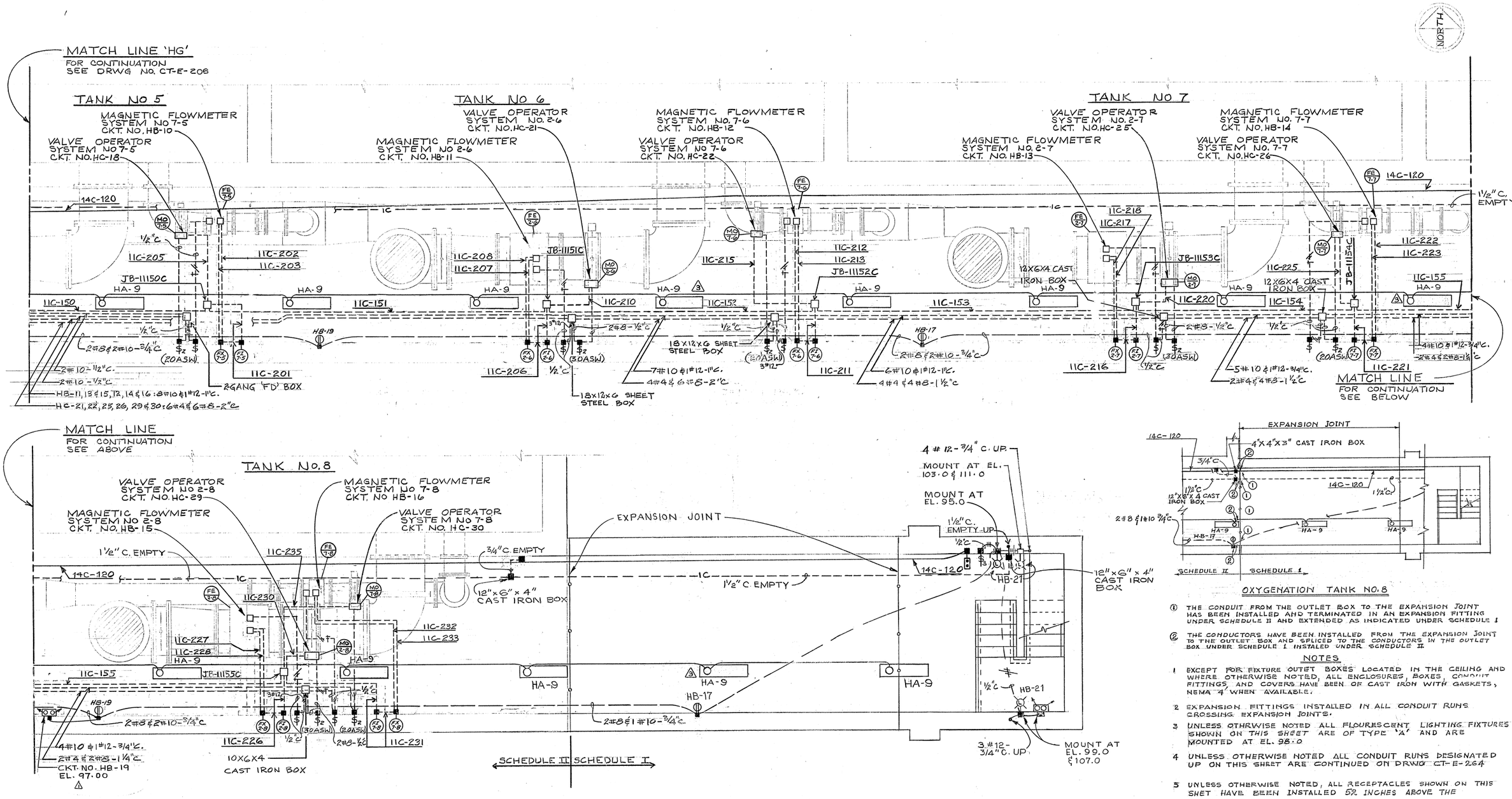
EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

SPECIFICATION NO. SD 120
OXYGENATION TANKS SOUTH GALLERY
PLAN I - ELECTRICAL

DATE JAN. 1973 SCALE: 1/4"=1'-0"
DRWG. NO.
CT-E-206

71100



† DESIGNATES GROUND WIRE

OXYGENATION TANK NO. 8

① THE CONDUIT FROM THE OUTLET BOX TO THE EXPANSION JOINT HAS BEEN INSTALLED AND TERMINATED IN AN EXPANSION FITTING UNDER SCHEDULE II AND EXTENDED AS INDICATED UNDER SCHEDULE I

② THE CONDUCTORS HAVE BEEN INSTALLED FROM THE EXPANSION JOINT TO THE OUTLET BOX AND SPLICED TO THE CONDUCTORS IN THE OUTLET BOX UNDER SCHEDULE I INSTALED UNDER SCHEDULE II

NOTES

1 EXCEPT FOR FIXTURE OUTET BOXES LOCATED IN THE CEILING AND WHERE OTHERWISE NOTED, ALL ENCLOSURES, BOXES, CONDUIT FITTINGS, AND COVERS HAVE BEEN OF CAST IRON WITH GASKETS, NEMA 4 WHEN AVAILABLE.

2 EXPANSION FITTINGS INSTALLED IN ALL CONDUIT RUNS CROSSING EXPANSION JOINTS.

3 UNLESS OTHERWISE NOTED ALL FLOURESCENT LIGHTING FIXTURES SHOWN ON THIS SHEET ARE OF TYPE 'A' AND ARE MOUNTED AT EL. 98.0

4 UNLESS OTHERWISE NOTED ALL CONDUIT RUNS DESIGNATED UP ON THIS SHEET ARE CONTINUED ON DRWG CT-E-264

5 UNLESS OTHERWISE NOTED, ALL RECEPTACLES SHOWN ON THIS SHET HAVE BEEN INSTALLED 5½ INCHES ABOVE THE FINISHED FLOOR.

REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

NO.	DATE	REVISIONS	BY	APPR'D
4	12-18-80	AS BUILT	E.E.E.	
3	1-21-77	RETROFIT EMERG. BALLASTS	RT	LH
2	4-16-74	INSTRUMENTATION CHANGES	RBS	
1	11-20-74	EMERGENCY LIGHTS	DCD	

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CT&A PARTNER
EBMUD MGR. WPCD

DESIGNED PAT
DRAWN DAT
CHECKED JPG-JGC

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

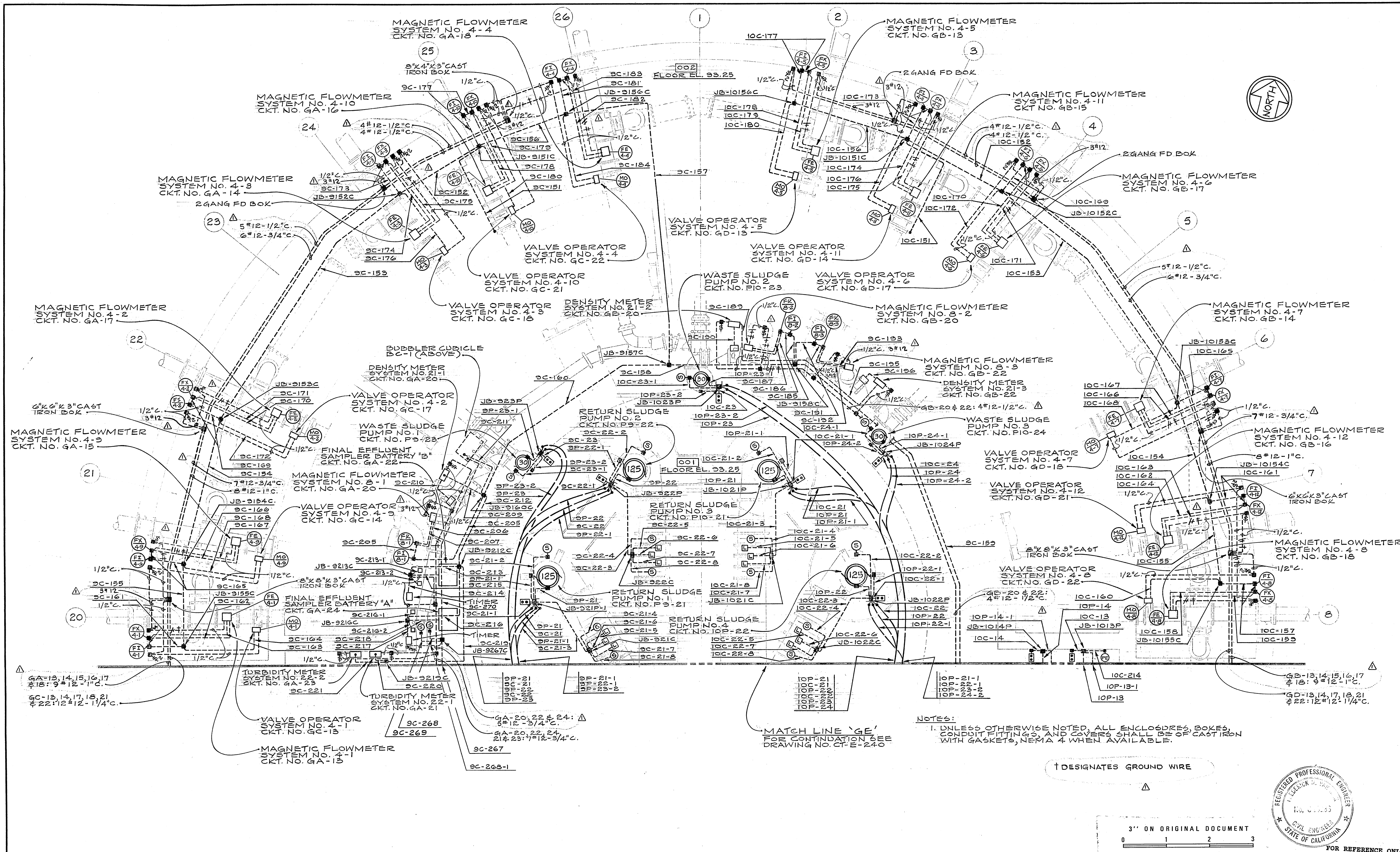
SPECIFICATION NO. SD 120

OXYGENATION TANKS SOUTH GALLERY
PLAN II-ELECTRICAL

DATE JAN-1973 SCALE: 1/4"=1'-0"

DRWG. NO.
CT-E-207

71100



NOTES:

1. UNLESS OTHERWISE NOTED, ALL ENCLOSURES, BOXES, CONDUIT FITTINGS, AND COVERS SHALL BE OF CAST IRON WITH GASKETS, NEMA 4 WHEN AVAILABLE.

REGISTERED PROFESSIONAL ENGINEER — CIVIL ENGINEER — STATE OF CALIFORNIA

FOR REFERENCE ONLY

NO.	DATE	DESCRIPTION	BY	APPR'D
1	4-16-76	INSTRUMENTATION CHANGES		

REVISIONS

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS — SAN JOSE, CALIFORNIA

APPROVED
CT&A — PARTNER
EBMUD — MGR. WPCD

DESIGNED RN
DRAWN RN
CHECKED JPG-JGC

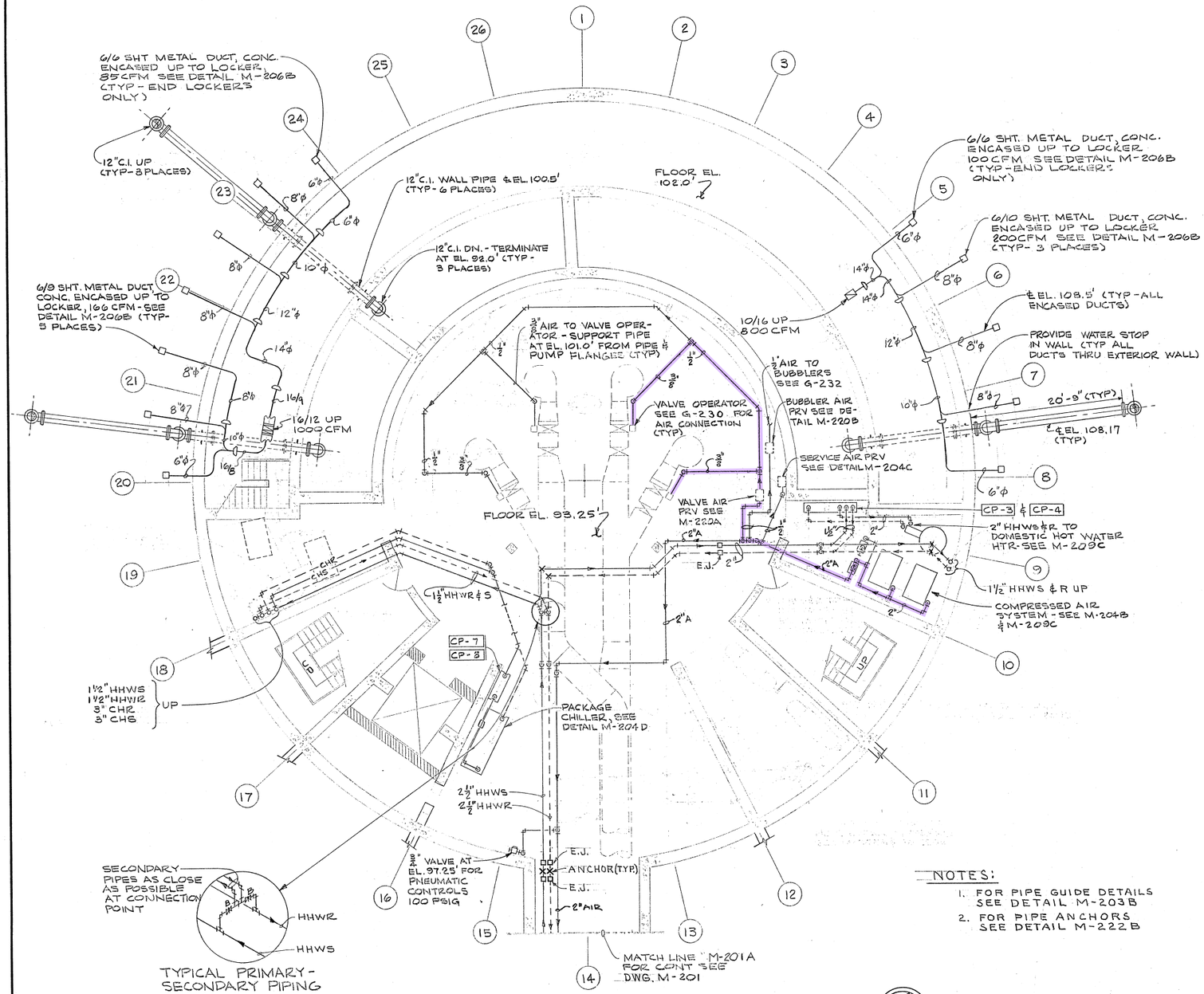
EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

SPECIFICATION NO. SD 120
OPERATIONS CENTER
BASEMENT POWER PLAN I
ELECTRICAL

DATE JAN-1973 SCALE 1/4" = 1'-0"
DRWG. NO. CT-E-239

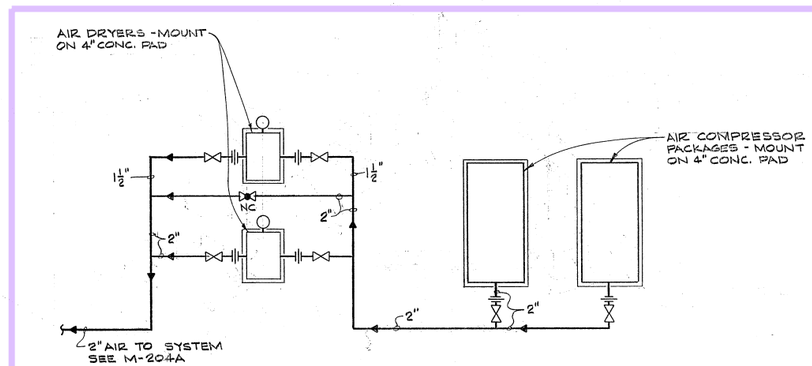
7100



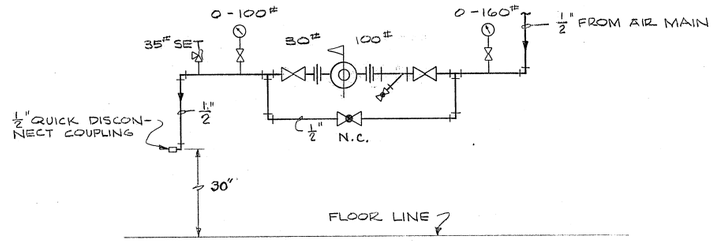
M-204A BASEMENT PLAN
SCALE 1/8" = 1'-0"

NOTES:
1. FOR PIPE GUIDE DETAILS SEE DETAIL M-203B
2. FOR PIPE ANCHORS SEE DETAIL M-222B

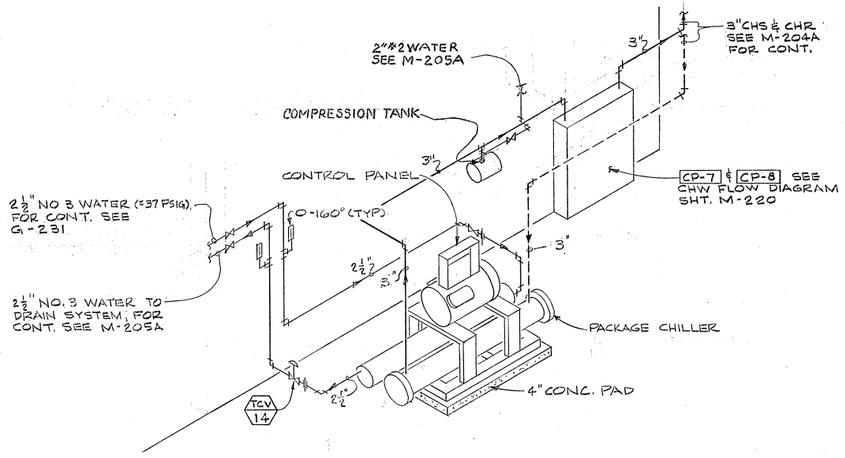
SEE SHEET CT-M-204.1



M-204B AIR COMPRESSOR DETAIL
NO SCALE



M-204C SERVICE AIR PRV STATION DETAIL
NO SCALE



M-204D PACKAGE CHILLER DETAIL
NO SCALE

REGISTERED PROFESSIONAL ENGINEER — No. 6[illegible] — STATE OF CALIFORNIA

NO.	DATE	REVISIONS DESCRIPTION	BY	APPR'D
1	9-11-81	AS BUILT	E.E.	

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS — SAN JOSE, CALIFORNIA

APPROVED
CT&A _____ PARTNER
EBMUD _____ MGR. WPCD

DESIGNED _____
DRAWN _____
CHECKED I. J. L.

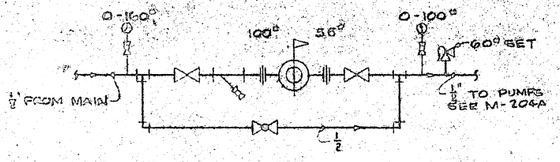
EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

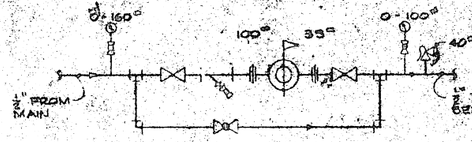
SPECIFICATION NO. SD 120
OPERATIONS CENTER
BASEMENT
HEATING, VENTILATING, AIR CONDITIONING

DATE JAN. '73 SCALE AS SHOWN
DRWG. NO. CT-M-204

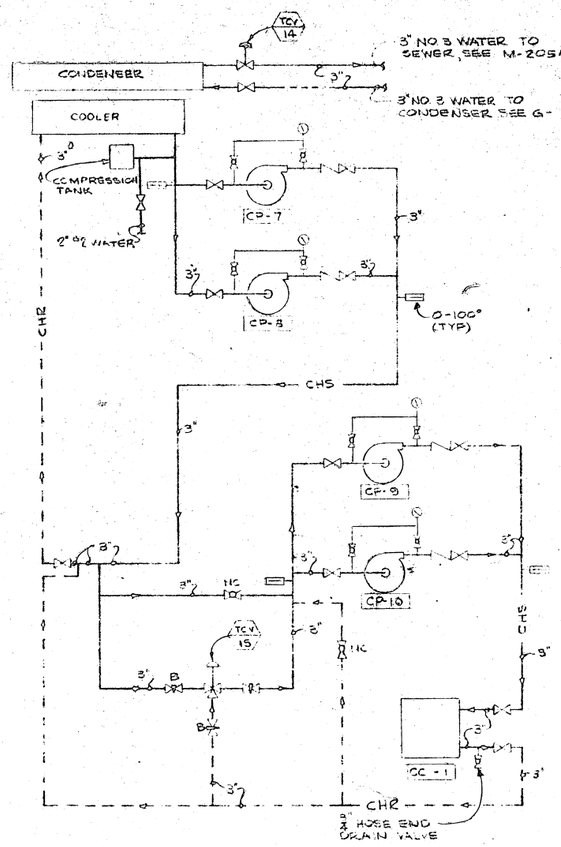
71100



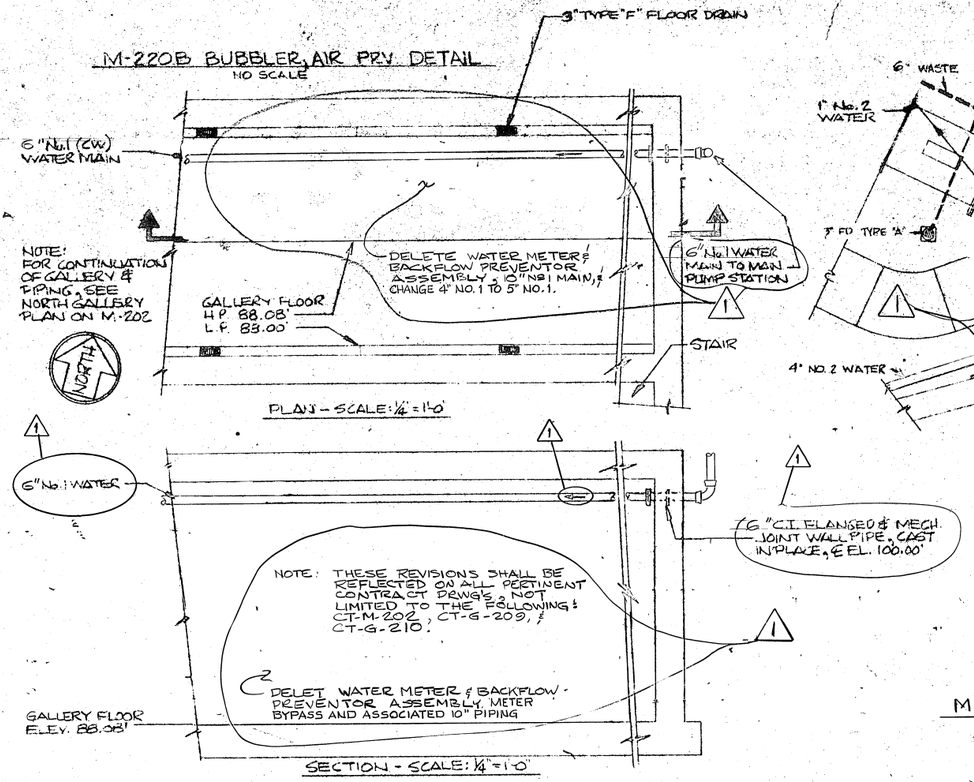
M-220A VALVE OPERATOR AIR PRV DETAIL
NO SCALE



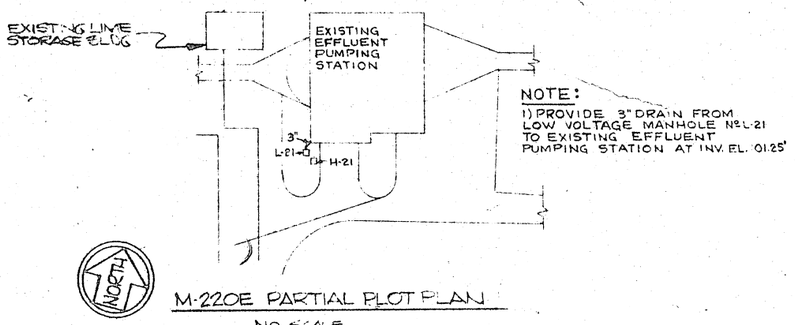
M-220B BUBBLER AIR PRV DETAIL
NO SCALE



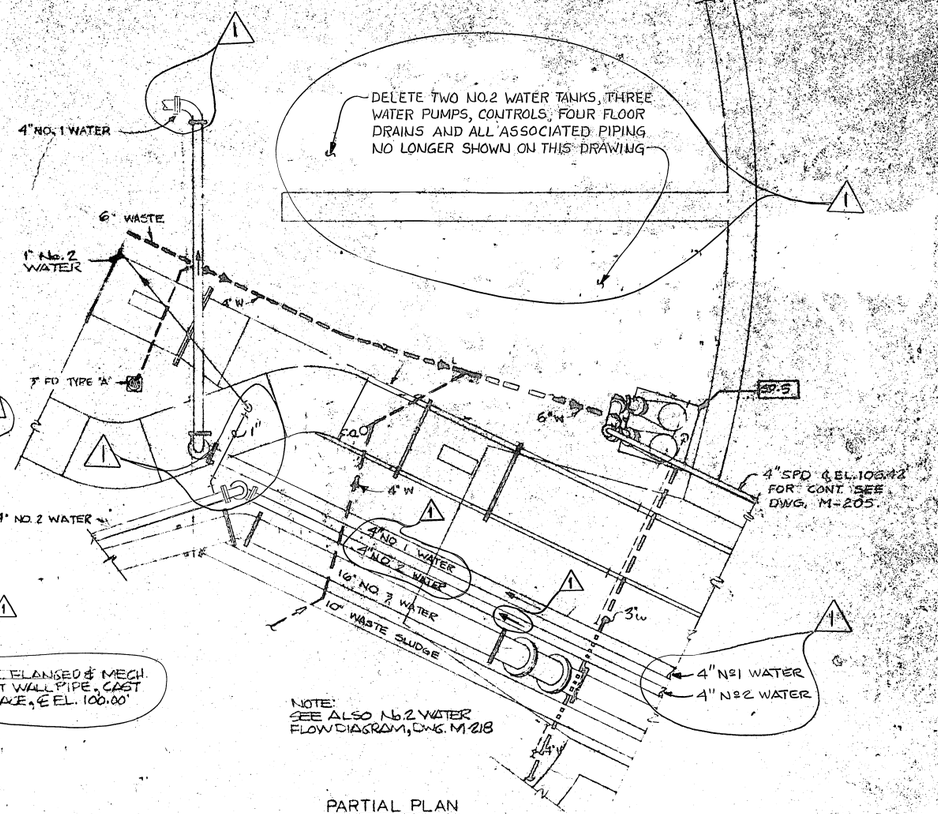
M-220C CHILLED WATER FLOW DIAGRAM
NO SCALE



M-220D WATER SUPPLY TO NORTH GALLERY



M-220E PARTIAL PLOT PLAN
NO SCALE



PARTIAL PLAN

M-220F OPERATIONS CENTER SERVICES
SCALE: 1/4" = 1'0"

NOTE: THE ABOVE REVISIONS SHALL BE REFLECTED ON ALL PERTINENT CONTRACT DRWGS, NOT LIMITED TO THE FOLLOWING; CT-M-202, CT-M-205A, CT-M-214A/B, & CT-M-217.

DELETE ALL TANKS, PUMPS AND PIPING PREVIOUSLY SHOWN IN SECTION A-A & B-B.

REGISTERED PROFESSIONAL ENGINEER FREDERICK N. HAY No. C 13285 STATE OF CALIFORNIA

NO	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		
⚠ 3	3-25-81	AS BUILT	EEE	
⚠ 2	3-4-74	CHG. No. 1 & No. 2 WATER SYS.	EEE	

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CTOA _____ PARTNER
EBMUD _____ MGR. WPCD

DESIGNED _____
DRAWN _____
CHECKED IJL

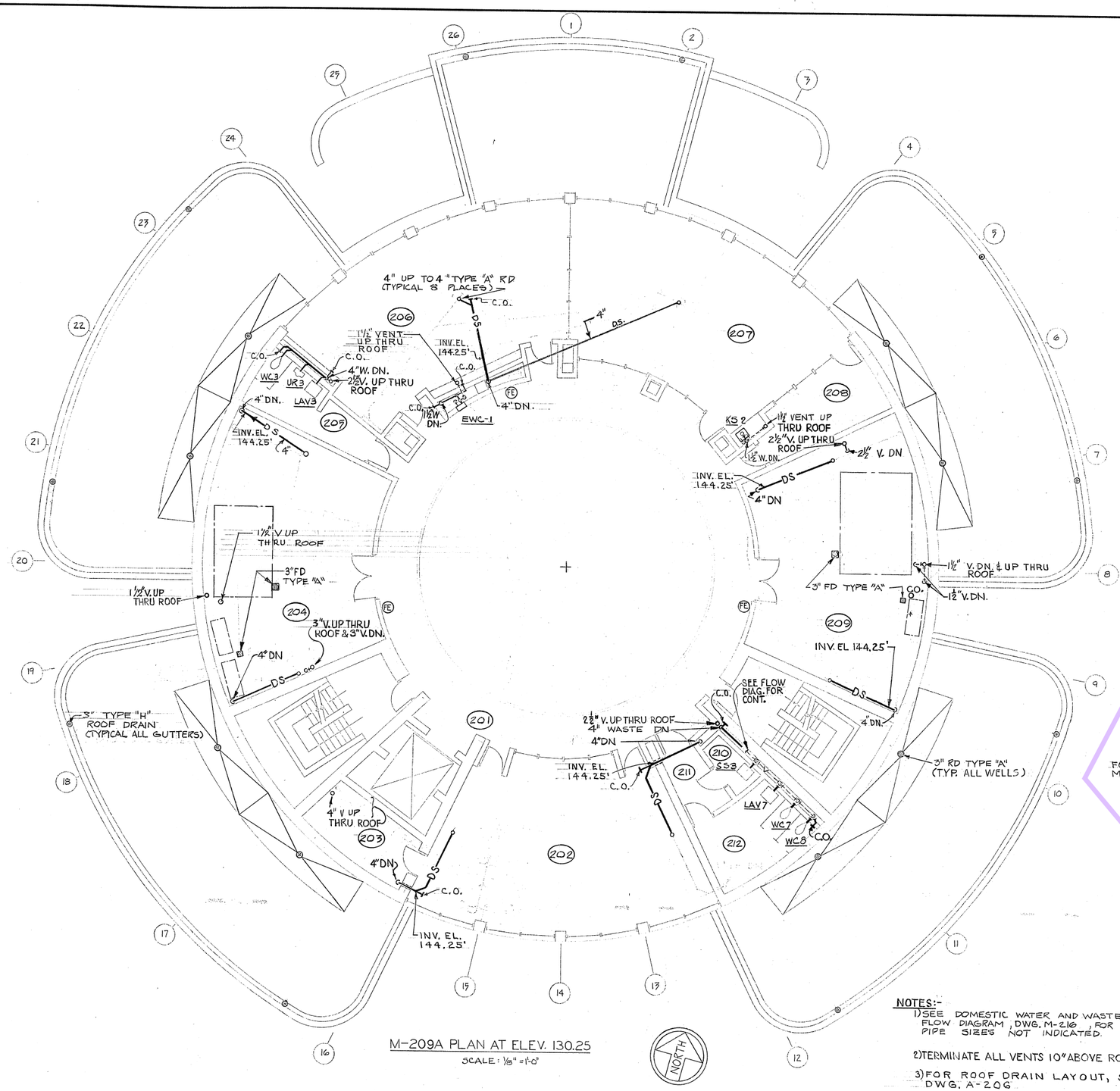
EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

SPECIFICATION NO. SD 120

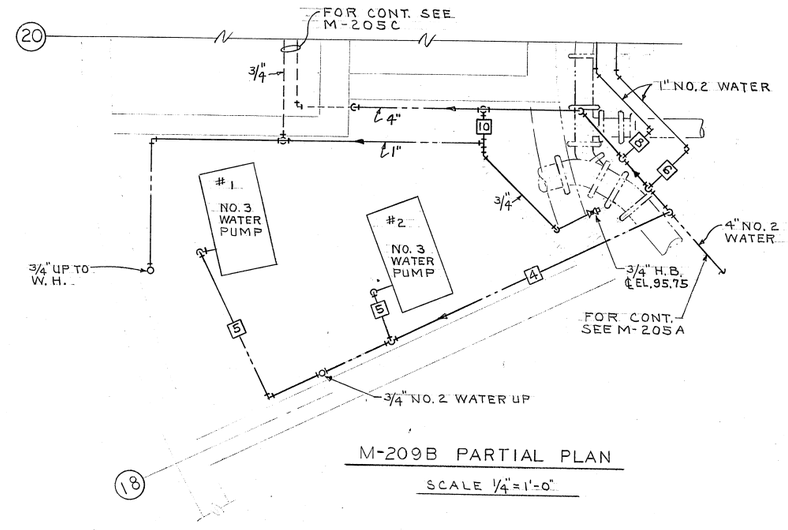
MISCELLANEOUS DETAILS

DATE JAN '70 SCALE AS NOTED
DRWG. NO. CT-M-220



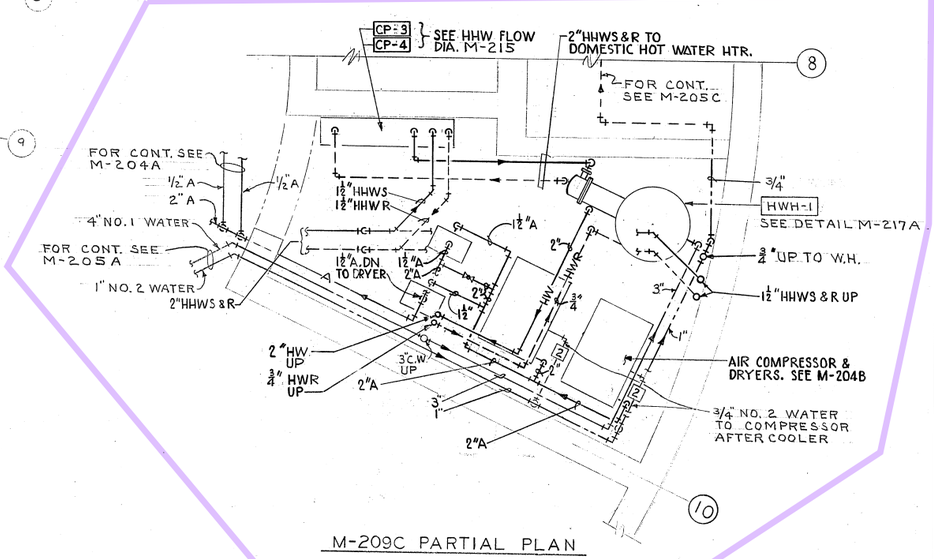
M-209A PLAN AT ELEV. 130.25

SCALE: ⅛" = 1'-0"



M-209B PARTIAL PLAN

SCALE 1/4" = 1'-0"



M-209C PARTIAL PLAN

SCALE 1/4" = 1'-0"

NOTES:-

1) SEE DOMESTIC WATER AND WASTE FLOW DIAGRAM, DWG. M-216, FOR PIPE SIZES NOT INDICATED.

2) TERMINATE ALL VENTS 10" ABOVE ROOFING

3) FOR ROOF DRAIN LAYOUT, SEE DWG. A-206

NOTE:

FOR REVISION OF PARTIAL PLAN SEE SHEET CT-M-225.1

REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

NO.	DATE	DESCRIPTION	BY	APPR'D
		REVISIONS		

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CT&A _____ PARTNER
EBMUD _____ MGR. WPCD

DESIGNED O.F.S.
DRAWN O.F.S.
CHECKED I.J.L.

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

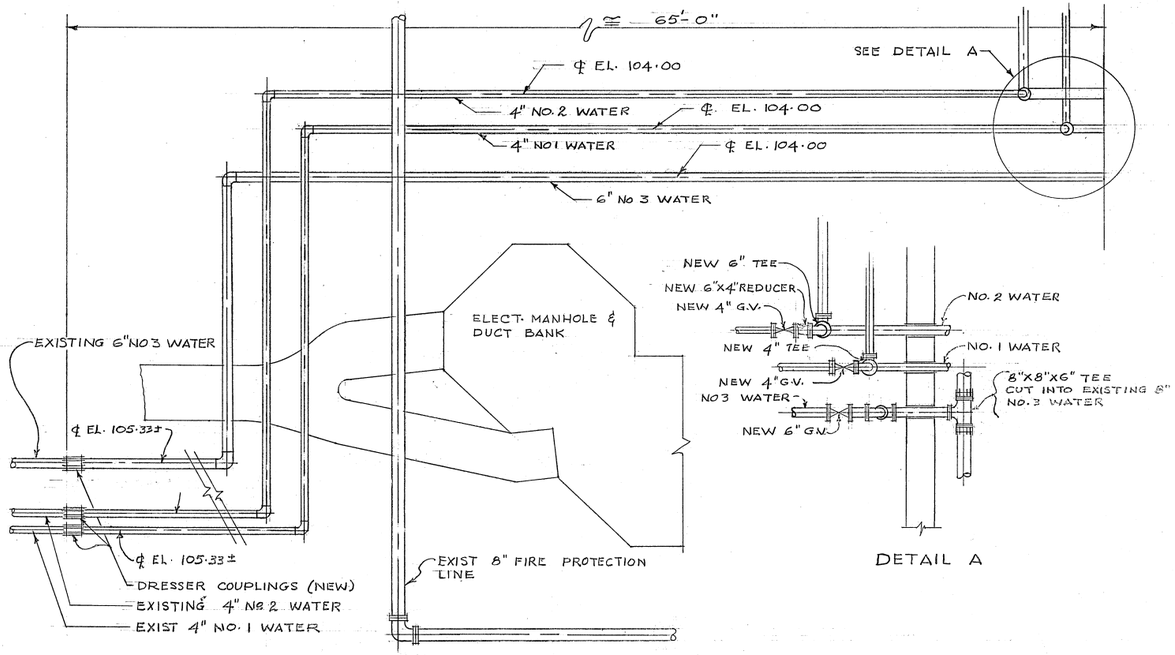
WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

SPECIFICATION NO. SD-120
OPERATIONS CENTER
MEZZANINE AND PARTIAL BASEMENT PLANS
PLUMBING

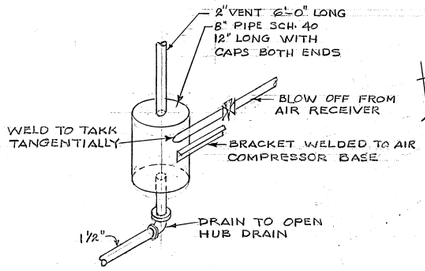
DATE JAN '73 SCALE AS SHOWN

DRWG. NO.
CT-M-209

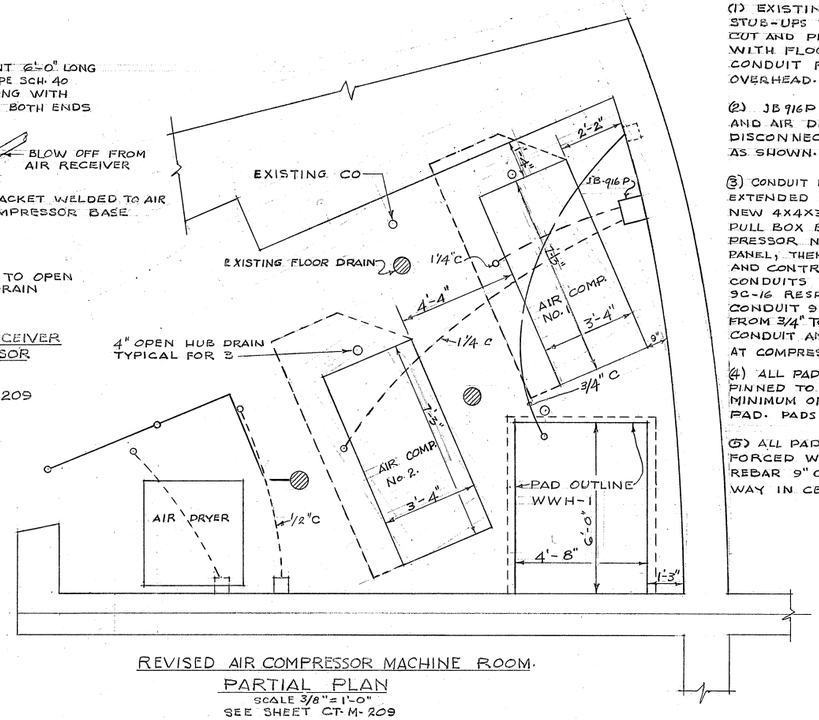
71100



No. 1, No. 2, AND No. 3 WATER PIPING CONNECTIONS
SCALE 1/4" = 1'-0"
SEE SHEETS CT-M-203 AND CT-M-223



AIR COMPRESSOR RECEIVER BLOW DOWN SUPRESSOR
(TYPICAL FOR 2)
NOT TO SCALE.
SEE SHEET CT-M-209



REVISED AIR COMPRESSOR MACHINE ROOM.
PARTIAL PLAN
SCALE 3/8" = 1'-0"
SEE SHEET CT-M-209

GENERAL NOTES:

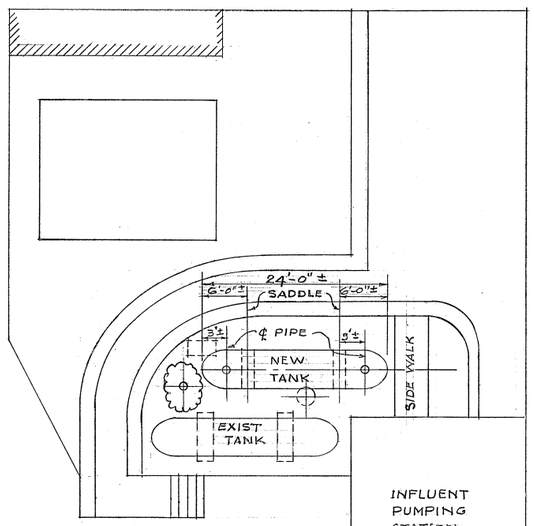
(1) EXISTING CONDUIT STUB-UPS TO EQUIPMENT CUT AND PLUGGED FLUSH WITH FLOOR. NEW CONDUIT RUNS INSTALLED OVERHEAD.

(2) JB 916P RELOCATED AND AIR DRYER DISCONNECTED APPROX. AS SHOWN.

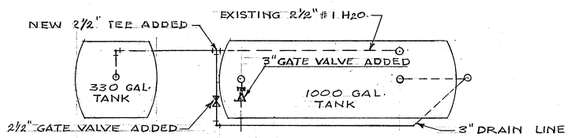
(3) CONDUIT RUN 9P-16 EXTENDED FROM JB-916P TO NEW 4X4X3 CAST IRON PULL BOX BENEATH COMPRESSOR NO1 CONTROL PANEL, THEN TO THE MOTOR AND CONTROL PANEL BY CONDUITS 9P-16-1 AND 9C-16 RESPECTIVELY. CONDUIT 9P-16-1 CHANGED FROM 3/4" TO 1". SIMILARLY CONDUIT AND BOX INSTALLED AT COMPRESSOR NO 2.

(4) ALL PADS HAVE BEEN PINNED TO BASE SLAB, MINIMUM OF 4 PINS PER PAD. PADS ARE 4" THICK.

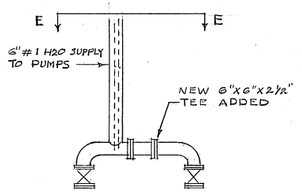
(5) ALL PADS ARE REINFORCED WITH #4 REBAR REBAR 9" O.C. BOTH WAY IN CENTER OF PAD.



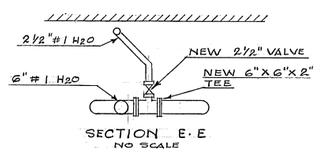
MAIN PUMPING STATION
No. 1. WATER TANKS
SCALE 1" = 10'-0"
SEE SHEET CT-M-224



PLAN VIEW
NO SCALE



FRESH WATER PUMP ROOM
NO. SCALE



SECTION E-E
NO SCALE

REVISION TO TANK DRAINAGE AND SUPPLY
NO SCALE
SEE SHEET CT-M-225

DRAWING CT-M-221

CP-11 ADDED TO PUMP SCHEDULE WITH THE FOLLOWING DATA

LOCATION : OPERATIONS CENTER
DISCRIPTION: IN LINE CENTRIFUGAL
CAPACITY: 10 GPM
HEAD IN FT. : 10 FT.
RPM: 1750
M IN HP: 1/6
VOLT : 115
PHASE : 1
HERTZ : 60

DIFFUSER SCHEDULE: CHANGED FRO 22X12 AND 800 CFM TO 18X12 AND 500 CFM IN LINE 7.

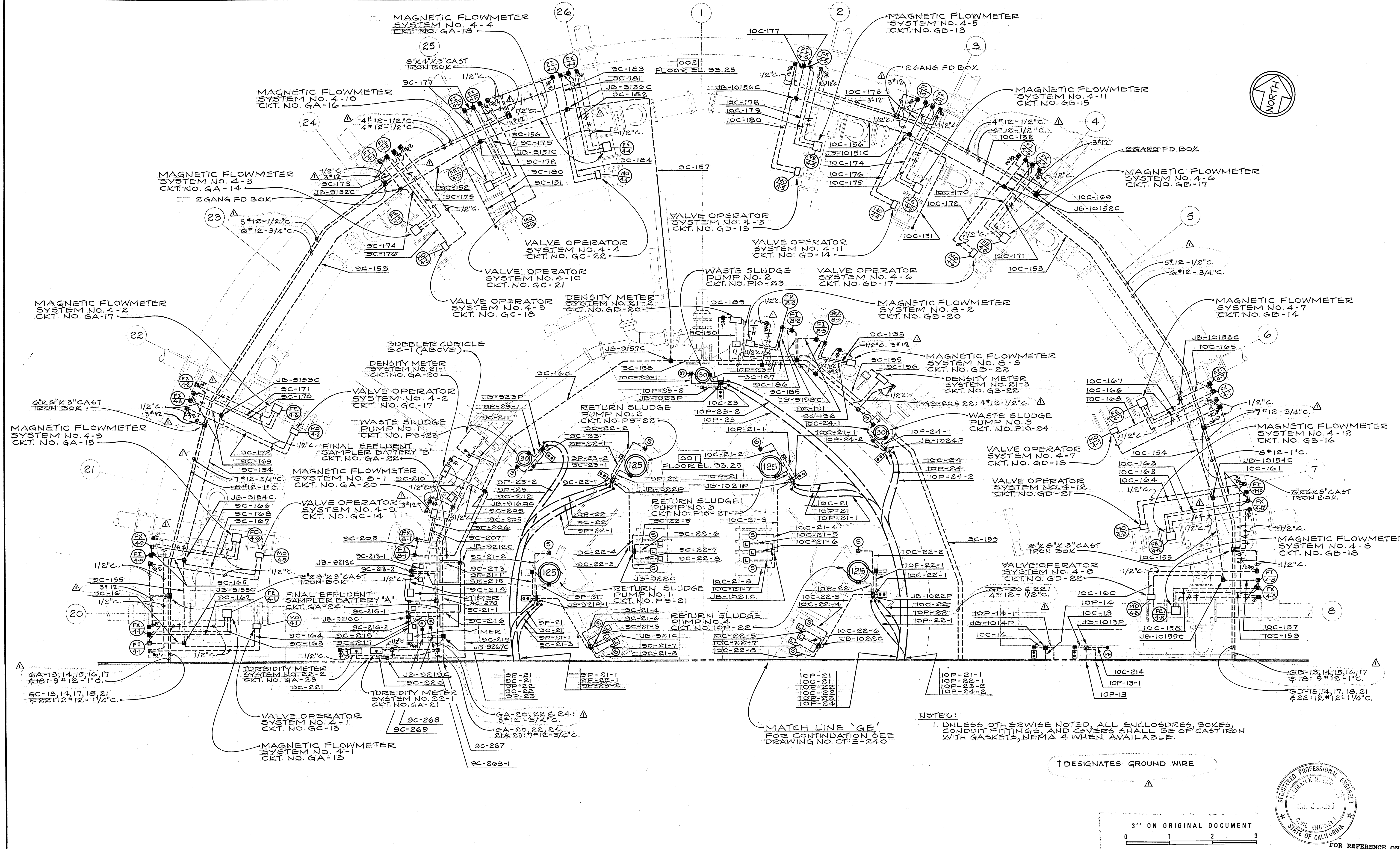
COIL SCHEDULE : UNDER COLUMNS DESIGNATED AS ROWS- FOR CC-1 THE NUMBER IS 6, FOR ALL OTHERS THE NUMBER IS 1. SPELLINGS IN NOTE CHANGED TO "... AEROFIN...".

UNIT HEATER SCHEDULE : UNDER CAPACITY, MBH CHANGED TO BTUH UH-1 IS 57,500 BTUH, 1040 CFM AND 130 HP, NOT 103,175 BTUH, 1715 AND 1/8 HP.

SUMP PUMP SCHEDULE : ALL MPG'S MODELS DELETED. SP-1 THROUGH SP-4 ARE 1750 RPM AND SUBMERSIBLE, NOT 1150 RPM. SP-5 IS 1150 RPM, NOT 1750 RPM; SP-6 AND SP-7 ARE 1750 RPM. SP-8 IS 1725 RPM, NOT 1750 RPM.

SEE SHEET CT-M-221.

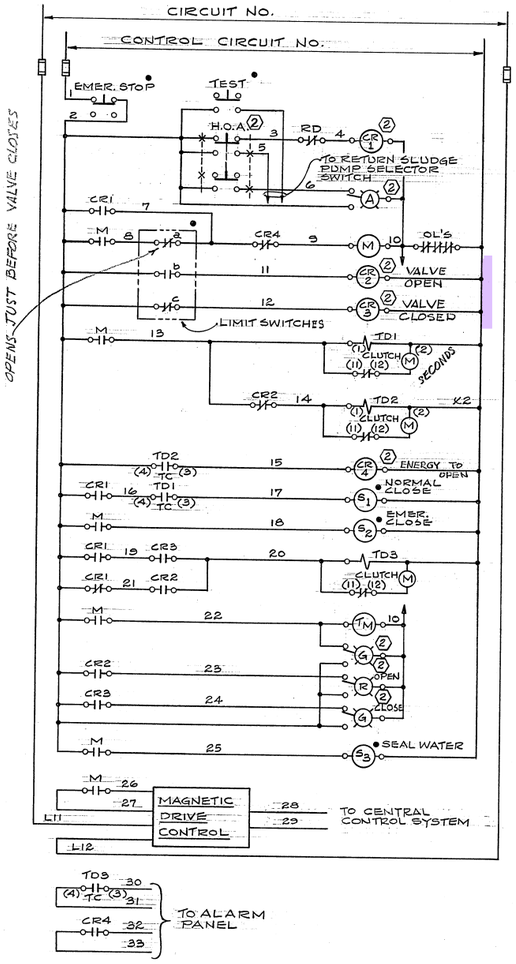
		REVISIONS	
EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO 1 OAKLAND, CALIFORNIA			
MISCELLANEOUS DETAILS			
PIPING & NOTES			
AS BUILT			
	DRAWN BY E.E.E.	TRACED BY	
	DATE 10-6-81	SCALE AS NOTED	
	SD-120 NO. SHT. CT-M-225-1		

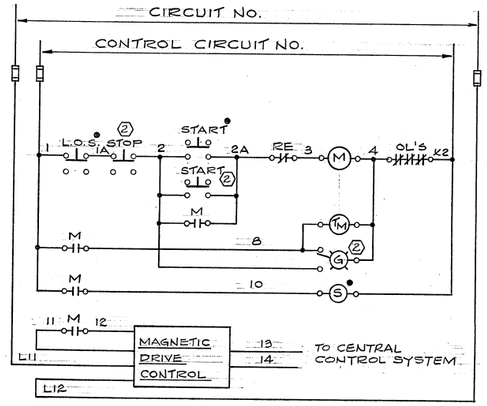


FOR REFERENCE ONLY

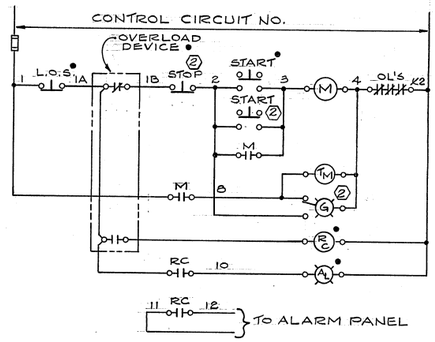
1 4-16-76 INSTRUMENTATION CHANGES NO. DATE DESCRIPTION BY APPR'D REVISIONS	CONSOER, TOWNSEND & ASSOCIATES CONSULTING ENGINEERS CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA	APPROVED CT&A PARTNER EBMUD MGR. WPCD	DESIGNED RN DRAWN RN CHECKED JPG-JGC	EAST BAY MUNICIPAL UTILITY DISTRICT SPECIAL DISTRICT NO. 1 OAKLAND, CALIFORNIA	WATER POLLUTION CONTROL PLANT ADDITIONS AND IMPROVEMENTS
SPECIFICATION NO. SD 120 OPERATIONS CENTER BASEMENT POWER PLAN I ELECTRICAL	DATE JAN-1973 SCALE 1/4"=1'-0" DRWG. NO. CT-E-239				

7100





ITEM	CKT. NO.	CONTROL CKT. NO.	RE
WASTE SLUDGE PUMP NO. 1	P9-23	P9-23	R31
WASTE SLUDGE PUMP NO. 2	P10-23	P10-23	R31 & R32
WASTE SLUDGE PUMP NO. 3	P10-24	P10-24	R32



PUMP NO. 2 LEAD - PUMP NO. 1 LAG			
PUMP NO. 1 LEAD - PUMP NO. 2 LAG			
CONTACT			
1	2	1	X
		2	X
3	4	3	X
		4	X
5	6	5	X
		6	X
7	8	7	X
		8	X

CONTACT DEVELOPMENT

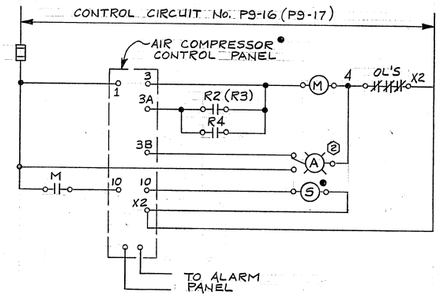
NOTES

1. THE MOTOR CONTROL CENTER MANUFACTURER SHALL USE THE NUMBERS SHOWN ON THE SCHEMATIC WIRING DIAGRAMS ON THIS SHEET ON TERMINAL BLOCKS OF THE STARTER UNITS. THE CONTRACTOR SHALL IDENTIFY ALL CONTROL CONDUCTORS INSTALLED WITH THESE SAME NUMBERS BY THE USE OF BRADY SELF-STICKING TAGS. THE IDENTIFICATION SHALL ALSO INCLUDE THE CIRCUIT NUMBER WHERE MORE THAN ONE CIRCUIT IS IN THE SAME ENCLOSURE
2. ALL CONTROL WIRES INSTALLED BY THE CONTRACTOR SHALL BE COLOR CODED AS FOLLOWS,

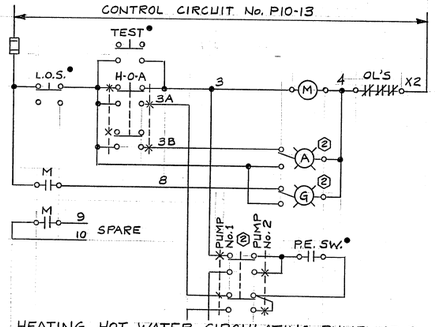
WIRE DESIGNATION	COLOR
1, 1A	BLACK
2	RED
3	BLUE
X2	WHITE
8	YELLOW
10	ORANGE
OTHERS	AS APPROVED.

LEGEND.

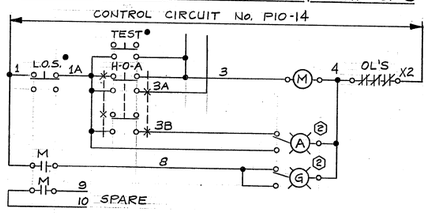
- • AT MOTOR
- (2) AT CONTROL PANEL NO.2
- (1) AT UNITIZED CONTROL PANEL UCP-1
- (2) AT UNITIZED CONTROL PANEL UCP-2



AIR COMPRESSOR No.1 (No.2)



HEATING HOT WATER CIRCULATING PUMP CP-3



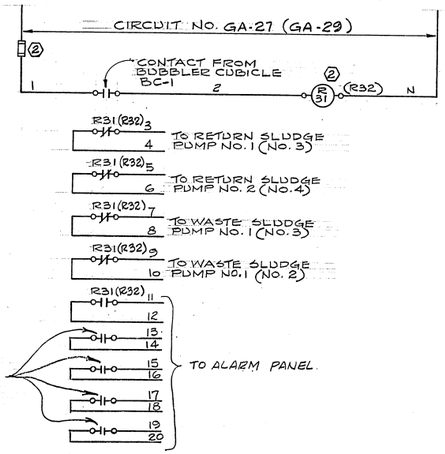
HEATING HOT WATER CIRCULATING PUMP CP-4

ITEM	CKT. NO.	CONTROL CKT. NO.	RD
RETURN SLUDGE PUMP NO. 1	P9-21	P9-21	R31
RETURN SLUDGE PUMP NO. 2	P9-22	P9-22	R31
RETURN SLUDGE PUMP NO. 3	P10-21	P10-21	R32
RETURN SLUDGE PUMP NO. 4	P10-22	P10-22	R32

ITEM	CKT. NO.	RC
FINAL TANK COLLECTOR DRIVE NO. 1	P9-2	R19
FINAL TANK COLLECTOR DRIVE NO. 2	P9-3	R20
FINAL TANK COLLECTOR DRIVE NO. 3	P9-4	R21
FINAL TANK COLLECTOR DRIVE NO. 4	P9-5	R22
FINAL TANK COLLECTOR DRIVE NO. 5	P10-2	R23
FINAL TANK COLLECTOR DRIVE NO. 6	P10-3	R24
FINAL TANK COLLECTOR DRIVE NO. 7	P10-4	R25
FINAL TANK COLLECTOR DRIVE NO. 8	P10-5	R26
FINAL TANK COLLECTOR DRIVE NO. 9	P9-6	R27
FINAL TANK COLLECTOR DRIVE NO. 10	P9-7	R28
FINAL TANK COLLECTOR DRIVE NO. 11	P10-6	R29
FINAL TANK COLLECTOR DRIVE NO. 12	P10-7	R30

NORMALLY OPEN AUXILLIARY CONTACT AND CONNECTION TO SOLENOID VALVE ADDED TO SCHEMATIC DIAGRAM FOR NO. 3 WATER PUMP NO. 1, CIRCUIT NO. P9-23; NO. 3 WATER PUMP NO. 2, CIRCUIT NO. P10-23; AIR COMPRESSOR NO. 1, CIRCUIT NO. P9-16; AND AIR COMPRESSOR NO. 2, CIRCUIT NO. P9-17.

RETURN SLUDGE PUMP NO. 1 & NO. 2 SELECTOR SWITCH (2)
(PUMP NO. 3 & NO. 4 SIMILAR)



NO.	DATE	DESCRIPTION	BY	APPR'D
1	5-12-81	AS BUILT	E.E.E.	

REVISIONS

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CT&A Frederick N. Van Kirk PARTNER
EBMUD E E Rose MGR. WPCD

DESIGNED JGC
DRAWN RN
CHECKED JPG

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

SPECIFICATION NO. SD 120
SCHEMATIC DIAGRAMS I
M.C.C. PANEL 'P9' AND 'P10'

DATE JAN, 1973 SCALE NONE
DRWG. NO.
CT-E-251

71100

FIXTURE SCHEDULE

FLUORESCENT

TYPE	MANUFACTURER	CATALOG NUMBER	LAMP SIZE	MOUNTING	REMARKS
A	DAYBRITE	R-41252-4	2-F40WW	STEM	WITH 277 V. BALLAST
B	DAYBRITE	R-41252-4	2-F40 WW	STEM	
C	DAYBRITE	4F21-718-4	2-F40WW	RECESSED	WITH PLASTER RING
D	DAYBRITE	45257-4	2-F40 WW	SURFACE/STEM	
E	ALKCO	SS-116-SW	2-T5-8W	SURFACE	
F	DAYBRITE	R41241	2- F40 WW	STEM	

FIXTURE SCHEDULE

INCANDESCENT

TYPE	MANUFACTURER	CATALOG NUMBER	LAMP SIZE	MOUNTING	REMARKS
A	ART METAL	3356 AA	60A	RECESSED	W/321PR PLASTER FRAME
B	ART METAL	3357 AA	100 A	RECESSED	W/323 PR PLASTER FRAME
C	ART METAL	3559 AA	2-75A	WALL MTD	W/GROUNDED OUTLET
D	MC PHILBIN	32-84	2-60 A	CEILING	
E	HUBBELL	SEE REMARKS	75 PAR/FL	SURFACE	SEE DETAIL E-243-1
F	HUBBELL	SEE REMARKS	150 PAR/FL	SURFACE	SEE DETAIL E-243-1
G	PRESCOLITE	39 HF	75 R30/FL	RECESSED	
H	PRESCOLITE	1058-730	150R40/FL	RECESSED	
I	PRESCOLITE	1172-910	75 R30/FL	WALL	WITH BLACK SATIN FINISH
J	PRESCOLITE	1152-910	75 R30/FL	WALL	WITH BLACK SATIN FINISH INSTALL INVERTED
K	APPLETON	VGA1075	100 A	WALL	
L	PRESCOLITE	WB-24	100 A	WALL	
M	CROUSE-HINDS	48092	H33-1GL/C	SEE REMARKS	WITH 480 V. BALLAST SEE DETAIL E-234-S & E-238-S
N	CROUSE-HINDS	2830-357	H37-5KC/C	SEE REMARKS	WITH 480 V. BALLAST SEE DETAIL E-238-3
P	APPLETON	VGA2075G	150 A	WALL	VAPORGARD
R	CROUSE HINDS	VXHF25GRD	150A	CEILING	
S	HOLOPHANE	06343	150A	POST TOP	SEE DETAIL E-278-1
T	HOLOPHANE	488-120	175 W	WALL	
U	STONCO	533-175MM	H39KC 175W J17SDX	WALL	CEILING MOUNTED

RECEPTACLE SCHEDULE

TYPE	MANUFACTURER	RECEPTACLE CAT. NO.	PLATE CAT. NO.	RATING	USE
A	HUBBELL	2620	7420 WP	240 V	30A,1Φ
B	HUBBELL	9325	9326	120/240V	50A,1Φ 3W

EXIT FIXTURE SCHEDULE

TYPE	MANUFACTURER	CATALOG NUMBER	LAMP SIZE	MOUNTING	REMARKS
A	ALKCO	RPW-110-E	1-TS-8W	WALL	
B	ALKCO	RPC-110-E	1-TS-8W	CEILING	

ELECTRICAL SYMBOLS

- A-1a — INCANDESCENT OR MERCURY VAPOR FIXTURE. LETTER INDICATES TYPE AS SPECIFIED OR SHOWN IN FIXTURE SCHEDULE ON CONTRACT DRAWINGS. (A-1a INDICATES CIRCUIT NO. 1 FROM PANEL "A" ON SWITCH LEG "a".)
- A-10c — BRACKET MOUNTED INCANDESCENT FIXTURE. (DITTO FOR DESIGNATION.)
- A-12b — FLUORESCENT FIXTURE. (DITTO FOR DESIGNATION.)
- AB SL — STREET LIGHT STANDARD SEE DRWG. NO. CT-ES-4, AB DESIGNATES PHASE CONNECTION.
- LUMINAIRE POLE MOUNTED. FOR POLE TYPE SEE FIXTURE SCHEDULE. INSTALL RECEPTACLES AND SWITCHES OF THE TYPE AND WHERE INDICATED ON THE CONTRACT DRAWINGS.
- BATTERY POWERED EMERGENCY LIGHT AS SPECIFIED.
- EXIT LIGHT- SEE SCHEDULE BELOW
- $ — SINGLE POLE TUMBLER SWITCH
- $2 — TWO POLE TUMBLER SWITCH
- $3 — THREE-WAY TUMBLER SWITCH
- $4 — FOUR-WAY TUMBLER SWITCH
- $T — MANUAL MOTOR STARTING SWITCH WITH TERMINAL OVERLOAD PROTECTION
- $MC — MOMENTARY CONTACT SWITCH
- CONDUIT EXPOSED
- CONDUIT CONCEALED IN CEILING OR WALL.
- CONDUIT IN FLOOR SLAB OR UNDERGROUND.
- HOMERUN TO PANEL BOARD OR AS INDICATED.
- UNDERFLOOR DUCT AND JUNCTION BOX. NUMBER OF PARALLEL LINES INDICATES NUMBER OF DUCTS.
- UNDERGROUND DUCT LINE: SIZE - 4" UNLESS NOTED, NUMBER AS INDICATED. SIZE AND NUMBER OF CONDUCTORS AS NOTED ON CONTRACT DRAWINGS.

CONDUIT NOTES

1. ANY CONDUIT WITHOUT FURTHER DESIGNATION INDICATES A TWO-WIRE CIRCUIT. GREATER NUMBER OF WIRES ARE INDICATED AS FOLLOWS: —|—|— (3 WIRES) —||— (4 WIRES) ETC. LONGER HATCH MARK INDICATES NEUTRAL CONDUCTOR.
2. CONDUITS INBEDDED IN STRUCTURAL CONCRETE (FLOOR SLABS, ETC.) SHALL BE SO LOCATED SO AS NOT TO UNDULY IMPAIR THE STRENGTH OF THE CONSTRUCTION, AND SHALL BE SPACED NOT LESS THAN TWO TIMES THE CONDUIT O.D. BETWEEN ADJACENT CONDUITS EXCEPT WHERE CROSSING OR OTHERWISE APPROVED BY THE ENGINEER.

- SINGLE CONVENIENCE OUTLET
- DUPLEX CONVENIENCE OUTLET
- FLOOR SINGLE CONVENIENCE OUTLET
- FLOOR DUPLEX CONVENIENCE OUTLET
- C 9 — CLOCK AND CLOCK HANGER OUTLET, INSTALL 8 FT. ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. NUMBER INDICATES DIAMETER
- A G — SINGLE SPECIAL PURPOSE OUTLET. SUBSCRIPT INDICATES TYPE OF RECEPTACLE AND USAGE.
- A G — FLOOR OUTLET. (DITTO FOR DESIGNATION)
- LIGHTING PANEL
- POWER PANEL
- TERMINAL CABINET OR PULL BOX AS INDICATED.
- OUTLET OR JUNCTION BOX
- (S) — ELECTRIC MOTOR, NUMBER INDICATES HORSEPOWER.
- MAGNETIC MOTOR STARTER
- SAFETY SWITCH, 3P-30A., 600 V., UNFUSED UNLESS OTHERWISE NOTED.
- "STOP" PUSHBUTTON STATION WITH L.O. PROVISION UNLESS OTHERWISE NOTED
- "START-STOP" PUSH BUTTON STATION
- "FAST-SLOW-STOP" PUSH BUTTON STATION UNLESS OTHERWISE NOTED.
- SS — SELECTOR SWITCH, "HAND-OFF- AUTO" UNLESS OTHERWISE NOTED.
- L — LIMIT SWITCH
- TS — TORQUE SWITCH
- PS — PRESSURE SWITCH
- FS — FLOAT SWITCH
- VS — VACUUM SWITCH
- ES — ELECTRIC-PNEUMATIC SWITCH
- F — FLOW SWITCH
- UH — UNIT HEATER
- T — TEMPERATURE ACTUATED DEVICE
- T — ROOM THERMOSTAT
- S — SOLENOID VALVE
- D — DAMPER MOTOR
- M — MOTORIZED OR MODULATING VALVE
- R — RELAY
- H — HORN
- ALARM BELL

- TELEPHONE OUTLET
- FLOOR TELEPHONE OUTLET
- TELEPHONE CABINET
- —T— TELEPHONE SYSTEM CONDUIT
- INTERPHONE OUTLET
- FLOOR INTERPHONE OUTLET
- INTERPHONE CABINET
- —IC— INTERPHONE SYSTEM CONDUIT

- P — SIGNIFIES WITH PILOT LIGHT
- VT — SIGNIFIES VAPOR TIGHT.
- WP — SIGNIFIES WEATHERPROOF
- EP — SIGNIFIES EXPLOSION PROOF
- RV — SIGNIFIES REDUCED VOLTAGE
- REV — SIGNIFIES REVERSING
- 2S — SIGNIFIES TWO SPEED
- LO — SIGNIFIES "LOCK-OUT" IN STOP POSITION
- SOV — SIGNIFIES SOLENOID VALVE

SYMBOLS APPLYING TO SINGLE LINE WIRING DIAGRAM

- V — VOLTMETER AND POLYPHASE SWITCH.
- A — AMMETER AND POLYPHASE SWITCH
- WM — WATTHOUR METER
- COMBINATION MANUALLY OPERATED AIR CIRCUIT BREAKER AND MAGNETIC MOTOR STARTER
- MANUALLY OPERATED AIR CIRCUIT BREAKER
- TRANSFORMER
- GROUND CONNECTION TO SUITABLE WATER PIPE OR GROUND RODS AS INDICATED OR SPECIFIED.
- PRESSURE SWITCH
- TEMPERATURE SWITCH
- FLOAT SWITCH
- FLOW SWITCH
- LIMIT SWITCH

INSTRUMENTATION LEGEND

- FI — FLOW INDICATOR
- FX — FLOW TRANSMITTER
- U/S — ULTRASONIC GENERATOR

GENERAL NOTES

1. WHEN INSTALLED BELOW GRADE OR EXPOSED TO THE WEATHER, ALL SWITCHES, PUSHBUTTON STATIONS, SELECTOR SWITCHES, PULL AND JUNCTION BOXES ETC. SHALL BE VAPOR-TIGHT AND ALL RECEPTACLES SHALL BE WEATHERPROOF, UNLESS OTHERWISE NOTED OR SPECIFIED, AND ALL SHALL BE INSTALLED WITH CAST METAL, STAINLESS STEEL OR MALLEABLE IRON BOXES AND COVERS WITH GASKETS.
2. EQUIPMENT FURNISHED UNDER OTHER THAN THE ELECTRICAL SECTION THAT REQUIRES WIRING SHALL BE WIRED AND CONNECTED IN ACCORDANCE WITH THE ELECTRICAL SECTION OF THE SPECIFICATIONS, THE CONTRACT DRAWINGS AND/OR AS SHOWN ON THE MANUFACTURES SHOP DRAWINGS.

REGISTERED PROFESSIONAL ENGINEER — FREDERICK H. VAN EMIN — No. C 14286 — CIVIL ENGINEER — STATE OF CALIFORNIA

NO.	DATE	REVISIONS	BY	APPR'D
1	8-21-61	AS BUILT	E.E.E.	

CONSOER, TOWNSEND & ASSOCIATES
CONSULTING ENGINEERS
CHICAGO, ILLINOIS SAN JOSE, CALIFORNIA

APPROVED
CT&A Frederick H. Van Emin PARTNER
EBMUD E.E. Rose MGR. WPCD

DESIGNED PAT
DRAWN PAT
CHECKED JPG

EAST BAY MUNICIPAL UTILITY DISTRICT
SPECIAL DISTRICT NO. 1
OAKLAND, CALIFORNIA

WATER POLLUTION CONTROL PLANT
ADDITIONS AND IMPROVEMENTS

SPECIFICATION NO. SD 120
SYMBOLS AND SCHEDULES
ELECTRICAL

DATE JAN. 1973 SCALE NONE
DRWG. NO. CT-E-284

71100

ITEM NO. 2 - BUTTERFLY GATES AND OPERATORS

1. Gates.

This item shall include the furnishing and installing of 8 mixed liquor channel and 12 final settling tank influent channel butterfly gates. Each gate shall be furnished and installed complete with all inserts, guides, operating stems, operating floorstands, operators, and other appurtenances or accessories specified or required for a complete operating installation.

The gate body shall be of fabricated structural steel ASTM A36, with rounded corner sections of the bottom not over 12 inch radius. Gate construction and appurtenances shall be of a design to maintain tight shut-off against maximum head conditions. When installed, the top of the gate frame shall be flush at the top of channel walls and abutting walkways.

The gate disc shall be fabricated of carbon steel ASTM A36 with a stainless steel 18-8 Type 304 seating edge at its periphery wherever the disc comes in contact with the gate seat. The general shape of the fabricated disc shall be of a streamline shape to prevent turbulence in the full open position and to minimize head loss. The disc shall include properly spaced internal ribbing as required to keep flat plate stresses below allowable and to prevent buckling. The stainless steel disc edge shall be hand dressed for smooth seating into the resilient seat. The gate disc shall rotate 90 degrees from the full open to the closed position.

The gate shafts shall be of stainless steel 18-8 Type 304 extending into the disc for a minimum distance of at least 2 shaft diameters. The shafts shall be securely locked to the disc by means of taper pins. The drive-side taper pinning shall be designed to carry full, unbalanced, torque under all operating conditions of head and flow without any play or flutter.

The bearings shall be of sintered bronze, and shall be self-lubricated of the permanent type requiring no addition of lubricant for the life of the gate.

Each gate assembly shall be furnished with a two-way thrust bearing assembly designed to hold the gate disc centered in the gate seat under all conditions of mounting and all angles of disc travel. The thrust bearing shall be of a design which permits adjustment in the field; however, the thrust bearing shall be locked in place by pinning the screw assembly in the shop. The thrust bearing position as pinned shall be the same position of disc which passed the factory leak test.

Gate seats shall be field adjustable. The gate seat shall be of a design that permits removal and replacement in the field without removing gate disc or shaft or removal of the gate from its mounting. The provision for adjustability shall be such that seat adjustment may be effected from the downstream side of the disc with the disc in the closed position and the upstream side pressurized. Provision for seat adjustment shall take the form of heavy, nickel cast iron retaining segments which lock the seat rigidly in position after adjustment and which will effect a minimum of 1/8 inch change in seat height at equal increments around the periphery. Adjustability dependent upon shimming between the seat and gate body is not acceptable.

All parts used in the equipment furnished under this sub-item, including gate disc, gate shaft, gate bearing, etc., shall be designed to withstand maximum hydrostatic pressure developed for this installation and all hydrodynamic forces developed during the operation of gate from any one position to any other position. Design stresses shall not exceed 1/5 of the ultimate strength of the material used or 1/3 of the yield point, whichever is lower.

Each gate shall be given a shop leak test at the maximum head that may occur during plant operation. The leak test shall be conducted using water on one side of the gate. Any dripping of water will be considered a leak area and the seat must be adjusted to seal these points before the gate is accepted.

2. Manual Operators.

Each mixed liquor channel butterfly gate shall be designed for shaft connection to a manual gearhead operator and shall be provided with a shaft bearing beyond the stuffing box gland. The housing for this bearing shall be rigidly attached to the gate body or may be fitted into the gate operator assembly, which in turn shall be rigidly attached to the top of the gate frame. Dust covers shall be provided to protect access openings in the pedestal and operator.

3. Motorized Operators.

All final settling tank influent channel gates shall be furnished with electric operators which shall be mounted above the gate as indicated on the Contract Drawings. Operators shall be designed for maximum torque required when operating with a maximum liquid head on one side and no head on the opposite side. Each operator shall include a control module, motor, gearing, limit and torque switches, a handwheel for manual operation on emergency, and a position indicator.

A control module shall be furnished with each motor operated gate and shall be an electronic solid state type with proportional power

variation to control the speed of the DC motor. The control module shall be mounted within the operator limit switch housing and shall consist of an error detection circuit powered by a closely regulated DC power supply and a thyristor section to power the motor. The control unit shall be designed to maintain existing valve position on signal failure.

The solid state control shall be capable of accepting a 4-20 ma DC current signal transmitted from a metering and instrumentation panel furnished and installed under Specification Section 7-C-A, through multi-conductor cables furnished and installed under Section 7-C-C. An automatic-hand, two-position selector switch shall be provided to disconnect the automatic signal during manual operation. The error detection section of the solid state control shall compare the input signal to the feedback signal and if a difference is detected it shall cause the motor to move the gate to the appropriate position at a speed proportional to the amount of error. There shall be no bumping or hunting in the gate operation.

The gate operator shall include a DC motor operating from a 208 volt AC single phase supply and shall be designed for maximum proportional gate control over the entire torque range. Motors shall be Type A rated at 75 degrees C rise for continuous modulating service.

The power gearing shall consist of generated helical gears of heat treated steel and worm gearing. The worm shall be carborized and hardened alloy steel with the threads ground after heat treating. The worm gearing shall be alloy bronze accurately cut with a hobbing machine. All power gearing shall be grease lubricated. Ball or roller bearings shall be used throughout.

Limit switches and gearing shall be an integral part of the gate control, and shall be an intermittent type, totally enclosed in its own gear case, grease lubricated to prevent dirt and foreign matter from entering the gear train and shall be made of bronze. Limit switches shall be an adjustable type capable of being adjusted to trip at any point between fully opened valve and fully closed valve.

The gate control shall be provided with a minimum of two rotor type gear limit switches, one for opening and one for closing. The rotor type gear limit switch shall have two normally open and two normally closed contacts per rotor. Geared limit switches must be geared to the driving mechanism and in step at all times whether in motor or manual operation. Contacts shall have a wiping action and shall be rated at 20 amps, 110 volts.

The gate control shall be equipped with a double torque switch. The torque switch shall be adjustable and shall be responsive to load encountered in either direction of travel. It shall operate during the complete cycle without auxiliary relays or devices to protect the gate, should excessive load be met by obstructions in either direction of travel.

All electric motor operators shall include a handwheel permanently attached for manual operation. The handwheel shall not rotate during electric operation but must be responsive to manual operation at all times except when being electrically operated. The motor shall not rotate during hand operation, nor shall a fused motor prevent manual operation. When in manual operating position, the unit shall remain in this position until motor is energized at which time the gate operator shall automatically return to electric operation and shall remain in motor operation until handwheel operation is desired. This movement from motor operation to handwheel operation shall be accomplished by a positive declutching lever which shall disengage the motor and motor gearing mechanically but not electrically. Hand operation must be reasonably fast. It shall be impossible to place the unit in manual operation when the motor is running.

Each motor operator which is installed outside shall be provided with a thermostatically controlled space heater for condensation protection.

4. Cylinder Operators and Controls

Each cylinder operator shall be of the air cylinder type with hydraulic damper suitable for variable speed operation in both directions and timed closing, and shall comprise an air cylinder, oil cylinder, oil reservoir, timing valves and appurtenances.

Air cylinder bodies shall be of hard drawn brass with head and cap ends of ferrous protected metal. Pistons shall be of steel, chrome plated. Piston rods shall be stainless steel with chrome plating .005" thick. Piston rod bushings shall be bronze pilot fitted. Cylinder rods shall be equipped with dirt wiper. Cylinders shall be equipped with rod seals of the non-adjustable wear compensating type.

The cylinders shall be mounted on the valve bodies, and shall be designed to operate the valves at the unbalanced pressures specified with compressed air at 80 psi and shall be tested in the manufacturer's shop at a pressure of 150 psi.

Oil cylinders for use with the above air cylinders shall be comparable in construction to that of the air cylinders, and both the air and oil cylinders shall be constructed and tested in accordance with AWWA Specification C504-70.

The oil cylinders shall be mounted in tandem with the air cylinder operators.

The tapped openings in the air and oil cylinder heads for control piping shall be the largest practical size tapped for American Standard pipe threads in accordance with ASA Spec. 82. 1.

The cylinder operators shall be equal to Air-Draulic operators manufactured by the Henry Pratt Co.

If the air and oil cylinders are of the swiveling type, a length of hose shall be provided at each connection. The hoses shall be 4-ply for 1" and larger, and 3-ply for smaller sizes, made of a quality rubber and reinforced with medium weight square woven duct wrapped at a 45 degree angle, equal to "Deluge" water hose.

The cylinder operated valves shall be controlled by 4-way control valves together with necessary piping and speed controls, all factory assembled, piped, and mounted on the prime valves and cylinder operator assembly.

ITEM NO. 3 - MAJOR BUTTERFLY VALVES AND OPERATORS

This Item shall include the furnishing and installation of all major **butterfly valves complete with operators and appurtenances, required on this Contract. Butterfly valves shall be provided in the quantity, types and sizes indicated on the Contract Drawings or listed in the Butterfly Valve Schedule included herein.**

Butterfly valves and operators shall be furnished in conformance with AWWA C504. All valves shall be short body with ends suitable for victaulic type couplings or with flanges as indicated on the Drawings. Shaft seals shall include a cast iron stuffing box and pull-down packing gland of cast bronze. Bodies and discs of valves shall be cast iron conforming to ASTM A45, Class 40.

Motor operators for butterfly valves shall be the same as those specified for butterfly gates in Item No. 2 above.

MAJOR BUTTERFLY VALVE SCHEDULE
SD-120

No. Reqd.	Location	Size	Service	Mat. Head	Operator
8	South Gallery	48"	Settled Sewage	12.5'	Manual
8	South Gallery	42"	Settled Sewage	12.5'	Modulating Electric
2	South Gallery	30"	Return Sludge	15'	Manual
4	Operations Center	30"	Return Sludge	15'	Manual
4	Operations Center	30"	Return Sludge	15'	Cylinder
12	Final Tanks	30"	Effluent	6'	Manual
8	South Gallery	18"	Return Sludge	15'	Manual
8	South Gallery	18"	Return Sludge	15'	Modulating Electric
12	Operations Center	16"	Final Tank Drain	18'	Manual
12	Operations Center	16"	Activated Sludge	18'	Modulating Electric
2	Operations Center	14"	No. 3 Water	80'	Manual
7	Operations Center	10"	Waste Sludge	65'	Manual
3	Oxygenation Tanks	8"	L.P. Air	4 psi	Manual
2	Operations Center	20"	#3 Water	20'	Electric w/floor stand

The glass lining shall be in accordance with the manufacturer's standard tolerances for sewage, continuity and glass. Pinholes, crazing or fishscales, which substantially expose the metal substrate, shall be cause for rejection of the piece. Sizes, details, handling, stacking, etc., shall be in accordance with the manufacturer's recommendations.

Expansion Joints - Additional expansion provisions shall not be required on lines utilizing victaulic connections except where such expansion joints are shown on the Contract Drawings. Where flanged connections and fittings are used, provision shall be made for one-inch expansion per 100 feet of pipe run. Such expansion shall be provided by the use of self equalizing, controlled-flexing, expansion joints with flanged connections. Anchors and guides shall be furnished to properly control the direction of expansion.

3. Grit Piping Systems

Pipe - Pipe shall be cast iron, glass lined, thickness class 22 with flanged or Victaulic connections

Fittings - Fittings shall be either cast iron, glass lined, 150 psi rating with flanged connections or victaulic malleable iron, glass lined.

Valves - Valves shall be eccentric plug type with flanged connections.

Glass Lining - Glass lining shall be as described for Sludge and Scum Piping.

4. Settled Sewage, Return Sludge, and Vent Piping Systems

Pipe - Pipe shall be welded steel pipe conforming with AWWA C202. The pipe shall be designed for a working pressure of 20 psi and a test pressure of 40 psi, and shall be Grade B steel with a minimum shell thickness of 3/8 inch. Ends of pipe sections shall be banded for field butt welding or shall have victaulic grooved connections with full pipe end separation. Flanges shall be provided where required for connection to meters, valves or equipment. Inside surfaces shall be shop coated per System D, Section 8-C, Painting, except that primer will not be required. A dry film thickness of 16 mils shall be applied.

Fittings - Fittings shall be fabricated in conformance with ASTM A234, Grade WPB. Connections shall be welded, flanged or victaulic.

EXHIBIT H
Forms

The following reference documents provide additional information about requirements in this Agreement.

Exhibit	Reference Documents Title
H1	Submittal Log
H2	O&M Manual Review Checklist
H3	Maintenance Summary Form
H4	Maintenance Summary Database Template
H5	Equipment Record
H6	Equipment Record Database Template
H7	Field Functional Test Data Form
H8	Manufacturer's Certificate of Proper Installation
H9	System Outage Request
H10	Instructor Qualification Checklist
H11	Training Material Review Checklist

EBMUD

SUBMITTAL LOG

SPEC NO.	PROJECT TITLE	DATE
SD-4XX	xxxxxxxx	

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)
CMIS Submittal No.	Spec. Section	Spec Article	Drawing No.	Dwg. Section/ Detail No.	Submittal Title/Description	Type of Submittal	Planned Submit Date	Submit Needed By	Actual Submit Date	Approval Needed By	Material Needed By	Date Returned by EBMUD	Submittal Status	Reviewer	Notes
8	03 11 00	1.3A	2116-S-010	Section A	Reservoir Roof Shoring Design & Calculations	Design Data	09/30/12	09/30/12	10/25/12	10/30/12	N/A	11/15/12	NET	PF	CA PE Stamped
12	33 12 16.11	1.2B, 1.a.1-3	2116-M-012	Item #5	Resilient Seated Gate Valves	Product Data	12/19/12	12/19/12	01/03/13	01/17/13	N/A	01/20/13	RAR	MT	NSF Cert required
15	01 29 00	1.2A	N/A	N/A	Initital Subcontractor Payment Report P-47	Progress Payment	08/15/12	08/15/12	09/09/12	09/23/12	N/A	09/16/12	MCN	TK	Update and submit monthly on the 25th
22	23 09 33	1.2A	2116-E-002, 202 R1	Section A & B	HVAC Control Panel	Product Data	04/15/12	04/15/12	04/30/12	05/15/12	N/A	05/12/12	RAR	PG	Clearly mark proposed enclosure
25	07 61 14	2.2.B	1234-A-012		Roof Panels	Samples	06/12/12	06/12/12	06/15/12	06/22/12	6//22/12	06/30/12	NET	PMF	Morin 2345, Shale Grey selected

O&M MANUAL REVIEW CHECKLIST

(Manufacturer's Representative to complete one form per submittal)

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

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

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

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

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

TYPICAL MAINTENANCE SUMMARY FORM

(Use as many pages as necessary. MS Word file available upon request)

1. Equipment Name: _____
2. Manufacturer: _____
3. Identification Numbers:

   Tag: _____

   Model: _____

   Serial: _____

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

   _____

5. Manufacturer's Local Representative:

   Name: _____

   Telephone: _____

   Address: _____

6. LUBRICANT LIST

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

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

8. Equipment Replacement Cost [$] _____

9. MAINTENANCE REQUIREMENTS

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

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

_____ _____

(Manufacturer's Representatives Signature) (Date)

MAINTENANCE SUMMARY DATABASE TEMPLATE

Columns A through H:

	A	B	C	D	E	F	G	H
1	**MAINTENANCE SUMMARY DATABASE TEMPLATE (DRAFT)**							
2								**Manufacturer's Local**
3	**Equipment ID No.[1]**	**Equipment Description**	**Manufacturer**	**Nameplate Data[2]**	**Units**	**Weight (lbs)[3]**	**Name**	**Company**
4	WRA-MFS-PMP-101-CFG	MF Feed Pump No. 1	Goulds	100	hp	250	James Beam	Wastewater Equipment Sales
5								
6								
7	WRA-SE-TNK-101	Influent Tank	Pacific Tank	1,000,000	gallons	NA	Jack Daniels	Big Tanks for Sale
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19	**NOTES**							
20	[1] Equipment numbers may be found in the instrumentation ("I") drawings for the project. All equipment numbers begin with an area code prefix of "W__" followed by the alphanumeric designations shown on the drawing. Please inc							
21	[2] Nameplate data rating for the equipment may be in a variety of units including horsepower, voltage, speed, etc. Please include units in the adjacent column.							
22	[3] For equipment items over 100 lbs, please provide weight.							
23	[4] List briefly each maintenance operation required and refer to specific information in manufacturer's standard maintenance manual, if applicable. **Multiple operations or tasks should be listed individually under a single piece**							
24	[5] Provide information for number of times the maintenance task is to be repeated. List the frequency (number of times in a given period) and the duration (period units, e.g., per day, week, month) in separate columns adjacent to or							
25	[6] Include recommendations regarding what spare parts, if any, should be kept on the job.							

Columns I through P:

	I	J	K	L	M	N	O	P
1								
2	**Representative**		**Maintenance Requirements**					
3	**Phone**	**e-mail**	**Maintenance Task[4]**	**Frequency[5]**	**Duration[5]**	**Lubricant**	**Comments**	**Spare parts[6]**
4	408.926.2258	jbeam@wwequip.com	(1) Grease main bearing	1	month	Mobil EZ Greazy	Your hands will get dirty	Main bearing
5			(2) Check oil fill level	2	week	Mobil Synthetic No. 2	Refill as necessary to maintain level between indicated markers.	
6			(3) Inspect for noise and vibration	1	month	NA		
7	510.256.9632	jdaniels@bigtanks.com	Inspect exterior coating	1	year		Look for flaking and chipping	can of spray paint
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20	lude the W__ prefix with the equipment numbers.							
21								
22								
23	**of equipment, see example above.**							
24	e another.							
25								

APPENDIX A

EQUIPMENT RECORD

Equipment Number _____

Equipment Name _____

Description _____

Location _____

Manufacturer _____

Address _____

Representative _____

Phone Number _____

Date of Purchase _____

Make _____

Type _____

Quantity _____

Serial Number _____

Size _____

Model _____

Electrical _____

Power Voltage _____ Control Voltage _____

Mechanical _____

Weight _____

Dimensions _____

Other _____

Motor Size _____ Type _____

Motor Phase/Frequency _____

Speed Control _____

Rated Capacity _____ Peak Capacity

Maximum Pump Speed _____

Pump Rotation _____ Impeller Dia _____

Instrumentation Range _____

Operator Type _____

Other _____

EQUIPMENT RECORD DATABASE TEMPLATE

Columns A through H:

	A	B	C	D	E	F	G	H
1	EQUIPMENT RECORD DATABASE TEMPLATE (DRAFT)							
2								
3	**Equipment Name**	**Equipment No.**	**Description**	**Manufacturer**	**Serial Number**	**Location**	**Representative**	**e-mail address**
4	MF Feed Pump No. 1	WRA-MFS-PMP-101-CFG	Pumps secondary effluent to Pall MF units	Goulds	1000-03-04-099	MF Feed Pump Station	Wastewater Equipment Sales	jbeam@wwequip.com
5	MF Feed Pump No. 2	WRA-MFS-PMP-201-CFG	Pumps secondary effluent to Pall MF units	Goulds	1000-03-04-099	MF Feed Pump Station	Wastewater Equipment Sales	jbeam@wwequip.com
6	MF Feed Pump No. 3	WRA-MFS-PMP-301-CFG	Pumps secondary effluent to Pall MF units	Goulds	1000-03-04-099	MF Feed Pump Station	Wastewater Equipment Sales	jbeam@wwequip.com
7								
8	MF Filtrate Flow Meter	WRA- MFF-FE-171	Measures MF Filtrate Flow	Rosemount	2000001	Membrane Building	Wastewater Equipment Sales	jbeam@wwequip.com
9								
10								

Columns I through V:

	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1														
2								**Power Voltage**	**Control Voltage**		**Weight**		**Units**	**Motor Size**
3	**Phone**	**Date of Purchase**	**Make**	**Type**	**Size**	**Model**	**Electrical**	**(volts)**	**(volts)**	**Mechanical**	**(lbs)**	**Dimensions**	**(ft or in)**	**(hp)**
4	408.926.2258	2/1/2009	Horizontal split-case	centrifugal	2350 gpm	No. 1000	NA	480	NA	NA	250	2 x 3 x 2	ft	100
5	408.926.2258	2/1/2009	Horizontal split-case	centrifugal	2350 gpm	No. 1000	NA	480	NA	NA	250	2 x 3 x 2	ft	100
6	408.926.2258	2/1/2009	Horizontal split-case	centrifugal	2350 gpm	No. 1000	NA	480	NA	NA	250	2 x 3 x 2	ft	100
7														
8	408.926.2258	5/1/2009	NA	Magnetic	8 inches	No. 2000	mV to FIT	24	NA	NA	25	12 x 10 x 10	inches	NA
9														
10														

Columns W through AI:

	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI
1													
2			**Motor**							**Impeller Dia.**			
3	**Type**	**Motor Phase**	**Frequency (Hz)**	**Speed Control**	**Rated Capacity**	**Peak Capacity**	**Capacity Units**	**Max Pump Speed**	**Pump Rotation**	**(inches)**	**Instrument Range**	**Operator Type**	**Other**
4	TEFC	3	60	VFD	2350	2350	gpm	1800	clockwise	25	NA	NA	
5	TEFC	3	60	VFD	2350	2350	gpm	1800	clockwise	25	NA	NA	
6	TEFC	3	60	VFD	2350	2350	gpm	1800	clockwise	25	NA	NA	
7													
8	in-line	NA	NA	NA	NA	3000	gpm	NA	NA	NA	0-3000 gpm	NA	
9													
10													

APPENDIX A

FIELD FUNCTIONAL TEST DATA FORM

EBMUD Project Title: _____ Test Date(s): _____

Equipment Name: _____ Section No.: _____

Tag No.: _____ P&ID No. _____

I. Pretest Documentation/Setup

Documents:	Yes	No	NA	Comments:
a) Interconnection & Loop diagrams provided	☐	☐	☐	
b) Mfr Cert of Proper Installation provided	☐	☐	☐	
c) Technical Submittal complete (contractor to show CMIS record)	☐	☐	☐	
d) Spare Parts provided	☐	☐	☐	
e) Final O&Ms provided (contractor to show final O&Ms)	☐	☐	☐	
f) Pipe pressure tests completed for adjacent piping (contractor to show test records).	☐	☐	☐	

Field Test Setup (Identify any test instrument, special setups like tanks, hoses, etc)**:**

II. Field Functional Test

1. Calibration/Loop/Electrical	Yes	No	NA	Comments:
1.1 Instrument commissioning complete	☐	☐	☐	
1.2 Loop Checks complete	☐	☐	☐	
1.3 Electrical commissioning complete	☐	☐	☐	

2. Installation Check	Pass	Fail	NA	Comments:
2.1 Correct equipment tags have been installed (tags shall match P&IDs)	☐	☐	☐	
2.2 All fields on Asset List Spreadsheet completed for device (Contractor shall show inspector at the time of the test that the asset list is complete and accurate for this system)	☐	☐	☐	

FIELD FUNCTIONAL TEST DATA FORM

EBMUD Project Title: _____ Test Date(s): _____

Equipment Name: _____ Section No.: _____

Tag No.: _____ P&ID No. _____

2.1	☐ ☐ ☐	
3. Operations Check	Pass Fail NA	Comments:
3.1	☐ ☐ ☐	
3.2	☐ ☐ ☐	
4. Controls Check	Pass Fail NA	Comments:
4.1	☐ ☐ ☐	
4.2	☐ ☐ ☐	
5. Alarms Check	Pass Fail NA	Comments:
5.1	☐ ☐ ☐	
5.2	☐ ☐ ☐	
6. Run Check	Pass Fail NA	Comments:
6.1 Operate the system for . System operated as expected, without unexpected noise, or vibration.	☐ ☐ ☐	
7. Other Tests and Checks	Pass Fail NA	Comments:
7.1	☐ ☐ ☐	
7.2	☐ ☐ ☐	

FIELD FUNCTIONAL TEST DATA FORM

EBMUD Project Title: _____ Test Date(s): _____

Equipment Name: _____ Section No.: _____

Tag No.: _____ P&ID No. _____

III. Participants/Witness

Test conducted:

By (signature): _____ Date: _____

Title: _____ Company Name: _____

By (signature): _____ Date: _____

Title: _____ Company Name: _____

EBMUD Witness:

By (signature): _____ Date: _____

Title: _____

MANUFACTURER'S CERTIFICATE OF PROPER INSTALLATION

OWNER:_____ EQPT SERIAL NO.:_____

EQPT TAG NO.:_____ EQPT/SYSTEM:_____

PROJECT NO.:_____ SPEC. & SECTION:_____

I hereby certify that the above-referenced equipment/system has been:

Complete	Not Applicable	
☐	☐	Installed in accordance with Manufacturer's recommendations.
☐	☐	Inspected, checked, and adjusted.
☐	☐	Serviced with proper initial lubricants.
☐	☐	Electrical and mechanical connections meet quality and safety standards.
☐	☐	All system instruments are calibrated.
☐	☐	All applicable safety equipment has been properly installed.

Comments:_____

_____

_____

_____

_____

I, the undersigned Manufacturer's Representative, hereby certify that I am (i) a duly authorized representative of the manufacturer, (ii) empowered by the manufacturer to inspect, approve, and operate the equipment and (iii) authorized to make recommendations required to assure that the equipment furnished by the manufacturer is complete and ready for startup and operations. I further certify that all information contained herein is true and accurate.

Date: _____

Manufacturer: _____

By Manufacturer's Authorized Representative: _____
(Authorized Signature)

SYSTEM OUTAGE REQUEST

File No.:

ATTACH THIS REQUEST TO A SAFE WORK NOTICE

DATE PREPARED	PROJECT TITLE	REQUEST NO.
REQUESTED BY:	CONTRACTOR	CC:

DESCRIPTION OF WORK TO BE PERFORMED:

WORK BY OTHERS:

SYSTEMS TO BE SHUT DOWN:

ANTICIPATED SHUT DOWN	Requested	Revised
Date	_____	_____
Time	_____	_____
Duration	_____	_____

COMMENTS

CONTACT PERSON(S)	Name/Phone/Pager	[ ] Work is on Critical Path [ ] Regulatory Agency Notification Required
SSD		[ ] "Dry Run" Required [ ] Maintenance Approval of Start-Up Required
Contractor		**APPROVAL**
		Signature Date/Time
Operations		SSD
Maintenance		WTD (outage procedure attached)

SYSTEM SHUTDOWN - FINAL APPROVAL

Status	Initial	Date/Time		Signature Date/Time
Contractor is Prepared to Begin Work			The Described System(s) are Shutdown and LOTO Secured	Operations/Maintenance
"Dry Run" Has Been Satisfactorily Completed			Approval to Start Construction Given	Inspector
Regulatory Agency Has Been Notified				
WTD Has Confirmed that All systems Are "Go"			I Certify that System(s) are Shutdown and LOTO Secured	Contractor

Remarks:

SYSTEM STARTUP - APPROVAL

	Signature Date/Time
Construction is complete and the system(s) are ready to be started up. LOTO removed.	Contractor
	Inspector
	Operations
	Maintenance

Remarks:

INSTRUCTOR QUALIFICATION CHECKLIST

Date: _____

Project: _____

Contractor: _____

Instructor: _____

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

_____
_____
_____
_____

YES	NO		
_____	_____	1.	Instructor has necessary educational, experiential and technical qualifications to present subject matter.
_____	_____	2.	Instructor has necessary knowledge of instructional methods, strategies and objectives as well as skills to conduct training.

TRAINING MATERIAL REVIEW CHECKLIST

Lesson Title: _____

Project: _____

Contractor: _____

Date: _____ Reviewed by: _____

YES	NO		
_____	_____	1.	Are learning objectives identified for the lesson material?
_____	_____	2.	Are the objectives/lesson plan contents sequenced properly?
_____	_____	3.	Do the learning objectives describe skills and knowledge appropriate for the position?
_____	_____	4.	Do the lesson plan contents support the learning objectives?
_____	_____	5.	Do the lesson plans include adequate teaching and evaluation methods?
_____	_____	6.	Do the lesson contents include industry events, facility events, or other experience-related items?
_____	_____	7.	Are learning activities included which involve the trainees and enable learning?
_____	_____	8.	Do the references and texts sufficiently support the lesson material?
_____	_____	9.	Do the lesson plans incorporate the use of audio-visual materials?
_____	_____	10.	Is the use of handouts and other trainee materials consistent with the objectives, usable and complete?
_____	_____	11.	Are the lesson materials current?

Lesson Materials Approved _____

Revise Lesson Materials and Resubmit _____

Comments: _____

EXHIBIT I

Agreement for Partial Assignment

The following reference documents provide additional information about requirements in this Agreement.

Exhibit	Reference Documents Title
I1	Agreement for Partial Assignment

PARTIAL ASSIGNMENT FOR
PURCHASE OF MWWTP SECONDARY REACTORS BUTTERFLY VALVES

The Purchase Agreement between East Bay Municipal Utility District (District) and _____ (Supplier) for the Purchase of Main Wastewater Treatment Plant (MWWTP) Secondary Reactors Butterfly Valves is hereby partially assigned, transferred, and set over to _____, the Contractor for the District's MWWTP Secondary Reactor Phase 2, SD-462 (SD-462 Contractor). The SD-462 Contractor shall be assigned responsibilities under this Purchase Agreement and, except as specifically excluded below, for all of the District's obligations and rights contained in the Purchase Agreement and any amendments to the Purchase Agreement.

EXCLUSIONS TO ASSIGNMENT

The following rights and obligations will remain with the District after the assignment of the Purchase Agreement to the SD-462 Contractor:

1. The District shall retain the obligation to pay the Equipment Supplier in accordance with the terms of the Purchase Agreement;

2. The District shall retain the right to conduct or to select an independent third-party inspector to conduct shop inspection of the equipment fabrication.

3. Any and all warranty provision owed by the Manufacturer to the District under the Purchase Agreement will continue to be owed directly to the District after the assignment;

4. Any and all liquidated damages provided for in the Purchase Agreement will continue to belong to the District after the assignment;

5. All insurance provisions that benefit the District in the Purchase Agreement shall remain in effect and for the benefit of the District after the assignment;

6. The indemnity provision contained in the Purchase Agreement shall not be modified by the assignment and shall remain in force after the assignment;

7. After the assignment the District shall be a third party beneficiary as to all other obligations of the Manufacturer under the Purchase Agreement.

This assignment of the Purchase Agreement to the SD-462 Contractor shall be effective on the date of the last signature below.

ASSIGNMENT DIRECTED BY:

DATE: _____

_____
For East Bay Municipal Utility District

By: _____
(Signature) (Title)

ASSIGNMENT ACCEPTED BY:

DATE: _____

_____
SD-462 Contractor

By: _____
(Signature) (Title)

ASSIGNMENT CONSENTED TO BY:

DATE: _____

_____
Supplier

By: _____
(Signature) (Title)

APPROVED AS TO FORM

By: _____
For the Office of the General Counsel