

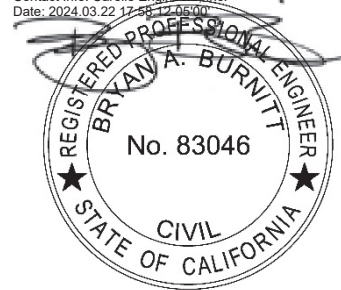


CITY OF PACIFICA, CALIFORNIA
UV DISINFECTION SYSTEM REPLACEMENT
PROJECT NO. P034
CONTRACT SPECIFICATIONS
DIVISIONS 00 - 01
BID SET
VOLUME 1 OF 5
MARCH 2024

Digitally signed by Paul V. Friedlander
Contact Info: Carollo Engineers, Inc.
Date: 2024.03.22 17:51:19-08'00'



Digitally signed by Bryan A. Burnitt
Contact Info: Carollo Engineers, Inc.
Date: 2024.03.22 17:55:12-08'00'



CITY OF PACIFICA
UV DISINFECTION SYSTEM REPLACEMENT

TABLE OF CONTENTS

VOLUME 1 OF 5

DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

SECTION NO.	TITLE
00_11_13	ADVERTISEMENT FOR BIDS
00_21_13	INSTRUCTIONS TO BIDDERS
00_41_00	BID FORM
00_43_14	ESCROW BID DOCUMENTS
00_43_30	BID BOND (PENAL SUM FORM)
00_43_36	PROPOSED SUBCONTRACTORS FORM
00_45_14.01	CONSTRUCTION CONTRACTOR QUALIFICATIONS FORM
00_45_19	NON-COLLUSION DECLARATION
00_51_00	NOTICE OF AWARD
00_52_00	AGREEMENT BETWEEN OWNER AND CONTRACTOR
00_54_01	ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION - CA
00_54_34	ASSIGNMENT OF PROCUREMENT CONTRACT
00_55_00	NOTICE TO PROCEED
00_60_09	SURETY'S AGREEMENT TO ASSIGNMENT
00_61_10	PERFORMANCE BOND
00_61_15	PAYMENT BOND
00_72_00	GENERAL CONDITIONS
00_73_00	SUPPLEMENTARY CONDITIONS
00_94_20	WORK CHANGE DIRECTIVE
00_94_21	CHANGE ORDER
00_94_22	FIELD ORDER

DIVISION 01 - GENERAL REQUIREMENTS

SECTION NO.	TITLE
01_11_00	SUMMARY OF WORK
01_11_02	CONTRACT DOCUMENT LANGUAGE
01_14_00	WORK RESTRICTIONS
01_20_20	MEASUREMENT AND PAYMENT
01_26_00	CONTRACT MODIFICATION PROCEDURES
01_29_73	SCHEDULE OF VALUES
01_29_77	APPLICATIONS FOR PAYMENT
01_31_19	PROJECT MEETINGS
01_32_21	SCHEDULES AND REPORTS
01_32_34	PHOTOGRAPHIC AND VIDEOGRAPHIC DOCUMENTATION

01_33_00	SUBMITTAL PROCEDURES
01_35_21	SELECTIVE ALTERATIONS AND DEMOLITION
01_35_73	DELEGATED DESIGN PROCEDURES
01_41_00	REGULATORY REQUIREMENTS
01_45_00	QUALITY CONTROL
01_45_17	CONTRACTOR QUALITY CONTROL PLAN
01_45_24	REGULATORY QUALITY ASSURANCE
01_50_00	TEMPORARY FACILITIES AND CONTROLS
01_60_00	PRODUCT REQUIREMENTS
01_75_17	COMMISSIONING
01_77_00	CLOSEOUT PROCEDURES
01_78_24	OPERATION AND MAINTENANCE MANUALS
01_78_36	WARRANTIES AND BONDS
01_81_50	DESIGN CRITERIA

VOLUME 2 OF 5

DIVISION 03 - CONCRETE

SECTION NO.	TITLE
03_01_02	CONCRETE REPAIR MORTAR
03_01_04	STRUCTURAL CONCRETE REPAIR
03_11_07	CONCRETE FORMWORK
03_15_14	HYDROPHILIC RUBBER WATERSTOP
03_20_00	CONCRETE REINFORCING
03_21_17	ADHESIVE-BONDED REINFORCING BARS AND ALL THREAD RODS IN CONCRETE
03_30_00	CAST-IN-PLACE-CONCRETE
03_35_29	TOOLED CONCRETE FINISHING
03_41_41	PRECAST CONCRETE ROOF AND WALL PANELS
03_60_00	GROUTING
03_63_01	EPOXIES
03_63_02	EPOXY RESIN/PORTLAND CEMENT BONDING AGENT

DIVISION 05 - METALS

SECTION NO.	TITLE
05_05_24	MECHANICAL ANCHORING AND FASTENING TO CONCRETE AND MASONRY
05_12_00	STRUCTURAL STEEL FRAMING
05_14_05	STRUCTURAL ALUMINUM
05_50_00	METAL FABRICATIONS

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

SECTION NO.	TITLE
07_92_00	JOINT SEALANTS

DIVISION 09 - FINISHES

SECTION NO.	TITLE
09_96_01	HIGH-PERFORMANCE COATINGS
09_96_08	CONCRETE REPAIR AND COATING

DIVISION 10 - SPECIALTIES

SECTION NO.	TITLE
10_14_00	SIGNAGE

DIVISION 26 - ELECTRICAL

SECTION NO.	TITLE
26_00_10	ELECTRICAL REQUIREMENTS

DIVISION 31 -- EARTHWORK

SECTION NO.	TITLE
31_05_15	SOILS AND AGGREGATES FOR EARTHWORK
31_34_07	LOW DENSITY CELLULAR CONCRETE FILL

DIVISION 32 - EXTERIOR IMPROVEMENTS

SECTION NO.	TITLE
32_01_15	PAVEMENT RESTORATION AND REHABILITATION
32_12_17	ASPHALTIC CONCRETE PAVING (CA)

DIVISION 33 - UTILITIES

SECTION NO.	TITLE
33_05_12	TEMPORARY BYPASS PUMPING

DIVISION 40 - PROCESS INTEGRATION

SECTION NO.	TITLE
40_05_00.01	COMMON WORK RESULTS FOR GENERAL PIPING
40_05_00.09	PIPING SYSTEMS TESTING
40_05_06.03	PIPE COUPLINGS
40_05_23.01	STAINLESS STEEL PIPE AND TUBING
40_05_31.17	POLYVINYL CHLORIDE (PVC) PIPE: SCHEDULE TYPE
40_05_51.01	COMMON WORK RESULTS FOR VALVES
40_05_52	SPECIALTY VALVES
40_05_57.13	MANUAL ACTUATORS
40_05_63	BALL VALVES
40_61_11	CONTROL SYSTEM REQUIREMENTS

DIVISION 41 - MATERIAL PROCESSING AND HANDLING EQUIPMENT

SECTION NO.	TITLE
41_22_17	PORTABLE DAVIT CRANES

VOLUME 3 OF 5

DIVISION 46 - WATER AND WASTEWATER EQUIPMENT

SECTION NO.	TITLE
46_05_10	COMMON WORK RESULTS FOR MECHANICAL EQUIPMENT
46_66_85	ULTRAVIOLET DISINFECTION SYSTEM

VOLUME 4 OF 5

DRAWINGS

VOLUME 5 OF 5

APPENDICES

APPENDIX A	EXISTING UV4000PLUS SHOP DRAWINGS
APPENDIX B	UV4000PLUS REMOVAL PROCEDURES
APPENDIX C	UV PURE BY HALLETT CUT SHEETS
APPENDIX D	PRE-PROCUREMENT CONTRACT DOCUMENTS
APPENDIX E	REMOVABLE PRECAST CONCRETE SLAB SHOP DRAWING
APPENDIX F	FACILITY PLANS WITH PHOTOS

DOCUMENT 00_11_13

ADVERTISEMENT FOR BIDS CITY OF PACIFICA, CALIFORNIA

UV DISINFECTION SYSTEM REPLACEMENT GENERAL NOTICE

City of Pacifica (Owner) is requesting Bids for the construction of the following Project:

UV Disinfection System Replacement
P034

Bids shall be submitted electronically on or before **4:00 PM**, local time, **Wednesday, 25 April 2024**, for Project No. P034 to the City's e-Procurement Portal:

<https://secure.procurenow.com/portal/cityofpacific>

The City is accepting electronic bid submissions. Bidders shall create a FREE account with ProcureNow by signing up at <https://secure.procurenow.com/signup>.

Once you have completed account registration, browse back to:

<https://secure.procurenow.com/portal/cityofpacific>

Click on "Submit Response" for this project, and follow the instructions to submit the electronic bid. The Documents will be available for download **Tuesday, 26 March 2024**.

The last day that questions will be accepted is **Monday, 15 April 2024**. Bid opening will be conducted remotely via Zoom Meeting whose link will be provided in ProcureNow.

Bids may be withdrawn through the City's e-Procurement Portal, the responding firm may "unsubmit" their proposal in ProcureNow. After withdrawing a previously submitted proposal, the responding firm may submit another proposal at any time up to the deadline for submitting proposals prior to the bid opening, but no bidder may withdraw his or her bid for a period of thirty (30) days after the opening thereof.

A Bidder's Package may be viewed in, and an electronic copy can be obtained on, the City's e-Procurement Portal whose address is listed above.

Bidders shall submit all inquiries regarding this bid via the City's e-Procurement Portal whose address is listed above. Please note the deadline for submitting inquiries. All answers to inquiries will be posted on the City's e-Procurement Portal. Bidders may also click "Follow" on this bid to receive an email notification when answers are posted. It is the responsibility of the bidder to check the website for answers to inquiries.

It is sole responsibility of the bidder to see that their bid is complete, all information requested has been submitted, and that their bid is submitted in the proper time. Any proposal submitted after the scheduled closing time will be rejected.

The bid opening whose date and time are listed above will be read aloud and conducted remotely via Zoom Meeting whose information will be included in ProcureNow.

The Project includes the following Work:

Demolition of existing UV disinfection system and construction of new UV disinfection system.

Owner anticipates that the Project's total bid price will be approximately \$8 Million. The Project has a substantial completion date of 10/15/2025 and a final completion date of 1/13/2026.

PRE-BID CONFERENCE

A mandatory pre-bid conference for the Project will be held on **Monday, 8 April 2024 at 10 AM** at the Calera Creek Water Recycling Plant, 700 Pacific Coast Hwy, Pacifica, CA 94044. Bids will not be accepted from Bidders that do not attend the mandatory pre-bid conference.

CONTRACTOR REGISTRATION

Contractor must provide proof of registration with the California Department of Industrial Relations (DIR) in the form of a PDF extract from DIR Public Works Registration website.

In accordance with California Labor Code Section 1770, et seq., Contractor and subcontractor must submit certified payroll records (CPRs) to the Labor Commissioner.

In accordance with California Labor Code Section 1771.4, the project is subject to compliance monitoring and enforcement by the California DIR.

INSTRUCTIONS TO BIDDERS

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

This Advertisement is issued by:

Owner: City of Pacifica
By: Louis Sun
Title: Deputy Public Work Director
Date: 26 March 2024

END OF DOCUMENT

DOCUMENT 00_21_13

INSTRUCTIONS TO BIDDERS

ARTICLE 1 — DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. Issuing Office—The office from which the Bidding Documents are to be issued, and which registers plan holders.

ARTICLE 2 — BIDDING DOCUMENTS

- 2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.
- 2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.
- 2.03 Bidders may rely on that sets of Bidding Documents are complete unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.
- 2.04 Owner has established a Bidding Documents Website as indicated in the Advertisement or invitation to bid. Owner requires that Bidder register as a plan holder with the issuing Office at such website and obtain a complete set of the Bidding Documents from such website.
- 2.05 Bidder may register as a plan holder with the Issuing Office and obtain complete sets of Bidding Documents.
- 2.06 Electronic documents:
- A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.
1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader, latest version. It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that

Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.

- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3 — QUALIFICATIONS OF BIDDERS

3.01 Qualification requirements with bid:

- A. Bidder is to submit the following information with its Bid to demonstrate Bidder's qualifications to perform the Work:
1. Submit Document 00_45_14.01 - Qualification Statement.
 2. Submit Document 00_45_19 - Non-Collusion Declaration.
 3. Successful bidder's subcontractors and suppliers listed on Document 00_43_36 - Proposed Subcontractor Form shall submit Document 00_45_14.01 - Qualification Statement.
 - a. Excluding providing information regarding Business officer's limits of authority, Financial, Surety Information, and Insurance.
 4. General Contractor's License Classification: In accordance with California Business and Professions Code, Section 7028, Owner has determined that Contractor shall possess a valid Class A Contractor License at the time of Bid and for the duration of the contract.
 - a. Failure to possess the specified license shall render the Bid as nonresponsive and shall act as a bar to award of the contract to any Bidder not possessing said license at the time of Bid opening.
 5. In accordance with California Labor Code, Section 1725.5, the Contractor and subcontractors must register with the California Department of Industrial Relations (DIR).
 6. In accordance with California Labor Code, Section 1771.4, this Project is subject to compliance monitoring and enforcement by the DIR.
 7. Provide the Bidder's proof of registration with the DIR in the form of a PDF extract from DIR Public Works Registration website.
 - a. The project is subject to registration, compliance monitoring, and enforcement by the DIR.
 - b. Subcontractor DIR registration number and PDF extract is not required with bid.

- 3.02 No requirement to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4 — PRE-BID CONFERENCE

- 4.01 A mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid where representatives of Owner and Engineer will be present to discuss the Project.

- A. Proposals will not be accepted from Bidders who do not attend the conference.

- B. It is each Bidder's responsibility to sign in at the pre-bid conference to verify its participation.
 - 1. Bidders must sign in using the name of the organization that will be submitting a Bid.
- C. An Addendum will be issued with a list of qualified Bidders that attended the pre-bid conference and who are eligible to submit a Bid for this Project.
- D. Information presented at the pre-bid conference does not alter the Contract Documents.
 - 1. Owner will issue Addenda to make any changes to the Contract Documents that result from discussions at the pre-Bid conference.
 - 2. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

ARTICLE 5 — SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

5.01 Site and other areas:

- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

5.02 Site visit and testing by bidders:

- A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. During the visit the Bidder must not disturb any ongoing operations at the Site.
- B. A Site visit is scheduled as part of the pre-bid conference.
- C. Bidders visiting the Site are required to arrange their own transportation to the Site.
- D. Access to the Site other than during a regularly scheduled Site visit must be coordinated through the following Owner or Engineer contact for visiting the Site:

Daniel Patten, P.E.
Engineering Manager
City of Pacifica
dpatten@Pacifica.gov

- 1. Bidder must conduct the required Site visit during normal working hours.
- E. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions during the site visit.
- F. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.

- G. Bidder must comply with applicable Laws and Regulations regarding excavation and location of utilities, obtain permits, and comply with terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- H. Bidder must fill holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.03 Owner's safety program:

- A. Site visits and work at the Site may be governed by an Owner safety program. If an Owner safety program exists, it will be noted in Document 00_73_00 - Supplementary Conditions.

5.04 Other work at the site:

- A. Reference is made to Document 00_73_00 - Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents.
 - 1. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 6 — BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 Express representations and certifications in Bid Form, agreement:

- A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.
- B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7 — INTERPRETATIONS AND ADDENDA

- 7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.
- 7.02 Submit questions about the meaning or intent of the Bidding Documents as indicated in Section 00_11_13 - Advertisement for Bids.
- 7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to registered plan holders.
 - A. Questions received less than 10 days prior to the date for opening of Bids may not be answered.
- 7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8 — BID SECURITY

- 8.01 A Bid must be accompanied by Bid security.
- A. Amount:
 - 1. Percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates): 10 percent.
 - B. Format:
 - 1. Bid Bond.
 - 2. Provide certified checks or cash, made payable to Owner.
 - 3. In accordance with California PCC, Section 22300, Contractor may substitute securities in place of retained funds, as provided in Document 00_54_01 - Escrow Agreement for Security Deposits in Lieu of Retention.
- 8.02 Bidder must submit Document 00_43_30 - Bid Bond that is included in the Bidding Documents.
- 8.03 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released.
- A. If the Successful Bidder fails to execute and deliver the Contract and furnish the required Contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole.
 - 1. Such forfeiture will be Owner's exclusive remedy if Bidder defaults.
- 8.04 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.05 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 7 days after the Bid opening.

ARTICLE 9 — CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in Document 00_52_00 - Agreement Between Owner and Contractor.
- 9.02 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in Document 00_52_00 - Agreement Between Owner and Contractor.

ARTICLE 10 — SUBSTITUTE AND "OR EQUAL" ITEMS

- 10.01 Prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda.
- A. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

10.02 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those “or-equal” or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum.

ARTICLE 11 — SUBCONTRACTORS, SUPPLIERS, AND OTHERS

11.01 Submit list of the Subcontractors or Suppliers:

- A. Submit Document 00_43_36 - Proposed Subcontractors Form to Owner with a list of the Subcontractors or Suppliers proposed.
 - 1. List subcontractors or suppliers proposed who will perform work or labor or render services in an amount in excess of 1/2 of 1 percent of Contractor's total bid:
 - 2. In accordance with California PCC, Section 4104, submit list of the Subcontractors or Suppliers proposed with the Bid.
 - 3. In accordance with California PCC, Section 4104, Owner may request additional subcontractor information from the apparent Successful Bidder and any other Bidder to be submitted within 24 hours after the deadline established by Owner for receipt of bids.
 - 4. In accordance with California PCC, Section 4105, Bidder may not circumvent the requirement to list subcontractors by the device of listing 1 subcontractor, who in turn sublets portions constituting the majority of the work covered by the contract.
 - 5. In accordance with California PCC, Section 4107.5, in the event Bidder alleges that a clerical error has been made in the list of subcontractors, they will propose a substitution in accordance with California PCC.
 - a. After the opening of Bids, changes or substitutions will be allowed except as otherwise provided by law.

11.02 Request to submit an acceptable substitute:

- A. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.
- B. If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers.
 - 1. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder.
- C. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Document 00_72_00 - General Conditions.

ARTICLE 12 — PREPARATION OF BID

- 12.01 Document 00_41_00 - Bid Form is included with the Bidding Documents.
- A. Complete blanks on the Bid Form in ink.
 - B. Sign the Bid Form signed in ink with names printed in ink below the signatures.
 - C. Erasures or alterations must be initialed in ink by the person signing the Bid Form.
 - D. Indicate a Bid price for each section, Bid item, alternate, adjustment unit price item, and unit price item listed.
 - E. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."
 - F. Unauthorized conditions, limitations, or modifications attached to the Bid will render it informal and may cause its rejection as being non-responsive.
 - G. Oral, telegraphic, faxed or telephone Bids or modifications will not be considered.
 - H. Alternative Bids will not be considered unless expressly called for in Document 00_11_13 - Advertisement for Bids.
- 12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents.
- A. The printed copy of the Bid Form must be clearly legible, printed on 8-1/2 inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical.
 - B. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that required information and submittals are included with the Bid.
- 12.03 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign.
- A. The corporate address and state of incorporation must be shown.
- 12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign.
- A. The official address of the partnership must be shown.
- 12.05 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign.
- A. The state of formation of the firm and the official address of the firm must be shown.
- 12.06 A Bid by an individual must show the Bidder's name and official address.
- 12.07 A Bid by a joint venture must be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form.
- A. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.

- 12.08 The Bid must contain an acknowledgment of receipt of Addenda, the numbers of which must be filled in on the Bid Form.
- 12.09 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.
- 12.10 Bidder's state contractor license number must be shown on the Bid Form.
- 12.11 Postal and e-mail addresses and telephone number for communications regarding the Bid must be shown.

ARTICLE 13 — BASIS OF BID

- 13.01 Lump sum:
 - A. Bidders must submit a Bid on a lump sum basis by line item as set forth in the Bid Form.
 - B. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- 13.02 Unit price:
 - A. Bidders must submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
 - B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity", which Owner or its representative has set forth in the Bid Form, for the item and the corresponding "Bid Unit Price" offered by the Bidder.
 - 1. The total of unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes.
 - 2. The final quantities and Contract Price will be determined in accordance with the General Conditions.
 - C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 14 — SUBMITTAL OF BID

- 14.01 Submit bids and required bid documents under the terms of the Bid Form.
- 14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid.
- 14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 15 — MODIFICATION AND WITHDRAWAL OF BID

- 15.01 An unopened Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.
 - A. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

- 15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified and submit a new Bid prior to the date and time for the opening of Bids.
- 15.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid, and the Bid security will be returned.
- A. Thereafter, if the Work is rebid, the Bidder will be disqualified from further bidding on the Work.
- 15.04 In accordance with California PCC, Sections 5101 and 5105, withdrawal of Bids may be permitted for mistakes made in filling out the Bid but will not be permitted for mistakes resulting from errors in judgment or carelessness in inspecting the site of the work or in reading the Drawings, Specifications, and other Contracts Documents.

ARTICLE 16 — OPENING OF BIDS

- 16.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly.
- A. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.
- 16.02 The 3 lowest Bidders shall submit within 72 hours of the Bid opening, 1 copy of documentary information generated in preparation of Bid prices for this Project, as specified in Document 00_43_14 - Escrow Bid Documents.

ARTICLE 17 — BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 17.01 Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 18 — EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids.
- A. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.
- 18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.
- 18.03 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.
- 18.04 Evaluation of Bids:
- A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

- B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form.
 - 1. To determine the Bid prices for purposes of comparison, Owner will announce to bidders a “Base Bid plus alternates” budget after receiving Bids, but prior to opening them.
 - 2. For comparison purposes alternates will be accepted, following the order of priority established in the Bid Form, until doing so would cause the budget to be exceeded.
 - 3. After determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these Instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its additive alternate Bids for which Owner determines funds will be available at the time of award.
 - C. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
- 18.05 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 18.06 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors.

ARTICLE 19 — BONDS AND INSURANCE

- 19.01 Document 00_72_00 - General Conditions sets forth Owner’s requirements as to performance and payment bonds, other required bonds (if any), and insurance.
- A. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by required bonds and insurance documentation.
- 19.02 Bid Security, requirements of providing bid bonds as part of the bidding process are specified in this document.

ARTICLE 20 — SIGNING OF AGREEMENT

- 20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement.
- A. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and any bonds and insurance documentation required to be delivered by the Contract Documents to Owner.
 - B. Within 10 days thereafter, Owner will deliver 1 fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated the General Conditions.

ARTICLE 21 — SALES AND USE TAXES (NOT USED)

ARTICLE 22 — CONTRACTS TO BE ASSIGNED

22.01 The Contract for UV Equipment Procurement and Services will be assigned by Owner to Contractor at the time the construction contract, see Section 00_54_34 – Assignment of Procurement Contract and Appendix D.

ARTICLE 23 — PREVAILING WAGES

23.01 Successful Bidder shall pay not less than the prevailing rate of per diem wages in accordance with California Labor Code, Section 1770 et seq. as determined by the DIR.

23.02 In accordance with California Labor Code, Section 1770, et seq., Contractor and subcontractor must submit certified payroll records (CPRS) to the Labor Commissioner.

ARTICLE 24 — LAWS AND REGULATIONS (NOT USED)

END OF DOCUMENT

This document is a MODIFIED version of EJCDC® C-410, Copyright© 2018 by the National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers, or is based in part on excerpts from copyrighted EJCDC documents. All rights reserved. Those portions of the text that originated in copyrighted EJCDC documents remain subject to the copyright.

DOCUMENT 00_41_00

BID FORM

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, Document 00_72_00 - General Conditions, and Document 00_73_00 - Supplementary Conditions.

ARTICLE 1 — OWNER AND BIDDER

- 1.01 This Bid is submitted to: City of Pacifica.
- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 — ATTACHMENTS TO THIS BID

- 2.01 The following documents are submitted with and made a condition of this Bid:
 - A. Required Bid security in the form of cash, a certified or cashier's check, or a Bid Bond as specified in Document 00_43_30 - Bid Bond (Penal Sum).
 - B. Document 00_43_36 - Proposed Subcontractors Form.
 - C. Document 00_45_14.01 - Construction Contractor Qualifications Form.
 - D. Document 00_45_19 - Non-Collusion Declaration.

ARTICLE 3 — BASIS OF BID—LUMP SUM BID AND UNIT PRICES

3.01 Lump Sum Bids

A. Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price(s), together with any Unit Prices:

Item No.	Description	Price in Figures (\$)
1.	Mobilization/Demobilization including Stormwater Pollution Prevention Plan (SWPPP) (not to exceed 5 percent of Total Bid Price).	\$
2.	Assignment of the Procurement Contract for Permanent and Temporary UV Disinfection Equipment and slide gates with Trojan Technologies. (Section 00_54_34) Cost of Lump Sum for Assigned Goods and Services. Contractor's payment obligation to Trojan Technologies, as "Supplier."	\$ 1,136,604
3.	Pre-negotiated Temporary UV Disinfection Equipment and services with GLASCO UV according to the Fee Proposal Form and Scope dated 03/21/2024 included as Attachment A of this section.	\$ 219,997
4.	Pre-negotiated SCADA System Programmer services with Telstar Instruments according to the Fee Proposal Form and Scope dated 2/23/2024 included as Attachment B of this section.	\$ 181,830
5.	Installation of permanent UV Equipment as specified in Section 46_66_85 including slide gates as specified in Section 40_05_59.20 of the assigned agreement (Section 00_54_34).	\$
6.	Installation, operation, and removal of Temporary Bypass Pumping and Disinfection system and all associated modifications and work with bypass activities.	\$
7.	Installation of new duct bank and electrical conduit and conductors for new permanent electrical feed and communications to and from the main administrative and operations building.	\$
8.	Subsurface utility confirmation along proposed ductbank alignment. Contractor to determine means and methods based on information provided on Drawings C01 and G04.	\$
9.	Temporary excavation support.	\$
10.	All other costs required to complete all Work in the Contract Documents not covered by the other Line Items listed in Parts 3.01 and 3.02 of Article 3.	\$
Total Lump Sum Bid Price		\$

3.02 Unit Price Bids

A. Bidder will perform the following Work at the indicated unit prices:

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Price in Figures (\$)
11.	Type 1 Concrete Repairs according to Drawing 40S01, Detail S204/TYP, and associated drawings and specifications.	S.F.	200		\$
12.	Type 2 Concrete Repairs according to Drawing 40S01, Detail S204/TYP, and associated drawings and specifications.	S.F.	50		\$
13.	Channel Preparation and Coating according to Drawing 40S01, Section 09_96_08, and associated Drawings and Specifications.	S.F.	2,000		\$
14.	Pavement replacement according to Drawings C01 & E02, Section 32_12_17, and associated Drawings and Specifications.	S.Y.	100		\$
Total of All Unit Price Bid Items					\$

B. Bidder acknowledges that:

1. Each Bid Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and
2. Estimated quantities are not guaranteed and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

3.03 Total Bid Price

Total Bid Price (Total of all Lump Sum and Unit Price Bid Items)	\$
--	----

ARTICLE 4 — TIME OF COMPLETION

4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with the Document 00_72_00 - General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5 — BIDDER’S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 Bid Acceptance Period

- A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 Instructions to Bidders

- A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 Receipt of Addenda

- A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6 — BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 Bidder’s Representations

- A. In submitting this Bid, Bidder represents the following:
 - 1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
 - 2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 - 3. In accordance with California Public Contract Code Section 2200 et seq., (“Iran Contracting Act of 2010”), Bidder certifies that Bidder is not identified on the list created by the California Department of General Services (DGS) in accordance with California Public Contract Code Section 2203(b) as a Person engaging in investment activities in Iran.
 - 4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Document 00_73_00 - Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 - 5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the 00_73_00 - Supplementary Conditions, with respect to Technical Data in such reports and drawings.

6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Document 00_73_00 - Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 Bidder's Certifications

- A. The Bidder certifies the following:
 1. In accordance with California Public Contract Code, Section 7103.5(b), Contractor or Subcontractor shall offer and agree to assign to the awarding 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).
 2. Successful bidder shall pay not less than the prevailing rate of per diem wages in accordance with California Labor Code, Section 1770 et seq. as determined by the California Department of Industrial Relations.
 3. In accordance with California Labor Code, Section 1861, the Bidder states the following as its certification:

BIDDER hereby submits this Bid as set forth above:

A Limited Liability Corporation

Limited Liability Corporation Name: _____

By: _____
(Signature of managing member -- attach evidence of authority to sign)

Name (typed or printed): _____

Business address: _____

END OF DOCUMENT

This document is a MODIFIED version of EJCDC® C-410, Copyright© 2018 by the National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers, or is based in part on excerpts from copyrighted EJCDC documents. All rights reserved. Those portions of the text that originated in copyrighted EJCDC documents remain subject to the copyright.

ATTACHMENT A
GLASCO



City of Pacifica

**CALERA CREEK WATER RECYCLING PLANT
TEMPORARY UV DISINFECTION FOR THE UV
DISINFECTION SYSTEM REPLACEMENT PROJECT**

LETTER AGREEMENT

MARCH 21, 2024

**CITY OF PACIFICA
COUNTY OF SAN MATEO**

**CALERA CREEK WATER RECYCLING PLANT TEMPORARY UV
DISINFECTION FOR THE UV DISINFECTION SYSTEM REPLACEMENT
PROJECT**

Table of Contents

1.	PURPOSE.....	1
2.	CONTACT PERSON(S)	1
3.	INSTRUCTIONS TO PROPOSER	1
4.	PROPOSED RFP TIMELINE	2
5.	CONTRACT TYPE AND METHOD OF PAYMENT	2
6.	PUBLIC NATURE OF PROPOSAL MATERIAL	3

EXHIBIT A – GLASCO UV PROPOSAL

EXHIBIT B – FEE PROPOSAL FORM

EXHIBIT C – SECTION 46_66_75 – TEMPORARY ULTRAVIOLET DISINFECTION SYSTEM

ATTACHMENT 1 - Draft Bid Documents - Selected Specifications

ATTACHMENT 2 - Draft Bid Documents – Drawings

ATTACHMENT 3 – Gate and Actuator References from UV Pre-Selection – Selected Specifications

LETTER AGREEMENT

CALERA CREEK WATER RECYCLING PLANT TEMPORARY UV DISINFECTION FOR THE UV DISINFECTION SYSTEM REPLACEMENT PROJECT

1. PURPOSE

The purpose of this Letter Agreement is for the City of Pacifica (“City”) to document the proposal from Glasco UV (“Proposer”) to provide rental equipment and services for a temporary ultraviolet disinfection (UV) system as required to replace the existing UV system with a new UV system. The Proposer and proposed fee will be included in the installation contract RFP for the UV Disinfection System Replacement Project (“Project”), and the Proposer will be assigned as a subcontractor to the selected installation contractor (“Contractor”) under the Project.

The Draft Bid Design Drawings and Specifications relevant to temporary UV disinfection for the Project are included as Attachments 1 and 2, including the contract terms and conditions for the Contractor under which the selected Proposer will be subcontracted. The Proposer must coordinate with all bidders during the RFP period for the Project. Proposer shall include cost and staffing to support the Project bid period coordination. The Project bid period is planned for April 2024.

All work is scheduled for 2025 and the delivery of the temporary UV system in this agreement must occur no later than February 15, 2025 or as scheduled with the Contractor. Additional sequencing information can be found in Section 01_14_00 – Work Restrictions in the Attachment 1.

2. CONTACT PERSON(S)

Technical questions or comments concerning this agreement may be directed to the following individual:

Louis Sun, P.E., Deputy Public Work Director - Wastewater
Office: (650) 738-4662
Cell: (650) 228-6273
Email: lsun@pacifica.gov

Dan Patten, P.E., Engineering Manager - Wastewater
Cell: (650) 922-7248
Email: dpatten@pacifica.gov

3. INSTRUCTIONS TO PROPOSER

Examination of Proposal Documents

The submission of a proposal shall be deemed a representation and certification by the Proposer that they:

- (i) Have carefully read and fully understand the information that is provided by the City to serve as the basis for submission of this proposal.
- (ii) Have the capability to successfully undertake and complete the responsibilities and obligations of the proposal being submitted.
- (iii) Represent that all information contained in the proposal is true and correct.
- (iv) Acknowledge that the City has the right to make any inquiry it deems appropriate to substantiate or supplement information supplied by Proposer and Proposer hereby grants the City permission to make these inquiries, and to provide any and all related documentation in a timely manner.

No request for modification of the proposal shall be considered after its submission on grounds that Proposer was not fully informed to any fact or condition.

Rights of the City of Pacifica

This RFP does not commit the City to enter in a contract, nor does it obligate the City to pay for any costs incurred in preparation and submission of proposals or in anticipation of a contract. The City reserves the right to:

- Make the selection based on its sole discretion;
- Reject any and all proposals;
- Issue subsequent Requests for Proposals;
- Postpone proceeding for its own convenience;
- Remedy technical errors in the process;
- Approve or disapprove the use of particular subconsultants;
- Waive informalities and irregularities in the Proposal; and/or
- Accept a proposal from another Proposer in the event the originally selected Proposer defaults selection with the City.

4. PROPOSED RFP TIMELINE

The Timeline is as follows:

Anticipated Notice to Proceed with Installation Contractor	May 2024
Setup of Temporary UV Disinfection System	February 2025
Removal of Temporary UV Disinfection System	October 2025

5. CONTRACT TYPE AND METHOD OF PAYMENT

The agreement resulting from this proposal when awarded will be a “time and materials with a not to exceed cost” contract with the Installation Contractor.

Proposer shall be prepared to accept the terms and conditions provided in Attachment 1 Draft Contract Documents as a subcontractor to the Installation Contractor.

Insurance Requirements

The selected Proposer(s), at Proposer’s sole cost and expense and for the full term of the Agreement or any extension thereof, shall obtain and maintain the required insurance as specified in the Contract Documents.

All policies, endorsements, certificates and/or binders shall be subject to the approval of the City Manager, the Director of Public Works or their representative as to form and content. These requirements are subject to amendment or waiver if so approved in writing by the City Manager, Director of Public Works or their representative. The selected Proposer agrees to provide the City with a copy of said policies, certificates and/or endorsement upon award of contract.

Billing

PLEASE NOTE: The City of Pacifica does not pay for services before it receives them. Therefore, do not propose contract terms that call for upfront payments or deposits. The Proposer will be paid as a subcontractor the Installation Contractor.

6. PUBLIC NATURE OF PROPOSAL MATERIAL

This proposal becomes the exclusive property of the City of Pacifica. The proposal shall be regarded as public records after a signed agreement is received, with the exception of those elements in the proposal which are defined by the Proposer as business or trade secrets and plainly marked as “Confidential,” “Trade Secret,” or “Propriety.” The City shall not in any way be liable or responsible for the disclosure of any such proposal or portions thereof, if they are not plainly marked as “Confidential,” “Trade Secret,” or “Propriety” or if disclosure is required under the Public Records Act.

EXHIBIT A – GLASCO UV PROPOSAL

Project: TEMPORARY UV DISINFECTION FOR THE UV DISINFECTION SYSTEM REPLACEMENT PROJECT

EXHIBIT “A”

GLASCO UV PROPOSAL

VERTICAL OPEN CHANNEL SYSTEM EQUIPMENT RENTAL AND SUPPORT

Project Name:	Pacifica CA. WWTP
Proposal Number:	GUV012-101455 REV B
Date:	March 15, 2024

Prepared by:	Romeo Vela Director of Engineered Products
Email	romeo@glascouv.com
Mobile	973-634-0903

Prepared for:	Bill Sotirakos
Company	Carollo Engineers
Email	
Phone	
Website	

Project Type:	Wastewater Reuse
Type	Open channel - Concrete
Orientation	Horizontal
System Name	VC-8-A800 X 4
Lamp Technology	Low pressure amalgam
Flow rate range	12 MGD



BENEFITS OF VC-A800

- Easy lamp change
- Low pressure high output Amalgam lamps 16,000hrs
- No underwater seals
- Flow pacing
- Automatic cleaning
- Lamp dimming

TYPICAL EQUIPMENT

- Vertical UV modules
- Ballast Control Center (BCC)
- System Control Center (SCC)-PLC
- Automatic quartz cleaning package
- UV monitoring
- Level Control

By Others

- Inlet isolation gate
- Integration



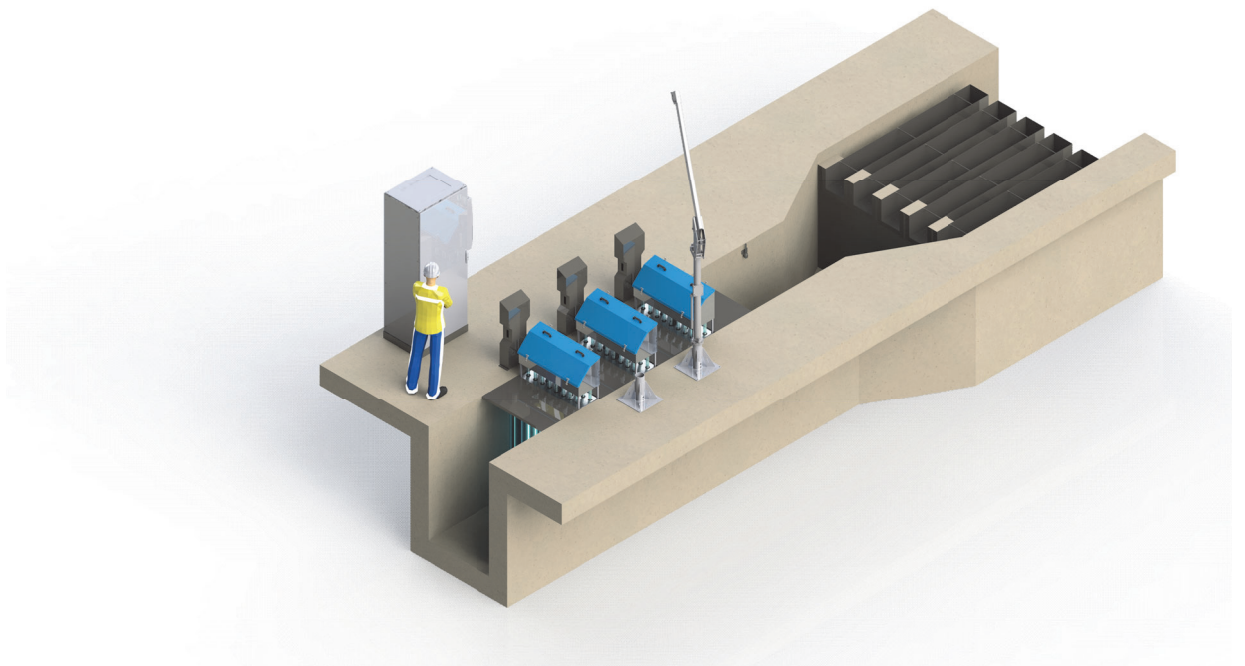
DESIGN OVERVIEW

Application	Wastewater
Peak Month	12 MGD
Average Daily	
Redundancy	
Location	Outdoors
Water Quality	
UV transmission %	65%
Influent counts	Not Given
Water temp.	33-90° F
TSS	<30 mg/l
BOD	<30 mg/l
T1 Red dose	16 mj/cm2
Headloss across UV	<6"
Max particle size	30 Micron
Dimensions	
Channel length	See Drawing
Channel width	See Drawing
Channel height	See Drawing
Water level	59"
Level control	Automatic gate
Ballast Control Center	Freestanding NEMA 4X stainless

EQUIPMENT OVERVIEW

Model Name	VC-8-A800X4
System type	Vertical
Configuration	Open Channel
Lamp type	Low pressure amalgam 800 watts
Channels	1
Modules	4
Lamps per module	8
Lamps per channel	32
UV monitoring	0-100% - 4-20 ma
Auto quartz cleaning	Pneumatic
Lamp status	Green LEDs
Remote control	H/O/A
Voltage	480V
kW/hr	6.4 kW per module
Weight each	150 lbs

Integration	
UV output	4-20 mA from UV
Flow signal	4-20 mA to UV
PLC	Allen Bradley
Remote control	H/O/A



Scope of Supply

Glasco UV will provide a packaged disinfection system that will consist of the below listed components and services. Not included in our scope are installation of the UV equipment. Scaffolding to access our equipment. The contractor will be responsible for installation and supplying all pumping, piping, etc. to connect your channel to the process line. The contractor will also terminate all power and instrumentation signals to your enclosures.

<u>Qty</u>	<u>Description</u>
One (1)	304 SS Channel
Four (4)	VC-8-8300 Modules, a vertical module with automatic cleaning and low- pressure high intensity amalgam lamps. Each module will have 8 lamps organized in 2 groups of 4 lamps. Each module will contain two banks of 4 lamps. Each bank can be dimmed or shutoff for turndown functionality.
One (1)	Ballast Control Center (BCC) NEMA 4X modified free standing air-conditioned stainless-steel enclosure.
One (1)	System Control Center (SCC), NEMA 4X modified free standing fan cooled enclosure with AB PLC and touch screen HMI with bank pacing and dimming. Lamp status and alarms displayed. Ethernet in/out
One (1)	Automatic quartz cleaning system center with air compressor, air filter/regular, and dryer. Outdoor enclosure
One (1)	Radar low level sensor
One (1)	Portable davit crane.
One (1)	Set of module docking cradles.
One (1)	Set of module power stations.
One (1)	Set of module eyeshields.
One (1)	Automatic control gate with ultrasonic level sensor
<u>Spares</u>	
8	UV Lamps
8	Quartz sleeves
2	Ballasts
8	Seals and wiper ring
2	Operator's kits with face shield
3	Operation Manuals

Commercial Offering

TERMS:	Net 30 days
FREIGHT:	Included
SUBMITTAL:	2-4 weeks after release of order
DELIVERY:	16 weeks after receipt of approved submittals
SITE START-UP:	Included
TRAINING:	Included
PRICE:	

Rental starts with the delivery of the equipment and ends with the breakdown of the equipment by Glasco. Equipment must be returned in good working condition. Any damage assessed to something other than normal wear may incur charges.

	RENTAL FOR 8 MONTHS		
EQUIPMENT			\$135,997
Installation support 5 days			\$20,000
Start up support 5 days			\$20,000
2 Support trips during rental			\$5,000
shipping to site			\$12,000
Shipping back to Glasco			\$12,000
BREAKDOWN TO SHIP BACK			\$15,000
Total cost			\$219,997

Priced per month rental	\$17,000
Price per month after the initial eight-month term	\$17,000
Length of time post delivery that the price per month will stay the same.	30 months

NOTES

1. GLASCO UV's proposes to furnish materials and/or equipment for the above project. Any items not shown above as detailed under 'SCOPE OF SUPPLY', or other attachments to this proposal, are EXCLUDED.
2. Any order resulting from this proposal is subject to the GLASCO UV's Standard Terms of Sale in addition to the following understandings:
 - a. Prices noted will be held valid for a period of 90 days from the date of the proposal.
 - b. Prices are in US Dollars.
 - c. Local or state taxes are not included in this proposal.
3. Please send all purchase orders to Glasco UV, 126 Christie Street, Mahwah, NJ 07430.

Warranty

The warranty period is 18 months from date of delivery and 12 months from date of the Certification of Substantial Completion whichever comes first. It covers all failures due to defects in material and/or workmanship excluding consumables (see separate lamp and ballast warranties below).

This warranty shall not apply to any failure or defect which results from the Equipment not being operated and maintained in strict accordance with instructions specified in Glasco UV's Instructions Manual or which results from mishandling, misuse, neglect, improper storage, improper operation of the Equipment with other equipment furnished by the Customer or by other third parties or from defects in designs or specifications furnished by or on behalf of the Customer by a person other than Glasco UV. In addition, this warranty shall not apply to Equipment that has been altered or repaired after start-up by any one except:

- Authorized representatives of Glasco UV, or
- Customer acting under specific instructions from Glasco UV.

Customer must notify Glasco UV in writing within 5 days of the date of any Equipment failure. This notification shall include a description of the problem, a copy of the operator's log, a copy of the Customer's maintenance record and any analytical results detailing the problem. If Customer has not maintained the operator's log and maintenance record in the manner directed in the Operation and Maintenance manual or does not notify Glasco UV of the problem as specified above, this warranty may, in Glasco UV's discretion, be invalid.

Customer will fully cooperate with Glasco UV, in the manner requested by Glasco UV, in attempting to diagnose and resolve the problem by way of telephone support. If the problem can be diagnosed by telephone support and a replacement part is required, Glasco UV will either, at Glasco UV's expense, ship a repaired, reworked, or new part to the Customer who will install such part as directed by Glasco UV or will direct Customer to acquire, at Glasco UV's expense, such part from a third party and then install such part as directed by Glasco UV.

This warranty is the exclusive remedy of the Customer for all claims based on a failure of or defect in the Equipment, whether the claim is based on contract (including fundamental breach), tort (including negligence), strict liability or otherwise. This warranty is lieu of all other warranties whether written, oral, implied or statutory. Without limitation, no warranty of merchantability or fitness for a particular purpose shall apply to the Equipment.

Lamp Warranty

Each low pressure, high output lamp is guaranteed for 16,000 hours operating time under normal operating conditions. Normal operating conditions include:

- On/off cycles max. 4 per 24 operating hours,
- Voltage fluctuations according to DIN IEC 38.

In case of premature lamp failure, the client is requested to send the lamp back to Glasco UV together with the information of UV unit serial number, hours run and on/off cycles. Glasco UV then offers the following:

- Lamp failure before 11,000 h: Glasco UV will send a replacement lamp free of charge,
- Lamp failure after 11,000 h: Glasco UV will issue a credit proportional to the hours not used.

Upon return to our facilities in Mahwah, NJ, we will dispose/recycle all used and failed lamps at no charge to the client.

Terms & Conditions

1. Applicable Terms. These terms govern the purchase and sale of the equipment and related services, if any (collectively, "Equipment"), referred to in Seller's purchase order, quotation, proposal or acknowledgment, as the case may be ("Seller's Documentation"). Whether these terms are included in an offer or an acceptance by Seller, such offer or acceptance is conditioned on Buyer's assent to these terms. Seller rejects all additional or different terms in any of Buyer's forms or documents.

2. Payment. Buyer shall pay Seller the full purchase price as set forth in Seller's Documentation. Unless Seller's Documentation provides otherwise, freight, storage, insurance and all taxes, duties or other governmental charges relating to the Equipment shall be paid by Buyer. Seller shall not be required to reimburse Seller. All payments are due with interest per month or the maximum legal rate on all amounts not received by the due date and shall pay all of Seller's reasonable costs (including attorneys' fees) of collecting amounts due but unpaid. All orders are subject to credit approval.

3. Delivery. Delivery of the Equipment shall be in material compliance with the schedule in Seller's Documentation. Unless Seller's Documentation provides otherwise, Delivery terms are F.O.B. Seller's facility.

Destination



4. Ownership of Materials. All devices, designs (including drawings, plans and specifications), estimates, prices, notes, electronic data and other documents or information prepared or disclosed by Seller, and all related intellectual property rights, shall remain Seller's property. Seller grants Buyer a non-exclusive, non-transferable license to use any such material solely for Buyer's use of the Equipment. Buyer shall not disclose any such material to third parties without Seller's prior written consent.

5. Changes. Seller shall not implement any changes in the scope of work described in Seller's Documentation unless Buyer and Seller agree in writing to the details of the change and any resulting price, schedule or other contractual modifications. This includes any changes necessitated by a change in applicable law occurring after the effective date of any contract including these terms.

6. Warranty. Subject to the following sentence, Seller warrants to Buyer that the Equipment shall materially conform to the description in Seller's Documentation and shall be free from defects in material and workmanship. The foregoing warranty shall not apply to any Equipment that is specified or otherwise demanded by Buyer and is not manufactured or selected by Seller, as to which (i) Seller hereby assigns to Buyer, to the extent assignable, any warranties made to Seller and (ii) Seller shall have no other liability to Buyer under warranty, tort or any other legal theory. If Buyer gives Seller prompt written notice of breach of this warranty within 18 months from delivery or 1 year from acceptance, whichever occurs first (the "Warranty Period"), Seller shall, at its sole option and as Buyer's sole remedy, repair or replace the subject parts or refund the purchase price therefore. If Seller determines that any claimed breach is not, in fact, covered by this warranty, Buyer shall pay Seller its then customary charges for any repair or replacement made by Seller. Seller's warranty is conditioned on Buyer's

(a) operating and maintaining the Equipment in accordance with Seller's instructions, (b) not making any unauthorized repairs or alterations, and (c) not being in default of any payment obligation to Seller. Seller's warranty does not cover damage caused by chemical action or abrasive material, misuse or improper installation (unless installed by Seller). THE WARRANTIES SET FORTH IN THIS SECTION ARE SELLER'S SOLE AND EXCLUSIVE WARRANTIES AND ARE SUBJECT TO SECTION 10 BELOW. SELLER MAKES NO OTHER WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE.

7. Indemnity. Seller shall indemnify, defend and hold Buyer harmless from any claim, cause of action or liability incurred by Buyer as a result of third party claims for personal injury, death or damage to tangible property, to the extent caused by Seller's negligence. Seller shall have the sole authority to direct the defense of and settle any indemnified claim. Seller's indemnification is conditioned on Buyer (a) promptly, within the Warranty Period, notifying Seller of any claim, and (b) providing reasonable cooperation in the defense of any claim.

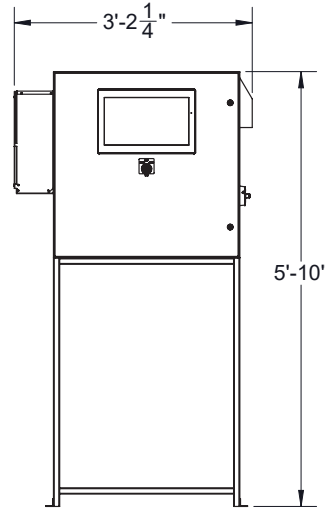
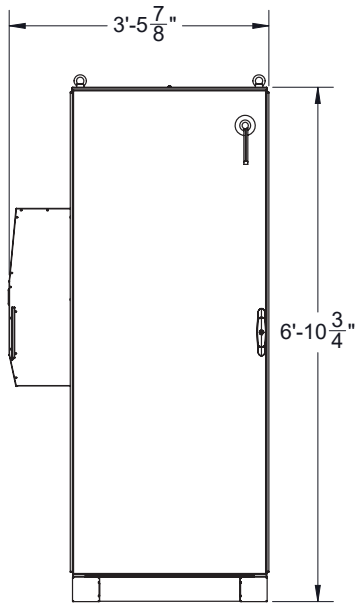
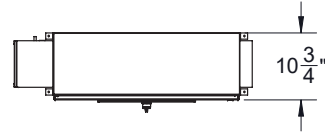
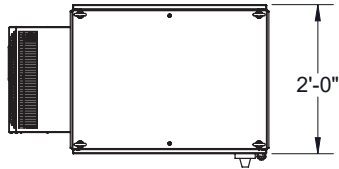
8. Force Majeure. Neither Seller nor Buyer shall have any liability for any breach (except for breach of payment obligations) caused by extreme weather or other act of God, strike or other labor shortage or disturbance, fire, accident, war or civil disturbance, delay of carriers, failure of normal sources of supply, act of government or any other cause beyond such party's reasonable control.

9. Cancellation. If Buyer cancels or suspends its order for any reason other than Seller's breach, Buyer shall promptly pay Seller for work performed prior to cancellation or suspension and any other direct costs incurred by Seller as a result of such cancellation or suspension.

10. LIMITATION OF LIABILITY. NOTWITHSTANDING ANYTHING ELSE TO THE CONTRARY, SELLER SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL, PUNITIVE OR OTHER INDIRECT DAMAGES, AND SELLER'S TOTAL LIABILITY ARISING AT ANY TIME FROM THE SALE OR USE OF THE EQUIPMENT SHALL NOT EXCEED THE PURCHASE PRICE PAID FOR THE EQUIPMENT. THESE LIMITATIONS APPLY WHETHER THE LIABILITY IS BASED ON CONTRACT, TORT, STRICT LIABILITY OR ANY OTHER THEORY.

11. Reservation Clause. Buyer acknowledges that Seller is required to comply with applicable export laws and regulations relating to the sale, exportation, transfer, assignment, disposal and usage of the Equipment provided under this Agreement, including any export license requirements. Buyer agrees that such Equipment shall not at any time directly or indirectly be used, exported, sold, transferred, assigned or otherwise disposed of in a manner which will result in non-compliance with such applicable export laws and regulations. It shall be a condition of the continuing performance by Seller of its obligations hereunder that compliance with such export laws and regulations be maintained at all times. BUYER AGREES TO INDEMNIFY AND HOLD SELLER HARMLESS FROM ANY AND ALL COSTS, LIABILITIES, PENALTIES, SANCTIONS AND FINES RELATED TO NON-COMPLIANCE WITH APPLICABLE EXPORT LAWS AND REGULATIONS.

12. Miscellaneous. If these terms are issued in connection with a government contract, they shall be deemed to include those federal acquisition regulations that are required by law to be included. These terms, together with any quotation, purchase order or acknowledgement issued or signed by the Seller, comprise the complete and exclusive statement of the agreement between the parties (the "Agreement") and supersede any terms contained in Buyer's documents, unless separately signed by Seller. No part of the Agreement may be changed or cancelled except by a written document signed by Seller and Buyer. No course of dealing or performance, usage of trade or failure to enforce any term shall be used to modify the Agreement. If any of these terms is unenforceable, such term shall be limited only to the extent necessary to make it enforceable, and all other terms shall remain in full force and effect. Buyer may not assign or permit any other transfer of the Agreement without Seller's prior written consent. The Agreement shall be governed by the laws of the State of New Jersey without regard to its conflict of laws provisions.



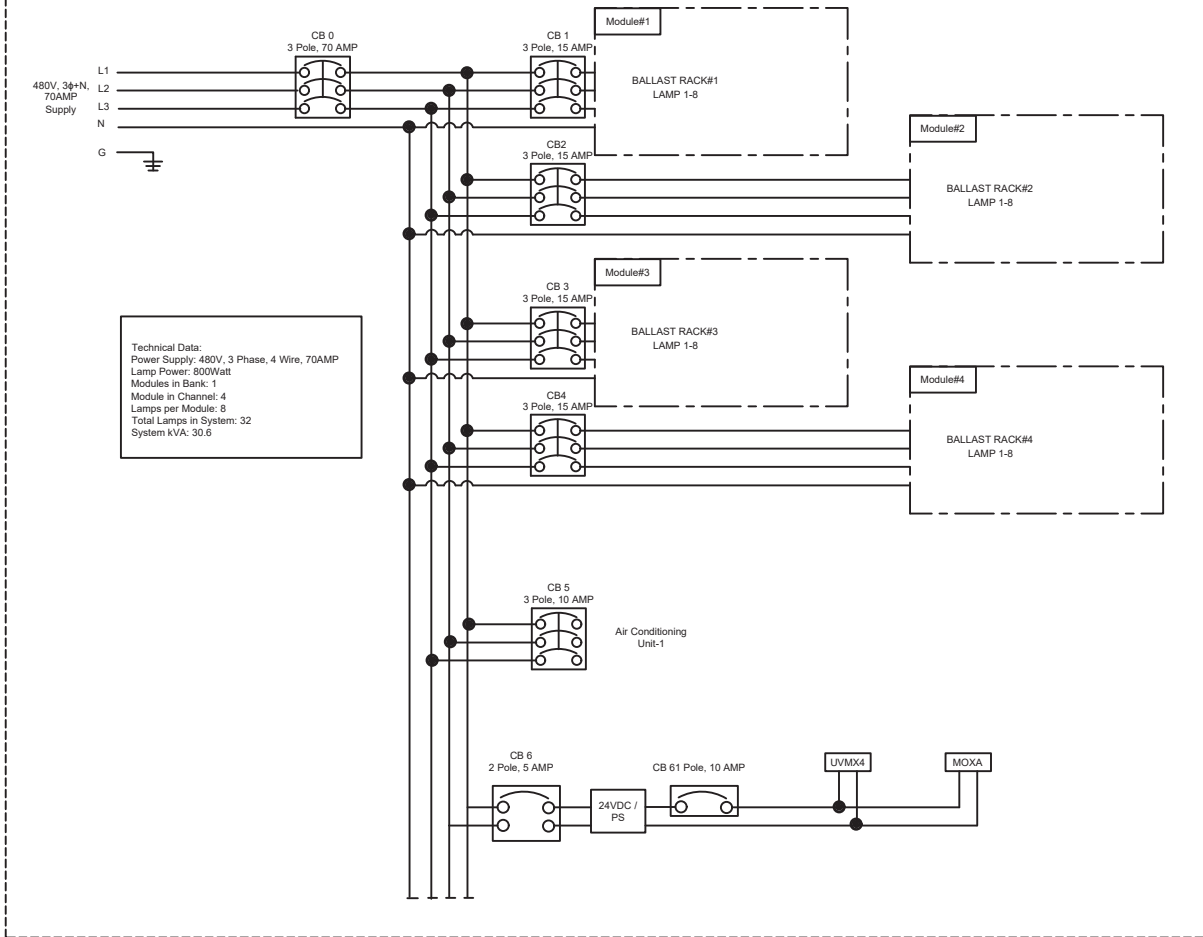
BALLAST CONTROL CENTER
480V, 3 PHASE + NEUTRAL

SYSTEM CONTROL CENTER
120V, 1 PHASE

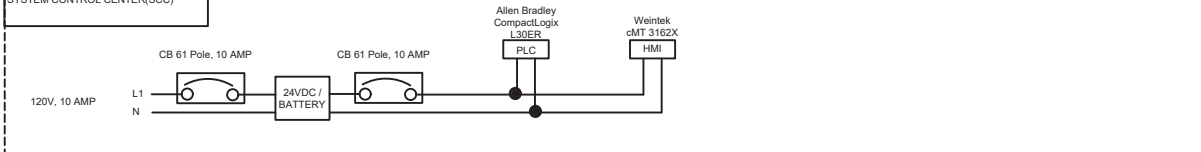
GENERAL ENGINEERING COMMENTS AND NOTES			
<small>THIS DRAWING/CONTAINS DESIGN AND OTHER INFORMATION WHICH ARE THE PROPERTY OF GLASCO UV, LLC. EXCEPT FOR RIGHTS EXPRESSLY GRANTED BY CONTRACT TO THE UNITED STATES GOVERNMENT, THIS DRAWING MAY NOT IN WHOLE OR IN PART BE DUPLICATED OR DISCLOSED OR USED FOR MANUFACTURE OF THE PARTS DESCRIBED HEREIN, WITHOUT THE WRITTEN PERMISSION OF GLASCO UV, LLC.</small>			FINISH: - MATERIAL: - PROJECT: PACIFICA
GLASCO UV <small>126 Christie Avenue Mahwah, NJ 07430 PH 201-624-2348 FX 201-624-3388 www.glascouv.com</small>			<small>GLASCO UV DISCLAIMS LIABILITY FOR THE DESIGN OR CONSTRUCTION OF THE PARTS DESCRIBED HEREIN UNLESS OTHERWISE SPECIFIED IN THIS DRAWING OR NOTES. XX = 1/2" XXX = 3/4" ANG = 1/8" </small>
DRAWING DESCRIPTION: EQUIPMENT LAYOUT			
SIZE: B	DWG. NO.: VC-8-A800X4	REV: -	
REV	GLASCO UV REVISION NOTES	DATE	APPROVED

DWN BY: MTR 2/27/2024
 DO NOT SCALE DRAWING
 SCALE: 1/20
 SHEET 2 OF 2

BALLAST CONTROL CENTER (BCC)



SYSTEM CONTROL CENTER (SCC)



REV	DESCRIPTION	DATE	APPROVED
-----	-------------	------	----------

THIS DRAWING CONTAINS DESIGNS AND OTHER INFORMATION WHICH ARE THE PROPERTY OF GLASCO UV, LLC. EXCEPT FOR RIGHTS EXPRESSLY GRANTED BY CONTRACT TO THE UNITED STATES GOVERNMENT, THIS DRAWING MAY NOT BE REPRODUCED OR IN ANY MANNER BE DISCLOSED OR USED FOR MANUFACTURE OF THE PART DESCRIBED HEREIN, WITHOUT THE PRIOR WRITTEN PERMISSION OF GLASCO UV, LLC.		Glasco UV 126 Christie Avenue, Mahwah, NJ 07430 PH: 201-934-3348, FX: 201-934-3388 WWW.GLASCOUV.COM	
PROJECT	REVISION	TITLE	DATE
POWER SUPPLY			
TOLERANCES UNLESS OTHERWISE SPECIFIED: .25 ± .002 .500 ± .002 .000 ± .001	MATERIAL SWN NL 6/22/22	SIZE: DIMS IN INCH D	PART NO. VC-8-A800-X4
DATE: 6/22/22 BY: BX	SCALE	SHEET 1 OF 1	REV

EXHIBIT B – Fee Proposal Form

Project: TEMPORARY UV DISINFECTION FOR THE UV DISINFECTION SYSTEM REPLACEMENT PROJECT

EXHIBIT B
FEE PROPOSAL FORM

EXHIBIT “B”

FEE PROPOSAL FORM

<p>Proposer Name: Glasco UV, LLC Address <i>(principal place of business)</i>:</p>	<p>Project Name: CALERA CREEK WATER RECYCLING PLANT TEMPORARY UV DISINFECTION FOR THE UV DISINFECTION SYSTEM REPLACEMENT PROJECT</p>
<p>Owner Name: City of Pacifica Address <i>(principal place of business)</i>: 540 Crespi Drive Pacifica, CA 94044</p>	<p>Project Location: CALERA CREEK WATER RECYCLING PLANT 700 COAST HIGHWAY PACIFICA, CA 94044</p> <p>Proposal Due: March 21, 2024</p>
<p>Fee Proposal for Programming Services Fee Proposal: \$ 219,997 Date:</p>	<p>Addenda Acknowledged (list addendum number and date received):</p>
<p>The above proposed fee will be included in the installation contract RFP for the UV Disinfection System Replacement Project (“Project”), and the Proposer will be assigned as a subcontractor to the selected installation contractor (“Contractor”) under the Project. Proposal is based on the Letter Agreement documents dated March 21, 2024 for the project named above.</p>	
<p>Proposer</p> <hr/> <p><i>(Full formal name of Proposer)</i></p> <p>By: _____ <i>(Signature)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p> <p>Attest: _____ <i>(Signature)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p>	<p>City of Pacifica</p> <hr/> <p>By: _____ <i>(Signature)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p> <p>Attest: _____ <i>(Signature)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p>

EXHIBIT “C”

SECTION 46_66_75 - TEMPORARY UV DISINFECTION SYSTEM

SECTION 46_66_75

TEMPORARY ULTRAVIOLET DISINFECTION SYSTEM

TABLE OF CONTENTS

PART 1	GENERAL	2
1.01	SUMMARY	2
1.02	REFERENCES	2
1.03	TERMINOLOGY	2
1.04	SUBMITTALS	2
1.05	QUALITY ASSURANCE	5
1.06	DELIVERY, STORAGE AND HANDLING	5
1.07	WARRANTY	6
1.08	DESIGN ASSISTANCE	6
1.09	WORK BY OTHERS.....	7
PART 2	PRODUCTS	8
2.01	SYSTEM DESCRIPTION.....	8
2.02	DESIGN CRITERIA	8
2.03	PERFORMANCE REQUIREMENTS	9
2.04	SUPPLIERS	9
2.05	GENERAL PRODUCT REQUIREMENTS.....	9
2.06	TEMPORARY UV DISINFECTION SYSTEM.....	12
2.07	ACCESSORIES.....	14
2.08	OUTLET LEVEL CONTROL GATES	14
2.09	INSTRUMENTATION AND CONTROLS	14
2.10	MAINTENANCE.....	19
PART 3	EXECUTION	20
3.01	INSTALLATION	20
3.02	FIELD EQUIPMENT CHECKS.....	20
3.03	FIELD TESTING	21
3.04	HYDRAULIC, ALARM AND FUNCTIONAL TESTING.....	21
3.05	INITIAL PERFORMANCE TEST	22
3.06	TRAINING OF OWNER'S PERSONNEL AND SUPPORT SERVICES.....	24

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Equipment associated with the Temporary Ultraviolet (UV) Disinfection System that will be used during the construction phase of this project that will be used to disinfect the effluent discharge during construction. Glasco UV (Supplier) has been preselected to provide the services and equipment described in this Section.

1.02 REFERENCES

- A. See Section 46_66_85, Article 1.02.

1.03 TERMINOLOGY

- A. See Section 46_66_85, Article 1.03.

1.04 SUBMITTALS

- A. Product Data and Shop Drawings: Supplier shall submit the following:
 - 1. Product data, including, but not limited to, the following:
 - a. Descriptive information including catalog cuts and Supplier's specifications for components.
 - b. Written field electrical termination requirements and instructions as required for the Contractor to install a complete and operational system.
 - c. Third-Party Reactor Validation Testing results and corresponding Engineering Report(s). If Third-Party Reactor Validation Testing is not available for the proposed system, supporting documentation and calculations must be provided to support the system capacity claimed by the Supplier at the specified water quality parameters.
 - d. Number of lamps per module.
 - e. Number of modules per bank.
 - f. Total number of UV lamps.
 - 2. General Shop drawing submittal including, but not limited to:
 - a. Details of the UV module/bank, ballast enclosure, power distribution system with transformers as required, and control system.
 - b. Dimensions and installation requirements.
 - c. Information on the channel dimensions.
 - 3. Electrical, Instrumentation and Controls data and shop drawings specified in the Contract Documents, including but not limited to:
 - a. Front exterior and interior panel layout drawings with bill of materials for electrical and control panels.
 - b. Control schematics with wire numbers.
 - c. Detailed interface and interconnection drawings that indicate UV system and external component and equipment connections.
 - d. Detailed electrical wiring diagrams as required for the Contractor to install a complete operational system including, but not be limited to:
 - 1) Source power feeder conductor quantities and sizes.
 - 2) Control wiring quantities and sizes.
 - 3) Signal cable quantities and sizes.

- 4) Power (kW), power factor and apparent power (kVA) for each UV Bank and/or Ballast Control Center.
 - 5) Master UV PLC power requirements.
 - e. Control philosophy narrative with integration of the Third-Party Reactor Validation Testing results, including the use of the sensors to monitor and alarm the combined effect of lamp aging and sleeve fouling and/or the use of the sensors to continuously monitor UV dose based on inputs of flow, UV sensor intensity, and UV transmittance (UVT). Process and Instrumentation Diagrams (P&IDs) shall accompany the narrative.
 - f. Provide a wiring diagram complete with inter-equipment wiring requirements.
 - g. Complete grounding requirements for each system component including any requirements for PLCs, process LANs, and Control System equipment.
 4. List of spare parts.
 5. UV Master Control Panel (MCP):
 - a. Proposed layout of mounted devices and terminals with dimensions within MCP.
 - b. Proposed MCP PLC programming printout with input/output (I/O) listing if available.
 - c. Complete I/O list:
 - 1) A table showing the data available over EtherNet/IP communication protocol to the plant control system.
 - d. Proposed MCP LOI graphic display printouts.
 - e. Operating description for MCP:
 - 1) Include detailed descriptions of logic and sequences of operation of control loops within the MCP controller, points monitored, available local and automatic control functions, and alarms.
 - 2) Include a description of the controls interface and communication between the MCP and Plant PLC.
- B. Operation and maintenance manuals:
1. Supplier shall submit an operation and maintenance manuals in accordance with Section 01_78_24 - Operation and Maintenance Manuals:
 - a. In addition to the requirements listed in the above referenced section, the Operation and Maintenance Manuals shall include:
 - 1) Name, address, and telephone number of nearest Supplier and spare parts warehouse.
 - 2) Special tools required for operation and maintenance.
 - 3) Reproducible prints of the Contract diagrams, schematics, and installation drawings for electrical and instrumentation work.
 2. Prerequisite to equipment approval: Engineer acceptance of the manual.
 3. Supplier's copy of complete manuals shall be available at the site of the work for use by field personnel and Engineer during Hydraulic, Alarm and Functional Testing, and Performance Testing of equipment.
 4. Step by step instructions for operation and maintenance of equipment provided by Supplier.
 5. Description of process control logic and process and instrumentation diagrams.
 6. Drawings of control panels to include:
 - a. Electrical ladder diagram.

- b. Interconnect to components outside the panel.
 - c. Door layout.
 - d. Interior layout.
 - e. Sample Operator Interface screens for the local panels and MCP.
 - 7. Provide typical Operator interface screens with detailed descriptions.
 - 8. Provide I/O listing for control panel PLCs.
 - 9. Indicate scheduled maintenance requirements and routine inspections. Include maintenance summary forms.
 - 10. Provide list of recommended spare parts and lubricants.
 - 11. Provide a troubleshooting guide.
 - 12. Provide the local sales representative contact information with the company name, contact person, phone number, address, and service provider.
- C. Quality Certification:
- 1. Supplier shall submit Engineering Report of the proposed UV Disinfection System, including:
 - a. Raw data used to justify the conclusions of the Third-Party Reactor Validation Testing.
 - b. Test reactor configuration including tested parameters (e.g., flow rates, UV transmittance, number of reactors/lamps in operation, and type of water tested).
 - c. Collimated beam results.
 - d. Reactor validation results with regard to inactivation of the test organism.
 - e. Test results from head loss testing.
 - f. Recommended normalized lamp velocity range (flow/lamp) to meet the required Design UV dose.
 - g. Delivered UV dose equation developed based on Supplier's Third-Party Reactor Validation Testing.
 - 2. Supplier's UV equipment warranty including lamps, ballasts, quartz sleeves, wipers, and UV sensors, as specified in this Section.
 - 3. Supplier's performance warranty as specified in this Section.
 - 4. Documentation of the successful completion and results of the Underwriter's Laboratory (UL) or equivalent testing shall be provided.
- D. Closeout submittals:
- 1. Written certification of proper UV system installation as specified in this Section.
 - 2. One copy of UV PLC, operator interface, and other programs required for the maintenance of the UV system in native format on flash drive:
 - a. PLC and LOI Programs:
 - 1) Provide complete electronic copies of the PLC and LOI programs and configuration files for equipment in the local control panels, in the native file format of each device, along with any supporting files.
 - 2) Programs shall be fully accessible for use by the Owner - programs that are locked, restricted, or contain hidden materials are not permitted.
 - b. Provide a detailed description of control systems.
 - 3. Provide panel drawings, wiring diagrams, specifications, and a detailed description of the local panels.

4. Update operation and maintenance manual documentation and drawings, as required, based on updates or changes made to the UV equipment or installation during startup and commissioning of the system.
- E. Other qualification requirement submittals:
1. A statement listing any deviations or exceptions taken to these specifications. Include specification reference and proposed alternative with reason stated for exception.

1.05 QUALITY ASSURANCE

- A. Qualification requirements:
1. Supplier shall demonstrate that the dose required in the performance specification can be met with the amount of equipment proposed:
 - a. Supplier shall base sizing of UV system on a Third-Party Reactor Validation Testing calculation to meet the minimum UV design dose as specified in this Section.
 - b. Supplier's data and results shall be reviewed by the Engineer.
 - c. Engineer can apply the required correction factor to the Supplier's bioassay results.
 - d. Engineer's review and opinion of the test protocol, pilot data, and pilot report conclusions shall be deemed final and shall be just cause for the rejection of the proposed equipment.
 2. A statement by the Supplier listing any deviations or exceptions taken to these Specifications shall be provided to the Engineer for the Engineer's review, opinion, and acceptance:
 - a. The Engineer's final decision regarding the acceptance or denial of any deviations or exceptions shall be just cause for the rejection of the proposed equipment and require that the Supplier supply the disinfection equipment as specified in this Section.
 3. Provide equipment labeled and listed by UL or another nationally recognized testing laboratory, furnished by a single Supplier qualified and experienced in the production of similar equipment.

1.06 DELIVERY, STORAGE AND HANDLING

- A. If required by the Contractor's schedule, the Supplier shall provide equipment in multiple separate freight shipments.
- B. Provide notification in writing to the Owner and Contractor of approximate delivery date(s) 4 weeks before delivery:
1. Notify same of actual delivery date at least 7 days before delivery.
 2. Provide description and approximate weight of shipping container and required equipment for unloading.
 3. Supplier shall coordinate delivery, unloading, and storage with Contractor.
- C. Store products according to manufacturer instructions:
1. Moisture sensitive products shall be stored in appropriate weather-proof enclosures or locations:
 - a. Supplier will designate those items that need to be stored in this manner.
 - b. Crates covered in tarps are not acceptable.

- D. Supplier shall coordinate the delivery of equipment with Contractor:
 - 1. Supplier's shipping company shall notify the Contractor at least 48 hours prior to arrival on site.
 - 2. Supplier shall revise schedule for delivering equipment packages if requested by Contractor without additional cost to Contractor.
- E. Storage:
 - 1. General:
 - a. Contractor shall store, and handle in accordance with the Supplier's printed instructions.
 - 2. Packing and shipping:
 - a. Supplier shall deliver equipment to the project site in the original containers with seals unbroken and labeled with Supplier's identification and number.
 - 3. Delivery:
 - a. Supplier shall deliver materials dry and undamaged to the Contractor. During the delivery process materials must be stored out of contact with the ground.

1.07 WARRANTY

- A. Provide warranty as specified in Section 01_78_36 - Warranties and Bonds:
 - 1. Additionally, include costs associated with required site visits, inspections, equipment removal costs, and equipment installation costs:
 - a. Provide warranties and support directly by the Supplier.
 - 2. Special Warranty:
 - a. Equipment Warranty:
 - 1) The equipment furnished under this Section shall be free of defects in materials and workmanship, including damages that may be incurred during shipping, storage, and installation, for the length of the construction period which is estimated to be 8 months. This covers the following components:
 - a) Wiring.
 - b) UV Lamps.
 - c) UV Ballasts.
 - d) UV Quartz Sleeves.
 - e) UV Sensors.
 - f) Quartz Sleeve Wiper Mechanism.
 - b. Performance Warranty:
 - 1) The equipment furnished under this Section, when operated within the conditions specified in the Contract Documents and Supplier's Operation and Maintenance Manual, will meet or exceed the performance requirements specified in this Section for the duration of the construction period.

1.08 DESIGN ASSISTANCE

- A. Supplier shall provide Design Assistance to the Contractor and Owner as outlined below:
 - 1. Temporary UV system design workshop:

- a. Supplier shall participate in an in-person, half-day long workshop with the Engineer to discuss the temporary UV system design and installation.
 - b. The installation design documents will be reviewed.
 - c. Topics will include installation and electrical requirements for the temporary UV system, mechanical equipment layout, programming and SCADA interface with the plant system, and any additional feature to complete the installation.
2. Product data and shop drawing submittal review workshop:
- a. Supplier shall participate in a virtual, half-day long workshop with the Engineer to review and discuss the temporary UV system submittal.

1.09 WORK BY OTHERS

- A. The following items are provided by the Contractor but shall be coordinated by the Supplier during the Design Assistance provided by Supplier. These items will include:
- 1. Structural:
 - a. Foundation support and additional housing for supplied UV disinfection equipment.
 - b. Anchor bolts will be provided and installed by Contractor, anchor bolt design by UV Supplier.
 - 2. Mechanical:
 - a. Motorized weir gates used to control the effluent level in each channel shall be supplied by the Supplier and installed by Contractor.
 - b. Installation materials for instrumentation and automatic valves including but not limited to air/sample line tubing, fittings, and mountings.
 - c. Installation of UV disinfection system components.
 - 3. Electrical:
 - a. Electrical wiring interconnections (including wiring, conduit, cable trays, transformers, and other appurtenances required to provide power connections as needed) from the electrical power source to the UV disinfection equipment and system control panels:
 - 1) Contractor shall also be responsible for determining the correct wire sizing and coordinate this information with the UV Supplier.
 - b. The lamp cables between the UV banks and Ballast Control Centers shall be supplied by the UV Supplier and will be run/pulled and terminated by the Contractor.
 - c. Communication cabling between the Ballast Control Centers, Master Control Panel and other electrical panels shall be provided by the Contractor based on the UV Supplier's requirements.
 - d. Ethernet communications connection to the Owner's Plant Control System.
 - e. Installation of enclosures for a complete UV disinfection system.
 - 4. Other:
 - a. Receiving, unloading, and safe storage of equipment at site or a storage facility until ready for installation.
 - b. Lifting equipment required to remove, access and maintain equipment during operation.
 - c. Access platforms to monitor and maintain equipment during operation.
 - d. Raw materials and utilities during equipment testing.

- e. Operating and maintenance personnel during equipment checkout, start up, testing and operations.
- f. Any onsite painting or touch-up painting of the equipment supplied.

PART 2 PRODUCTS

2.01 SYSTEM DESCRIPTION

- A. Provide a temporary UV disinfection system complete with UV Banks, a control system, UV intensity sensors, automatic on-line cleaning system, power distribution system, level control gate, and accessories as specified in this Section or as required to have a complete and functioning system.
- B. Furnish labor, materials, equipment, and appurtenances required to provide a low-pressure, high-output (LPHO) lamps, UV disinfection system complete with automatic cleaning system:
 - 1. The UV system is to be complete and operational with control and appurtenant equipment as indicated on the Drawings and specified in this Section.
 - 2. Supplier shall provide installation assistance, start-up, testing and operator-maintenance training for the UV system as specified in this Section.
 - 3. The Supplier shall assist with commissioning and performance testing for the UV system as specified in this Section.
- C. Provide complete UV Disinfection System that meets the water quality requirements as set forth by the California Regional Water Quality Control Board, San Francisco Bay Region, Order No. R2-2022-0029 and NPDES Permit No. CA0038776:
 - 1. In the event of a conflict between regulations and this Section, the UV System Supplier shall meet the more restrictive standard.
- D. Third-Party Reactor Validation Testing and the related Engineering Report for the UV reactor to be installed must be completed at the time of Proposal.

2.02 DESIGN CRITERIA

- A. Supplier shall provide UV disinfection equipment which meets the Performance Requirements, specified in this Section, based on the following conditions:
 - 1. Influent Water Quality:
 - a. Description: Tertiary effluent.
 - b. Peak Design Flow: 12.0 million gallons per day (mgd).
 - c. Average Flow: 2.0 mgd.
 - d. Design Ultraviolet Transmittance (UVT) at 253.7 nm: 56 percent.
 - e. Average UVT at 253.7 nm: 62 percent.
 - f. Total Suspended Solids: 5 milligrams per liter (mg/L).
 - g. The minimum T1 RED for the discharge must be based upon the delivered UV dose equation developed from the Supplier's bioassay results as determined by Third-Party Reactor Validation Testing per the IUVA Protocol:
 - 1) Engineer can apply the required correction factor to the Supplier's bioassay results based upon the Engineer's analysis of the Validation Testing and site conditions.

- B. UV equipment shall be located as indicated on the Drawings:
 - 1. The UV channel will be located outdoors and at grade.
 - 2. The electrical enclosures with the electronic ballasts and master PLC will be located next to the UV channel outdoors.
- C. Facility constraints:
 - 1. Components of the UV system must fit within a footprint approximately 12' by 40', including proper approach and exit lengths, electrical equipment, and reasonable operations and maintenance access.

2.03 PERFORMANCE REQUIREMENTS

- A. The UV disinfection system performance shall be guaranteed by the Supplier to produce an effluent that meets or exceeds the following permit limits:
 - 1. Discharge NPDES permit limits:
 - a. *E. coli*: 100 colony forming units (CFU)/100 mL, based on a six-week rolling geometric mean calculated weekly.
 - b. *E. coli*: 320 CFU/100 mL, less than 10 percent of all samples collected in a calendar month shall exceed this limit.
 - 2. Grab samples shall be taken in accordance with the Microbiology Sampling Techniques found in Standard Methods for the Examination of Water and Wastewater, Latest Edition.
- B. Minimum Discharge RED:
 - 1. Design the system to deliver a minimum T1 RED equal to or greater than 14 mJ/cm² specified in this Section at peak wet weather flow, the design UVT and under Attenuated Lamp Conditions.
 - 2. The basis for evaluating the dose delivered by the UV disinfection system shall be the Supplier's bioassay results as determined by Third-Party Reactor Validation Testing per the IUVA Protocol.
 - 3. The Engineer can apply the required correction factor to the Supplier's bioassay results.

2.04 SUPPLIERS

- A. The Temporary UV Disinfection System shall be manufactured by the following equipment manufacturers:
 - 1. Glasco UV LLC.

2.05 GENERAL PRODUCT REQUIREMENTS

- A. Description of Work:
 - 1. The work under this Section shall cover furnishing a complete and operational temporary UV disinfection system:
 - a. The system shall be complete with UV banks, power distribution, master control, UV detection system and automatic cleaning system as indicated on the Drawings and specified in this Section.
 - 2. If the system utilizes active dose control based on the Third-Party Reactor Validation Testing, then it shall use the following parameters:
 - a. UV intensity, as measured by a calibrated sensor technology meeting USEPA/UVDM standards.

- b. Water quality (UVT).
 - c. Water flow.
 - d. Power (Ballast Power Level).
 - e. Based on these parameters, the system will either automatically vary the UV lamp power proportionally or turn banks on and off to continuously meet the dose requirement.
3. If the system utilizes flow pacing, it shall be based on Third-Party Reactor Validation Testing and shall use the following parameters:
 - a. UV intensity, as measured by a calibrated sensor technology meeting USEPA/UVDGM standards.
 - b. Water quality (UVT).
 - c. Water flow.
 - d. Power (Ballast Power Level).
 - e. Based on these parameters, the system shall turn UV banks on, off, or vary lamp power to maintain the setpoint dose at all times.
 4. The system shall be capable of continuous disinfection while automatically cleaning the UV lamp sleeves without reducing or shadowing the output of the lamps.
- B. General:
1. Unless otherwise specified, components in contact with the effluent and/or UV light shall be Type 304 or 316 stainless steel, Type 214 quartz glass, Viton, or Teflon™:
 - a. Wiring exposed to UV light shall be Teflon™-coated.
 2. Fasteners in contact with the effluent shall be Type 304 or 316 stainless steel.
 3. Unless otherwise specified, metal components above the effluent shall be Type 304 stainless steel.
 4. Enclosures shall be Type 304 stainless steel - NEMA 4X unless specified otherwise.
- C. Master Control Panel (MCP) general requirements:
1. Programming:
 - a. Supplier shall provide control equipment and programming as required for a complete and functional UV control system:
 - 1) Supplier shall be responsible for preparing, writing, and testing PLC programming logic associated with the UV control system and shall provide a system block diagram complete with inter-equipment wiring requirements:
 - a) Provide status, alarms, and process variable data to the plant SCADA system.
 - 2) Programming for the plant SCADA system shall be done by others hereby designated as the Programmer.
 - 3) Supplier shall include an allowance for an additional 8 hours total for the PLC and LOI to accommodate SCADA coordination programming:
 - a) Execution of hours will be determined by Engineer and Owner as needed.
 - b. Master Control Panel:
 - 1) The UV system Supplier shall provide a PLC-based Control Panel to monitor and control equipment associated with the UV Supplier's system:

- a) The UV MCP shall operate as an interface between the UV control system and the Plant PLC system.
- b) The Master UV PLC shall communicate to the Plant PLC system through Ethernet communications using Ethernet/IP protocol. The UV PLC shall be provided and programmed by the UV system Supplier.
- c) Provide communication capability for monitoring the UV system through the plant SCADA system as indicated on the Drawings and specified in this Section.
- 2) MCP shall contain a dedicated PLC.
- 3) The Ethernet switch inside the panel shall be provided as specified in Section 40_61_05 - Packaged Control System.
- 4) Main circuit breaker:
 - a) Door-mounted operator:
 - (1) Pad-lockable in the off position.
 - b) Disconnects power to the panel.
 - c) Interlock with the panel door:
 - (1) Defeat mechanism.
 - d) Properly sized for 10kAIC of available fault current based upon a 120VAC, single-phase power supply to the MCP.
- 5) Control power:
 - a) Primary voltage:
 - (1) 120 VAC, 1 phase, 60 hertz.
 - b) Control and status points to the facility SCADA system: 120 volt.
 - c) Secondary voltages:
 - (1) Additional voltages as required by the application.
- 6) Control components:
 - a) Terminal strips:
 - (1) Provide terminal strips for landing external wiring.
 - b) Relays, timers, and other components as required providing the specified functionality and remote monitoring connections.
- 7) Control system programming:
 - a) Programming:
 - (1) The Supplier shall be responsible for preparing, writing, and testing logic associated with the MCP.
- 8) Control devices:
 - a) MCP shall be provided with start and stop, and hand-off-auto control of the entire UV system.
 - b) A separate Hand-Off-Auto switch shall be provided on each Ballast Control Center (BCC).
 - c) At a minimum, the UV control system shall have the following inputs:
 - (1) UVT (Ultraviolet Transmittance) input (from SCADA), with hand input override from the LOI.
 - (2) Level signal used to calculate flow wired to the UV MCP.
 - (3) Motorized weir gate position indicator wired to the UV MCP.
 - (4) Low Water level input from Supplier supplied water level measurement instruments.
 - (5) UV Intensity Isolated analog 4 to 20 mA or 0 to 5 VDC input (from Supplier supplied UV Intensity sensor), 1 per bank.
 - (6) Hand input operational UV dose from LOI.

- 9) Dedicated LOI:
 - a) The LOI shall provide access to status and control functions for operations personnel.
 - b) Provide and program the local LOI Panel as specified in this section.

2.06 TEMPORARY UV DISINFECTION SYSTEM

- A. System construction:
 1. System shall include a stainless steel channel assembly, UV banks, motorized weir gate, automatic cleaning system, master system control panel, ballast control center, and accessories as specified.
- B. Channel assembly:
 1. The 304 or 316 stainless steel channel assembly shall be comprised of an inlet box, channel section and outlet box.
 2. The inlet box must allow for a connection to a 24-inch ANSI B16.5 Class 150 flange.
 3. The outlet box must allow for a connection to a 24-inch ANSI B16.5 Class 150 flange.
 4. The channel assembly shall be self-supporting.
- C. UV bank:
 1. Each UV bank will consist of UV lamps, quartz sleeves and an automatic cleaning system.
- D. UV bank lifting device:
 1. The lifting means for UV banks will be supplied by the Contractor when required.
- E. Automatic cleaning system:
 1. An automatic in-situ cleaning system will be provided to clean the quartz sleeves:
 - a. Wiping sequence will be automatically initiated with capability for manual override.
 2. The cleaning system will be fully operational while UV lamps and modules are submerged in the effluent channel and energized.
 3. Cleaning sequence frequency will be field adjustable to enable optimization with effluent characteristics.
 4. The wipers shall travel the full length of the UV lamp arc.
 5. Air compressor requires 120 VAC and will be powered from the Supplier provided Master Control Panel.
- F. UV intensity detection system:
 1. A submersible UV sensor will continuously monitor the UV intensity produced within each UV bank of UV lamps.
 2. The sensor shall measure only the germicidal portion of the light emitted by the UV lamps as measured at 254 nm:
 - a. The sensor shall have sensitivity at 254 nm of greater than 90 percent.
 3. The UV intensity sensor shall be accurate within 20 percent.
 4. The UV intensity monitoring system shall be calibrated in the factory.

5. The sensor shall be automatically cleaned at the same frequency as the lamp sleeves to prevent fouling of the sensor and resulting false alarms for low intensity.
 6. There shall be 1 UV sensor for every UV bank.
- G. Electrical:
1. Each UV bank shall be powered from the Ballast Control Center (BCC).
 2. Supplier to supply cabling between the lamps and ballasts.
 3. Contractor to perform terminations between lamps and ballasts based on direction from the Supplier.
 4. Electrical supply for the water level transmitters/switches will be provided by an external power supply.
- H. Ballast Control Center (BCC):
1. Electrical supply to each of Ballast Control Center(s) shall be 480/277 volts, 3-phase, 4-wire (plus ground) connection.
 2. BCC enclosure material shall be Type 304 stainless steel and rated NEMA 4X.
 3. Ballast Control Centers to be UL approved or equivalent.
 4. Data concentration shall be through integrated circuit boards located inside the BCC.
 5. BCCs shall be self-supporting.
 6. Each BCC shall include its own main circuit breaker interlocked with the BCC door:
 - a. The complete BCC unit, including the incoming main breaker shall have a minimum interrupting rating of 65 kA.
 7. Network communication with MCP shall be over Modbus or Ethernet/IP protocol.
- I. Master Control Panel:
1. Control requirements are specified in this Section.
 2. The UV control system shall include 1 Master UV PLC and associated enclosure for control and monitoring of the entire UV system:
 - a. The master UV PLC shall be located as indicated on the Drawings.
 - b. The master UV PLC shall be provided and programmed as indicated on the Drawings, and this Section.
 3. Electrical supply to the MCP shall be 120 volts, 1 phase:
 - a. Where Supplier's equipment requires other voltages, Supplier shall provide any transformers necessary for proper system operation.
 4. UV System control and monitoring shall be provided through display touchscreen to allow complete operator interface:
 - a. Hardwired panel devices and meters shall not be permitted.
 5. The Master UV PLC control panel shall be provided with a LOI.
 - a. Operator interface shall be menu-driven with automatic fault message windows appearing upon alarm conditions.
 6. Bank status shall be capable of being placed either in Manual (ON/OFF) or Automatic mode.
 7. Banks shall be cycled in a lead/lag rotation through automatic control at the Master UV PLC for equal wear and timed off to minimize bank cycling.
 8. Elapsed time of each bank shall be recorded and displayed at the LOI when prompted.

9. Master UV PLC Panel shall be UL approved, Type 304 stainless steel and rated NEMA 4X.
10. The Master UV PLC shall be provided with networking equipment required to properly communicate information to the plant SCADA system.

2.07 ACCESSORIES

- A. Face shields:
 1. Quantity: 1.
 2. Design: Block UV light wavelengths between 200 and 400 nm.
- B. Water level sensors:
 1. One ultrasonic level sensor (analog), provided by the Supplier, shall be included as indicated on the Drawings. The level sensor shall be installed upstream of the UV channel's level control gate. The signals from these sensors shall be used to control the effluent level in the channel. These level sensors shall also generate a low-level signal (dry-contact) that is wired to the BCCs to turn the lamps off when a low-level condition is present.
 2. During manual, automatic, and remote modes of system operation, the water level sensor shall ensure that the automatic cleaning system is disabled if the water level in the channel drops below an acceptable value.

2.08 OUTLET LEVEL CONTROL GATES

- A. The level control gate shall be designed and provided by the Supplier.
- B. Design:
 1. Located in the channel assembly.
 2. Designed to maintain a minimum channel effluent level to keep lamps submerged and comply with the hydraulic constraints set in this Section.
 3. Design flow per design criteria in this Section.
 4. Downward opening level control gate as specified in Section 40_05_59.20 - Low-Head Fabricated Stainless Steel Slide Gates.
 5. Motorized operator in accordance with Section 40_05_57.24 - Electric Actuators:
 - a. The motorized operator will interface with the UV MCP so that the UV PLC can monitor and control the level gate.
 - b. "Or Equal" operators will be considered for the temporary system. Control and communication compatibility must be demonstrated during the submittal process.
- C. Materials:
 1. As specified in Section 40_05_59.20 - Low-Head Fabricated Stainless Steel Slide Gates.
 2. Anchor bolts and other fasteners:
 - a. Type 316 stainless steel.

2.09 INSTRUMENTATION AND CONTROLS

- A. General:

1. Control system shall utilize a PLC-based control panel. Supplier system shall communicate with the Plant PLC using a dedicated network connection that shall be isolated from the Supplier field control network.
 2. Provide signals over network communication protocol as indicated on the Drawings. Plant PLC monitoring I/O shall be over the network connection.
 3. Supplier system shall be completely prewired, preprogrammed, and factory tested for proper operation prior to shipment.
 4. Supplier is responsible for providing the necessary control hardware, software, and components as required for a fully functional and operational installation.
- B. Control system and strategy:
1. Programming:
 - a. The Supplier shall be responsible for preparing, writing, and testing all ladder logic associated with the UV control system.
 2. Components:
 - a. Supplier will provide PLC-based MCP with operator interface and interconnects for monitoring the system through the plant control system.
 - b. The PLC outputs to the plant control system shall be via Ethernet/IP communication.
 - c. Provide required hardware, software and programming.
 3. The system's LOIs for the Master UV PLC shall provide manual-auto control of the UV system.
 4. Provide a separate manual-off-auto switch on each BCC enclosure. The BCC manual-off-auto switch shall override the control of any other remote device.
 5. UV system control philosophy:
 - a. Final control philosophies are subject to approval by the Engineer and Owner.
 - b. Monitored parameters including UV transmittance, flow, and UV intensity shall be used to operate the temporary UV system to deliver the setpoint dose.
 - c. UV transmittance shall be monitored by an existing UVT analyzer and the signal will be sent to the UV PLC via SCADA.
 - d. Flow shall be monitored by the UV system.
 - e. UV intensity shall be monitored for each UV bank.
 - f. Control philosophies shall use the dose equation included in the Engineering Report of the proposed UV Disinfection System, to continuously calculate the delivered dose of the system and automatically vary the lamp power or turn banks on and off to control the UV dose.
 - g. The dose equation and control philosophy shall be as follows:
 - 1) Dose as a function of flow, UVT, and UV intensity sensor value, directly in agreement with Third-Party Reactor Validation Testing results and approved by the Engineer:
 - a) The control system shall generate an alarm when the delivered UV dose is less than the setpoint UV dose.
- C. Control strategy: The UV control system shall be programmed to control the UV system as follows:
1. General:
 - a. The UV control system shall monitor and control equipment as specified in this Section to ensure that the target UV dose of the UV process is delivered for the given flow, UVT, and attenuated lamp conditions.

- b. The PLC program shall have the dose equation that is included in the Engineering Report of the proposed UV Disinfection System.
 - c. The Master UV PLC shall execute the following for the entire UV system:
 - 1) Monitor the flow for the system.
 - 2) Monitor UV intensity at each bank.
 - 3) Monitor the level in the UV channel.
 - 4) Monitor the level in each channel and disable the UV lamps if the level drops below the channel minimum water level.
 - 5) Calculate the UV dose delivered in the channel as specified in this Section.
 - 6) Control all UV equipment in the channel to deliver the target UV dose in the channel.
 - 7) Control the automatic cleaning system.
 - 8) Control the level control gate.
 - 9) Monitor UVT.
 - 10) Display flow through the system.
 - 11) Signal UV banks to start-up and shutdown as required.
 - d. Level sensors provided must detect low water level in the channel. Level sensors are wired to the BCC and/or MCP.
2. Automatic control:
- a. With a minimum of 2 UV banks and the outlet gate in the channel set to Auto mode, the operator can place the UV system into "Auto" mode from the Master UV PLC.
 - b. General:
 - 1) The lead bank shall always be on-line.
 - 2) Based on the flow, the Master UV PLC shall select the number of banks to be in service and the required power setting of each operating bank.
 - 3) The Master UV PLC shall monitor the power level (ballast power level or lamp current) of each bank and minimize the total power required to deliver the target dose.
 - 4) The number of ON/OFF cycles for any one UV bank shall not exceed 4 times per 24 hours, on average.
3. Start-up procedure of a bank:
- 1) When a bank is required to be brought into service, the Master UV PLC will initiate the following Start-Up Procedure:
 - a) The Master UV PLC will monitor the bank's effluent low-level signal. If the low-level signal is not in alarm then turn ON all lamps in the bank.
 - b) If an effluent low-level alarm exists in the requested bank then generate a Major Alarm, "Low Effluent Level".
 - c) If bank that was placed in service is replacing another bank, then wait until the new bank has completed the lamp warm-up stage before turning OFF the lamps in the off-line bank.
 - d) After the new bank's lamp warm-up stage is completed, switch the Dose Pacing PID to Auto.
 - e) The Master UV PLC shall optimize the percent ballast power level or lamp current to the UV lamps to deliver the target UV dose.
4. Shutdown procedure of a bank:

- b. When a bank is required to be taken out of service, the Master UV PLC shall initiate the following Shutdown Procedure to be executed by the Master UV PLC:
 - 1) The Master UV PLC shall calculate the new dose that will occur in the channel when the bank that is being taken off-line is completely out of service.
 - 2) If the number of operating banks is sufficient to treat the total flow with 1 less bank, then the Master UV PLC will move to the last step of this procedure.
 - 3) If the number of operating banks is not sufficient to treat the total flow with 1 less bank, then the Master UV PLC will maintain the current number of operating banks and display an informational warning.
 - 4) Upon verification that the operating banks can deliver the setpoint dose required for the current flow then the Master UV PLC shall turn the UV lamps OFF in the bank being taken out of service.
- 2. Control during filter backwash cycle:
 - a. The Master UV PLC shall receive a filter backwash cycle signal prior to the initiation of the backwash cycle via SCADA.
 - b. When the backwash cycle signal is received the Master UV PLC shall force the ballast power level to 100 percent for the online UV banks.
 - c. Dose pacing control shall be placed into manual mode and the ballast power level will not change during this period.
 - d. When the backwash cycle signal is removed the Master UV PLC shall start an operator adjustable timer (initially set to 5 minutes). After the timer expires the dose pacing control will be placed into automatic mode and the Master UV PLC will determine the required ballast power level based on the operating conditions at that time.
- 3. Upon Major (HIGH priority) alarm:
 - a. With the system in Auto mode, the Master UV PLC shall initiate the bank Shutdown Procedure specified in this Section under the following conditions after the next available bank has been placed in service:
 - 1) Major alarms generated by a bank will cause the next available bank to be placed in service and the bank with the Major alarm to be placed out of service.
 - 2) If another bank is not available then the bank with the Major alarm will remain on-line and the Master UV PLC will generate a Major alarm, "Not Enough Banks Available".
 - 3) If the other available banks have a Major alarm, then the entire UV system, banks, shall be placed on-line with the power to the lamps set to 100 percent.
 - b. Upon loss of communication between Master UV PLC and BCC's, the BCC's shall remain in their last operational state.
- 4. Upon Low UVT alarm:
 - a. The UV system shall continue operating.
 - b. The Master UV PLC shall trigger a Low UVT alarm.
- 5. Upon Loss of SCADA Communication alarm:
 - a. The Master UV PLC shall trigger a Loss of SCADA Communication alarm and set the UVT to the design value. The UV system shall continue to operate.
- 6. Upon Minor (Low priority) alarm:

- a. The Master UV PLC shall continue normal operation, monitoring and controlling the equipment as needed to deliver the target dose.
- 7. Power failure recovery:
 - a. Following a power failure, loss of power at BCCs, the plant Master UV PLC shall initiate communications with the BCCs and restore the last state of operation prior to the power failure or energize the duty banks.
 - b. The number of duty banks placed online after a power failure can also be based on an operator adjustable start-up flow.
- 8. Water level:
 - a. During Manual and Automatic modes of system operation, the Master UV PLC shall ensure that the lamps in the channel extinguish automatically if the water level in the channel drops below an acceptable value:
 - 1) The acceptable water level is specific to each UV system and shall be specified by UV Manufacturer.
 - b. During Manual and Automatic modes of system operation, the Master UV PLC shall ensure that the automatic cleaning system is disabled if the water level in the channel drops below an acceptable value specified by the UV Manufacturer.
- 9. With the UV system in Manual mode, the UV system shall be operated through the local Master UV PLC LOI:
 - a. The operator shall have the ability to manually turn banks ON and OFF.
 - b. The Master UV PLC shall continue to monitor the UV lamps and dose in manual mode.
 - c. The safety devices shall continue to act as permissives in Manual mode to prevent any potential damages to the UV system.
- 10. Alarms and monitoring:
 - a. Provide LOI alarms and monitoring required as specified in this Section and transmit monitored information and alarms to the plant SCADA system.
- 11. Monitoring and controls:
 - a. Bank ON/OFF status for each bank, status, and action.
 - b. Lamp Status and Alarm for each bank:
 - 1) ON.
 - 2) OFF.
 - 3) WARM-UP.
 - 4) FAILED.
 - 5) MULTIPLE LAMP FAILURE.
 - c. Gate Open/Close status and action.
 - d. UV Intensity (each bank) value.
 - e. Elapsed time per bank.
 - f. Number of starts per lamp.
 - g. Cumulative number of ON/OFF cycles (each bank).
 - h. Ballast power (lamp current) setpoint and value (each bank).
 - i. UV transmittance value.
 - j. Provide the operator the ability to override the UVT analyzer value and manually enter the UVT value based on laboratory testing.
 - k. Setpoint UV dose.
 - l. Flow rate.
 - m. Filter backwash cycle status.
- 12. Major (High priority) alarms:
 - a. Outlet Gate Fail – Position feedback does not match the control signal.

- b. UV Sensor Out of Range (intensity sensor reading is greater than 20 percent of the validated intensity value at the current operating conditions).
 - c. LOW Dose (delivered RED dose drops below an operator adjustable setpoint accessible at the Master UV PLC).
 - d. Channel LOW Water Level.
 - e. Not Enough Banks Available FAIL.
 - f. Multiple (Percent) Lamp FAIL (more than operator adjustable percentage setpoint lamps fail per bank):
 - 1) Default setpoint will be 10 percent.
 - g. Power Fail:
 - 1) Alarm generated from external dry contact provided from the MCP.
 - h. BCC High Temperature.
 - i. Loss of UV Intensity Signal at BCC.
 - j. Communication Fail, Master UV PLC to SCADA.
 - k. Communication Fail, Master UV PLC to UV BCCs.
13. Minor (Low priority) alarms:
- a. LOW UVT (UV transmittance drops below an operator adjustable setpoint accessible at the UV LOI).
 - b. Cleaning System Fail.
 - c. Individual Lamp FAIL (include location of lamp by bank and position).
 - d. MCP High Temperature.
14. Screen indicators:
- a. Inputs, monitoring and alarms listed in this Section must be shown visibly within the LOI screen. Additional items to be displayed on the LOI screen include:
 - 1) Outlet Gate Position Indication.
 - 2) Outlet Gate Manual/Automatic Status Indication.
 - 3) Channel Flow.
 - 4) UV Transmittance.
 - 5) Bank ON/OFF Status.
 - 6) Bank Manual/Automatic Status.
 - 7) Bank Warming-Up/Operating Status.
 - 8) Bank Elapsed Time.
 - 9) Bank Cleaning Status.
 - 10) Number of starts per bank.
 - 11) Dose Indication (process variable and setpoint).
 - 12) UV intensity sensor indications (for each bank).
 - 13) Ballast Power Level (for each bank).
 - 14) Operation Mode:
 - a) Manual or automatic mode.

2.10 MAINTENANCE

- A. Special tools:
 - 1. Provide 1 set of special tools required for operation and maintenance, and complete assembly or disassembly of the UV disinfection system.
- B. Spare parts:
 - 1. The UV Disinfection System Supplier shall furnish, at a minimum, the following spare parts for each system provided:

- a. UV Lamps: 10 percent additional.
- b. UV Ballasts (complete): 5 percent additional.
- c. Quartz Sleeves: 10 percent additional.
- d. Lamp Sealing Rings or Holder Seals: 10 percent additional.
- e. Lamp Plug Assemblies: 5 percent additional.
- f. Lamp Cables: 1.
- g. Wiper or Wiper Rings: 10 percent additional.
- h. UV Sensors: 2.
- i. Cleaning Solution (if applicable): For 8 months of operation after acceptance of Initial Performance Test.
- j. Proprietary Printed circuit boards: 5 percent additional of each type supplied with a minimum quantity of 1.
- k. Fans: 5 percent additional of each type supplied with a minimum quantity of 1 of each type.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Installation of the UV equipment shall be by the Contractor in accordance with the Contract Documents, and Supplier's engineering drawings and instructions:
 - 1. Supplier shall supervise the installation of the UV equipment.
 - 2. Contractor, in accordance with the Contract Documents and the Supplier's engineering drawings and instructions, shall install the equipment provided by the Supplier.
 - 3. Temporary equipment will be installed outdoors.

3.02 FIELD EQUIPMENT CHECKS

- A. Equipment checks:
 - 1. Prior to the Field Testing (as detailed below, including Hydraulic, Alarm and Functional Testing, Initial Performance Test, and other testing), the Supplier shall check that equipment is installed properly, and functions as specified in this Section.
 - 2. The equipment checks shall include, but not be limited to:
 - a. Proper installation and alignment of UV support structure defined as the structure used to support and secure the channel assembly containing the UV banks and associated mounting brackets.
 - b. Water tightness of submerged equipment.
 - c. Proper placement of UV lamp banks to assure specified water levels relative to the lamps.
 - d. Electrical wiring and connections.
 - e. Proper operation of instrumentation, alarms, and operating indicators associated with the UV equipment.
 - f. Proper placement and operation of lamp driver/ballast and other equipment in the control panels.
 - g. Adequate cooling of the control panels.
 - h. Proper operation of lamp bank shut-off switches.

- B. Upon completion of equipment checks, the Supplier shall submit to the Owner written certification that UV equipment and accessory equipment associated with the UV disinfection system have been properly installed, are in good condition, are functioning properly, and are in accordance with the Contract Documents.

3.03 FIELD TESTING

- A. Following the Supplier's calibration of test instruments, the Supplier shall perform Component, System, and Operational Tests on the UV disinfection equipment system:
 - 1. It is the responsibility of the Supplier and Contractor to jointly coordinate and arrange the times for testing and start up activities; however, the Contractor must confirm that these times are acceptable to the Owner.
- B. Calibration:
 - 1. Supplier to ensure all instrumentation associated with testing is calibrated within 180 days prior to the field testing.
 - 2. If retesting is required, the Supplier shall recalibrate instruments associated with the retest if they have not been calibrated within the previous 240 days and submit that information to the Engineer prior to retesting.
- C. Data Collection:
 - 1. Direct readings from the instruments shall be used in the calculations to determine conformance with the guaranteed performance requirements.
 - 2. Readings shall be obtained from digital trends from the UV disinfection equipment system PLC and by manually recording the values directly from the instrument.
 - 3. Record (and round if necessary), to the level of accuracy of the instrument before any calculations.
 - 4. Collect manual instrument readings before and after sampling during the Initial Performance Test.
 - 5. There shall be no adjustment to readings or calculations due to random or systematic instrumentation error or accuracy limitations.
 - 6. The Supplier shall document modifications, changes, or additions and amend the operations and maintenance manuals and record drawings to reflect the modifications.
- D. Retesting:
 - 1. The Supplier shall be responsible for retesting.
 - 2. Supplier shall recalibrate test instrumentation associated with the retest as specified in this Section, if the instrumentation has not been calibrated within the 240 days immediately prior to the retest:
 - a. Reimburse the Owner for Owner's costs associated with the retesting, including engineering fees and administration costs.

3.04 HYDRAULIC, ALARM AND FUNCTIONAL TESTING

- A. After the Owner accepts the Supplier's written certification of proper installation of the Temporary UV System as specified in this Section, the Hydraulic, Alarm and Functional Testing shall be performed to determine whether the equipment meets the hydraulic, alarm and control function conditions specified in this Section.

- B. Separate protocols for the Hydraulic Testing and the Alarm and Functional Testing shall be submitted to the Engineer for approval a minimum of 30 days prior to the scheduled UV system start up:
 - 1. Hydraulic, Alarm and Functional Testing will occur over a period of several days and shall be performed by the Supplier and Contractor with the assistance of the Owner.
 - 2. Channel Level Control Tests: Water level in the channel shall be measured and plotted showing flow rate in MGD on the horizontal axis and water level in inches of water on the vertical axis.
 - 3. The level between the downstream bank of lamps and the level control gate shall be used to verify the level data compared to the Supplier's specifications:
 - a. A minimum of 4 water level measurements shall be taken during this test at approximately 25, 50, 75, and 100 percent of the design flow rate.
 - 4. Alarm and functional testing shall include simulation of flow and water quality change, lamp and bank failures, sensor performance alarms and the proper maintenance of the minimum UV dose over a range of flow and water quality conditions, as specified in this Section:
 - a. This test shall also include automatic control of the UV banks, start-up and shutdown of UV banks, bank rotation based on operator selection and high priority alarms, and other control functions as specified in this Section.

3.05 INITIAL PERFORMANCE TEST

- A. Following completion of the Hydraulic, Alarm and Functional Testing and calibration of instruments, the Supplier and the Contractor shall conduct the Initial Performance Test (IPT):
 - 1. The IPT shall be conducted to determine whether or not the equipment meets the Performance Test Requirements specified in this Section.
- B. Supplier shall submit a detailed protocol to be followed for the IPT for both the reuse and discharge effluents at least 30 days in advance:
 - 1. This protocol requires written approval by the Owner/Engineer before initiating the tests.
 - 2. The protocol shall specifically detail the operational mode of the system, sampling program, method and schedule, equipment and system monitoring data to be collected with each sampling, the daily (manual) log format, and sampling and analytical procedures.
 - 3. Upon acceptance of the protocol and the recommended laboratory by the Owner/Engineer, the Supplier shall commence the performance test.
 - 4. The Contractor shall collect and process duplicate influent and effluent samples two times per day for a total of 3 days:
 - a. Additional samples shall be collected for total suspended solids and UV transmittance for each test.
- C. Supplier and the Contractor shall provide the IPT Report within 10 working days of completion of each test period.

- D. To perform the test, the Supplier and the Contractor shall operate the system continuously over a 3-day test period, and collect and summarize data to demonstrate that the system meets the following Performance Test Requirements:
1. Net production capacity:
 - a. System meets average daily flow and peak flow rate requirements as specified in this Section.
 2. Minimum design dose:
 - a. System can deliver the minimum design UV dose as specified in this Section.
 3. UV Disinfected Effluent Water Quality:
 - a. UV Disinfection system produces an effluent in complete compliance with requirements as specified in this Section.
 4. Cleaning:
 - a. The on-line, automatic cleaning system cleans the lamps as thoroughly and frequently as is required for the system to deliver the minimum design dose.
 5. No major changes in equipment or apparatus will be permitted during this test period:
 - a. However, minor adjustments of equipment that would normally be expected during regular operation of the equipment in plant use may be made.
- E. Successful completion of the IPT shall be defined as continuous operation over the IPT test period without a major failure in the system and demonstration that the system meets performance requirements established in this Section.
- F. Downtime resulting from Owner's operation will not be counted against the criteria of "continuous days of operation".
- G. If during the IPT, the system fails or shuts down, the IPT shall then be rerun, as described above, and additional testing, labor, materials, equipment, etc., associated with correcting deficiencies in the UV system, including the repeated performance test, shall be borne by the Supplier:
1. Each repetition of the IPT shall be for a continuous period unless failure to meet performance requirements as specified in this Section has been documented and modifications have been accomplished.
- H. During the IPT, the Owner shall have the option of collecting samples for independent analyses to confirm measurements and analyses conducted by the Supplier and the Contractor:
1. The Engineer and the Owner shall have the option of witnessing testing performed by the Supplier and the Contractor.
 2. Supplier shall notify the Engineer a minimum of 2 weeks in advance of testing.
- I. If the UV disinfection equipment system fails to successfully complete the IPT, the Supplier shall have the option of repeating the test 2 more times, with costs borne by the Supplier.
- J. Consequences to the Supplier for failure to successfully complete the IPT are that the disinfection capacity of the system is derated.

3.06 TRAINING OF OWNER'S PERSONNEL AND SUPPORT SERVICES

- A. General requirements:
1. Provide operations and maintenance training for items of mechanical, electrical and instrumentation equipment:
 - a. Utilize Supplier's personnel to conduct training sessions.
 2. Coordinate training sessions to prevent overlapping sessions.
 3. Provide Draft Operation and Maintenance Manual for specific pieces of equipment or systems prior to training session for that piece of equipment or system.
 4. Satisfactorily complete Hydraulic, Alarm and Functional Testing before beginning operator training.
 5. Following Owner's acceptance of Certificate of Proper Installation, the Supplier shall perform training of Owner's personnel at the site, or a classroom designated by the Engineer.
 6. The training provided by the Supplier's representative shall consist of both classroom and field training based upon Owner's schedule.
 7. The Supplier shall give the Owner a minimum of 30 days' notice prior to initiation of training.
 8. The Supplier shall designate and provide 1 or more persons to be responsible for coordinating and expediting training duties:
 - a. The person or persons so designated shall be present at training coordination meetings with the Owner.
 9. The Supplier's coordinator shall coordinate the training periods with Owner personnel and shall submit a training schedule for each component of the UV disinfection equipment system for which training is to be provided:
 - a. Such training schedule shall be submitted not less than 30 calendar days prior to the time that the associated training is to be provided and shall be based on the current plan of operation.
- B. Specific requirements:
1. In addition to the time necessary to complete the requirements established elsewhere within these Specifications, the Supplier's representative shall also provide onsite services at times designated by the Owner, for the minimum person-days listed below, travel time excluded.
 2. Installation Supervision and Inspection:
 - a. Minimum 5 person-days to handle various requests by the Owner, including during the unloading of UV disinfection equipment system and for providing installation assistance for the UV disinfection equipment system (assume 1 trip).
 3. Start-up and field-testing:
 - a. Minimum 6 person-days to handle various requests by the Owner, for assistance during start up activities (assume 2 trips).
 4. Operator training:
 - a. Training shall consist of a minimum of total of 8 hours (1 trip) of hands-on lectures on the UV disinfection equipment system operation and the maintenance requirements, and replacement and repair processes for lamps, ballasts, wipers, sleeves, and ancillary equipment.
 5. Maintenance Service - Service Scheduling:
 - a. By Owner request any time during warranty period as specified on the Warranty Form.

- b. Factory representatives of the Supplier who have complete knowledge of the proper operation and maintenance of the equipment, shall be provided to instruct representatives of Owner on the proper start-up, operation, and maintenance.
- C. Supplier shall include in the proposal a price for the time and expenses listed above.
- D. Supplier's representative shall be a qualified individual who has previously provided onsite services for the installation, testing, and start-up of the Supplier's identical system at a minimum of 5 wastewater treatment plants of similar size.
- E. Telephone:
 - 1. Include the following support during the construction period, estimated to be 8 months in duration, in lump sum price:
 - a. Provide telephone support by means of a toll-free phone number.
 - b. Provide a list of 3 or more names of individuals qualified to support operation and provide cell phone numbers for these individuals.
 - c. At least 1 of the listed individuals shall be available at all times including nights, weekends, and holidays in the event of an emergency.
- F. Service scheduling:
 - 1. By Owner, on request any time during warranty period as specified.
 - 2. Factory representatives of the Supplier who have complete knowledge of the proper operation and maintenance of the equipment, shall be provided to instruct Owner on the proper start-up, operation, and maintenance.

END OF SECTION

This document is a MODIFIED version of EJCDC® C-410, Copyright© 2018 by the National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers, or is based in part on excerpts from copyrighted EJCDC documents. All rights reserved. Those portions of the text that originated in copyrighted EJCDC documents remain subject to the copyright.

ATTACHMENT B
TELSTART

EXHIBIT “B”

FEE PROPOSAL FORM

<p>Proposer Name: Telstar Instruments Address (<i>principal place of business</i>): 4017 Vista Park Court, Sacramento, CA 95834</p>	<p>Project Name: PROGRAMMING FOR THE ULTRAVIOLET DISINFECTION SYSTEM REPLACEMENT PROJECT</p>
<p>Owner Name: City of Pacifica Address (<i>principal place of business</i>): 540 Crespi Drive Pacifica, CA 94044</p>	<p>Project Location: CALERA CREEK WATER RECYCLING PLANT 700 COAST HIGHWAY PACIFICA, CA 94044</p> <p>Proposal Due: February 23, 2024</p>
<p>Fee Proposal for Programming Services Fee Proposal: \$ 181,830.00 Date: 2/23/24</p>	<p>Addenda Acknowledged (list addendum number and date received): N/A</p>
<p>The above proposed fee will be included in the installation contract RFP for the UV Disinfection System Replacement Project (“Project”), and the selected Proposer will be assigned as a subcontractor to the selected installation contractor (“Contractor”) under the Project. Proposal is based on the Scope of Work and RFP dated February 5, 2024 for the project named above.</p>	
<p>Proposer Telstar Instruments</p>	<p>City of Pacifica</p>
<p>(<i>Full formal name of Proposer</i>)</p>	
<p>By:  (Signature)</p>	<p>By: _____ (Signature)</p>
<p>Name: <u>Telstar Instruments</u> (Printed or typed)</p>	<p>Name: _____ (Printed or typed)</p>
<p>Title: <u>Vice President</u></p>	<p>Title: _____</p>
<p>Attest: _____ (Signature)</p>	<p>Attest: _____ (Signature)</p>
<p>Name: _____ (Printed or typed)</p>	<p>Name: _____ (Printed or typed)</p>
<p>Title: _____</p>	<p>Title: _____</p>

City of Pacifica
Request for Proposal (RFP)
Calera Creek Water Recycling Plant
Programming for the UV Disinfection System Replacement
Project



March 23, 2024

Proposal Submitted By



Telstar Reference: 30-42735

4017 Vista Park Ct., **Sacramento**, CA 95834 Phone 916-646-1999, Fax 916-646-1096
1717 Solano Way, Unit 34, Concord, CA 95620 Phone: 925-671-2888, Fax 925-671-9507
202 South Douty Street, **Hanford**, CA 93230 Phone 559-584-7116, Fax 559-584-8028

COVER LETTER

February 16, 2024

Louis Sun
City of Pacifica
Lsun@pacificagov

Subj: RFP for CCWRP-Programming for UV Disinfection Replacement Project
Ref: Telstar SR# 30-42735

Dear Louis,

The City of Pacifica seeks the services of qualified system integrators to provide services for programming of the City's existing SCADA front-end systems for monitoring, control, historical database, and alarming to replace the existing UV system with a new UV system, including programming of the existing plant PLC equipment associated with the UV replacement.

Telstar Instruments (Telstar) has been performing this type of work for more than 40 years for many water and wastewater facilities from Bakersfield to Chico. We have performed projects very similar to yours for Discovery Bay WWTP, Mariposa Public Utilities District, El Dorado Irrigation District and Manteca Water Quality Control Facility.

Ben Herston, Telstar's Managing Director, is authorized to enter contracts for Telstar. Ben may be contacted during the period of proposal evaluation, bind Telstar, and negotiate a contract with the County. Ben's contact information is: Ben Herston, Managing Director, 4017 Vista Park Court, Sacramento, California 95834; Bherston@telstarinc.com; (916) 204-2747.

To ease the review process, Telstar follows the "Required Proposal Submittal" format in our proposal.

Sincerely,

Ben Herston
Managing Director
Telstar Instruments
(916) 204-2747

A. Project Overview

Telstar is clear on the understanding of the Scope of Services as outlined in the RFP. Telstar reviewed Pacifica's current SCADA screens to clearly understand the project. The SCADA Programming for the UV Disinfection System Replacement Project involves the integration of new and temporary UV system programming while eliminating programming related to the existing UV system. As the selected proposer, we are committed to being a vital subcontractor to the installation contractor, aligning our efforts with the City's goals.

The three programming phases are meticulously planned, ensuring seamless integration and operation of the temporary and new UV systems. Our proposal includes staffing and cost considerations for effective coordination during the Project period.

We are clear that the implementation will occur in three phases. The first phase will occur in the early spring when we modify the programming to the plant SCADA and PLC systems to incorporate SCADA control, alarm and indication features related to the temporary UV systems, while operating simultaneously with the existing UV system SCADA and PLC programming. The second phase will occur in the fall when we make the modifications associated with the new UV system while operating simultaneously with the temporary UV system, and eliminate the programming associated with the removed, existing UV system. The third phase will occur during the early winter months when we remove the programming associated with the temporary UV system and finalize the new UV system SCADA and PLC programming.

The new UV system PLC and local main UV panel operator interface screen will be performed by the UV system supplier. Telstar will coordinate with the Trojan programmer to gather required data signal addressing information. We understand that the new UV control system platform is AB ControlLogix with PanelView Plus 7 display. We will coordinate with Trojan for shared information on the graphical display for similar presentation of features and arrangement, and we understand that Trojan will likely not provide their proprietary graphical screen or PLC programming software files.

B. Project Team

Telstar is committed to providing the resources needed to complete the project on time and on budget. We do not intend to use any subcontractors and will complete all work with in-house staff.

Suresh Patil, Telstar's SCADA/PLC Project Manager/Programming Manager

Suresh manages our 18 SCADA/PLC programmers. Suresh is responsible for the implementation of instrumentation and control system projects for Telstar and will be assigned as the project manager and lead technical resource for this project. With over 20 years of experience, Suresh provides the full range of SCADA integration services, including design, implementation, and service. His programming competencies as a programmer and controls system integrator include:

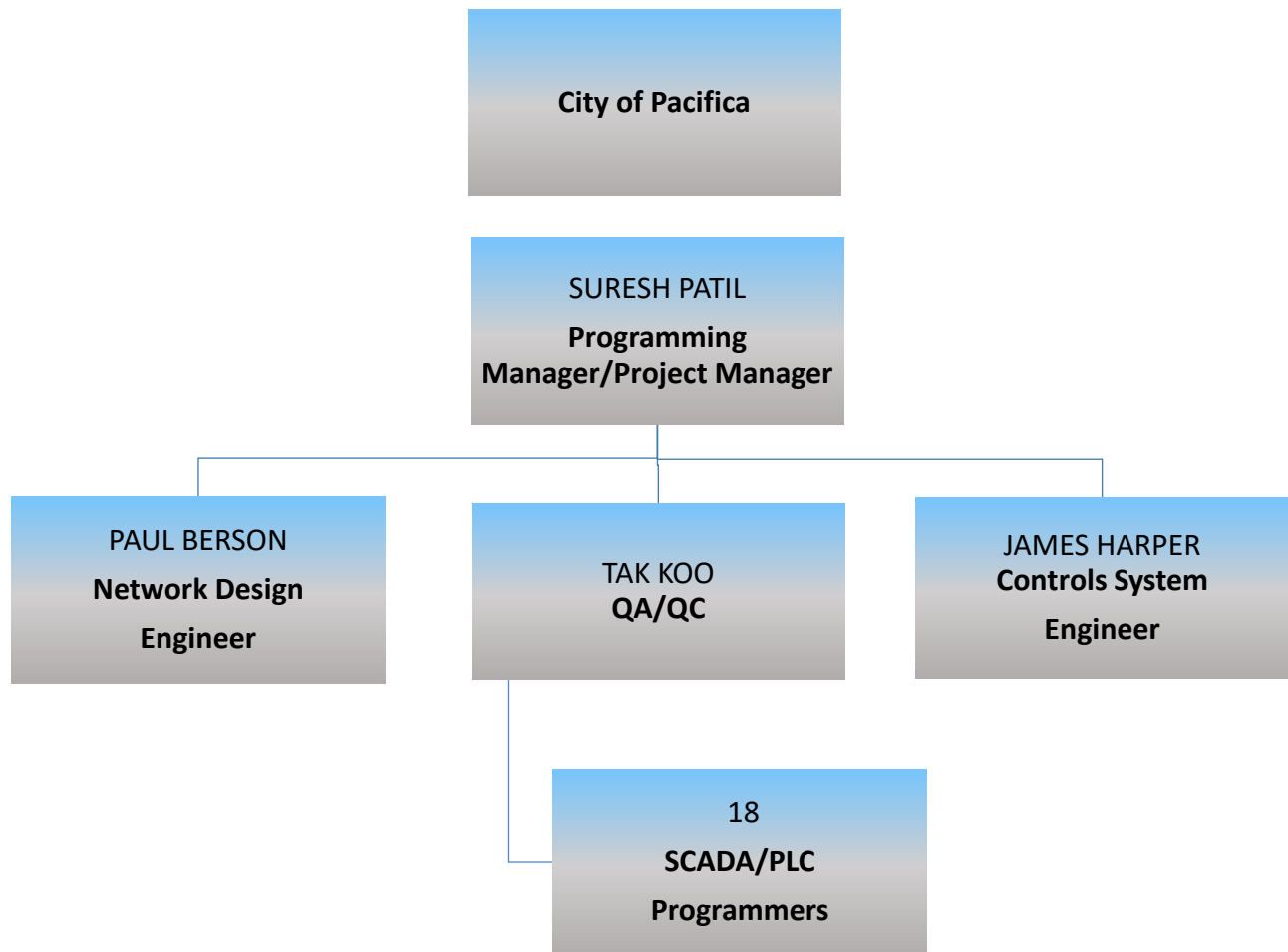
- SCADA radio and telemetry based, 975mhz and 450mhz FCC licensed, 900mhz spread spectrum, FSK, lease or modem data phone line.
- PLC Programming: Allen Bradley, Schneider-Modicon, Siemens, GE Fanuc, DirectLogic, Scadapack, Automation Direct PLCs.
- RSLogix 5, 500, 5000, ProWorx32, Concept, Unity, Schneider EcoStructure System, Direct Soft, Telespace, Proficy ME, Indralogic 1.31, Codesys 2.2.
- Operator Interface Terminals: Panel Builder 32, FactoryTalk ME, Vijeo Designer, Protool, C-more, Proficy ME.
- SCADA: Wonderware InTouch/Historian, Wonderware System Platform, Rockwell Rsvi32, Rockwell FactoryTalk SE, Rockwell PlantPax, GEIFIX, Ignition, Clear SCADA Cimplicity.
- SCADA Reporting and Alarming: Custom Reporting Software, XLReporter, DreamReports, Win911, TopView, SCADAPhone
- Industrial electrical systems: variable frequency drives, soft starters, motor control centers, automatic transfer switch systems, uninterruptable power supplies, and various instrumentation.
- Virtualization VMware Esxi, Vsan and Computer Networking.

Paul Berson serves as our Network Design Engineer. Paul recently completed an expansion of the existing 900 MHz system for the City of Ceres (18 sites) where he surveyed all locations and determined requirements for new antenna masts, antennas, radios, and controls. For Alameda County Flood Control & Water Conservation District (23 sites), Paul replaced the entire communications network. He installed new 900 MHz tail end links, and 5 GHz backbone throughout the County. Paul prepared computer models of the system, field surveyed all locations and determined requirements for new antenna masts, antennas, radios, and networking. At the City of Fairfield (28 sites), Paul replaced their UHF radio network with a new 200 MHz licensed network, including multiple repeater sites.

Tak Koo is our QA/QC Inspector. Tak oversees fabrication, testing and consistent quality of control panels for all projects. Tak Koo recently completed a large \$8M SCADA System Upgrade Project for the Alameda County Flood Control & Water Conservation District. The project involves replacement of the proprietary HSQ hardware and software with Ignition software at 23 large storm water pump stations throughout the County, in Oakland, San Leandro, Hayward, Union City and Sunol. Upgrades include installation of Process Automation Controllers (PACs), SCADA servers, HMI workstations, portable computer workstations, network equipment, radio communications and other ancillary equipment. Tak Investigated and documented the facilities "as-found," designed the new control systems, and specified the new level and gas detection instrumentation. Telstar was solely responsible for the general contracting, electrical, and control systems engineering, all onsite demolition and construction, programming, testing, and commissioning efforts for the project. Outsourcing was limited to Computerized Maintenance Management Software (CMMS) and Asset Management Software (AMS), as specified by the owner.

Sr. Engineer **James Harper** recently completed a large SCADA and PLC design and upgrade project for El Dorado Irrigation District. James was responsible for QA/QC, panel building, electrical, mechanical, programming and site loop testing work on the project. James hosted several preliminary SCADA design review meetings and workshops for the development of a new Wonderware Archestra High Efficiency graphic SCADA system for the entire plant. He coordinated the replacement of 4 VFDs, 2 Utility water motors, plant power monitoring equipment, installation of new fiber communication ring, upgrade of 8 PLC panels, and site investigations to prepare the as-built drawings for the 17 PLC panels around the plant. This was a staged project as each PLC panel was upgraded one at a time in a fully operational Wastewater Treatment plant. Telstar functioned as the general contractor and performed all programming, electrical, and mechanical, site commissioning work.

ORGANIZATION CHART



C. Project Understanding and Approach

Our proposal is deeply informed by our comprehensive understanding of the existing SCADA system's intricacies, including its configuration, tag allocation, and operational screens. Leveraging this understanding, **Telstar** is committed to delivering a seamless transition that not only maintains the plant's operational integrity but also enhances its monitoring, control, and efficiency.

Integration of Existing System Features

Acknowledging the current system's configuration with 494 tags and detailed functionalities across UV channels, settings, and displays, our approach focuses on a meticulous, phased integration strategy that respects and builds upon the established SCADA infrastructure.

1. Preservation of Current Functionalities
 - Tags and Displays: All 494 tags will be carefully mapped and integrated into the new system, ensuring no loss of data or functionality. This includes detailed UV channel displays, process alarms, dose control settings, and analog ranges.
 - Main UV Page and Bank Screens: The navigation structure, including the main UV page that links to each bank (1A, 1B, 1C, and 1D), will be replicated and enhanced in the new system. Each bank's screen, featuring 12 modules with 8 lamps each and 5 status indicators color-coordinated, will be meticulously programmed into the new setup.
2. Enhanced User Interface and Navigation
 - Navigation Enhancements: We will enhance the system's navigation capabilities, including pop-up displays for major UV alarms, trend screens, and detailed UV process overviews. This includes power level trends, intensity trends, flow and dose trends, ensuring operators have real-time access to critical operational data.
 - UV Help and Logical Display: The UV help screen and logical display functionalities will be carried over and improved, providing users with intuitive access to system information and troubleshooting guides.
3. Advanced Programming Modifications
 - Module and Bank Configuration: Attention will be given to the unique configuration of each UV bank, including module reset buttons, manual power level settings, bank mode operations, initial bank wipes, lamp/ballast displays, and lamp runtime hours. These features will be carefully programmed and tested in both the temporary and new UV systems.
 - Alarm and Trend Integration: Our programming will ensure that all alarms and trends are fully integrated and accessible, with enhanced visualization and user interaction to support efficient plant operation and decision-making.

Coordinated Development and Testing

Our development process will prioritize close coordination with the City, Trojan, and all relevant stakeholders, ensuring that the transition to the new system is smooth and fully aligned with operational requirements and standards.

1. Factory and Site Acceptance Testing: We will conduct comprehensive FAT and SAT phases to verify the functionality and performance of the SCADA system against the detailed specifications of the current and new UV systems. This includes simulating operational scenarios to test the integration of alarms, trends, and navigational features.
2. Training and Documentation: Post-implementation, we will provide thorough training sessions to City staff, focusing on the enhanced features and functionalities. Comprehensive documentation, including operation manuals and as-built drawings will be provided to ensure ongoing support and system optimization.

Conclusion

Telstar is fully prepared to leverage our expertise and understanding of the **Calera Creek Water Recycling Plant's** current SCADA system to deliver a state-of-the-art UV Disinfection System Replacement. Our approach guarantees a seamless transition with enhanced operational capabilities, ensuring the plant continues to provide safe, efficient water treatment services to the **City of Pacifica**.

Please find below the detailed outline of the tasks and approach:

1. Existing Site Conditions:

- a. Identification of Existing Infrastructure:** Conduct a thorough assessment to identify existing Programmable Logic Controllers (PLCs), RIO racks, Plant SCADA, Human Machine Interface (HMI), and the overall network architecture. Gather existing PLC and SCADA programs for comprehensive understanding.
- b. Parallel Installation:** Ensure modifications to the existing SCADA system programming are installed in parallel, ensuring continuous monitoring and control without interruptions, unless written permission is granted by the City.
- c. System Documentation Review:** Review existing system documentation and design for a comprehensive understanding of the current state.

2. Develop Proposed Site Changes:

- a. Submission of Submittal:** Submit detailed conceptual drawings, illustrating modifications to the existing SCADA and PLC network for each of the three work phases. Provide a comprehensive description of the SCADA headend configuration, installation details, and an updated network architecture drawing.
- b. Coordination Meetings:** Collaborate with the Contractor to schedule and attend essential programming coordination meetings with the Owner, Engineer, and other stakeholders, including Project Kickoff, Progress Meetings, Installation, Testing, and Commissioning Plan Workshops, and Startup Meetings.

3. Programming and Testing:

- a. Factory Acceptance Test (FAT):** Program and factory-test all SCADA and PLC software before installation at the treatment plant. Submit a Factory Acceptance Test plan 30 days before planned testing.

4. Installation, Testing, and Commissioning:

- a. Phased Plan Development:** Develop a phased plan for installation, testing, and commissioning in coordination with the Contractor and Trojan, minimizing impact on treatment plant operations. Provide scheduling information to the Contractor for incorporation into the overall project construction schedule.
- b. Workshops and Coordination Meetings:** Schedule and attend two Installation, Testing, and Commissioning Plan Workshops to review plans in detail with stakeholders. Present layout and functionality of new SCADA screens to the City for review, ensuring optimization for a 16:9 aspect ratio display.

5. SCADA And PLC Programming:

- a. System Development:** Develop SCADA interface screens aligned with existing standards and industry best practices. Incorporate design elements compatible with the City's most current system. Ensure widescreen 16:9 aspect ratio for system graphics.
- b. Data Migration:** Copy and map all tags and history from existing system programming to the new system programming. Develop SCADA interface screens that generate daily regulatory reports, ensuring consistency with the existing system.

6. Integration:

a. Configuration of SCADA Servers: Configure SCADA servers for redundancy with automatic fail-over and continuous historical data collection. Ensure virtual machine hosts balance loading, automatically move virtual machines in case of hardware failure, and maintain overall system reliability.

b. Configuration Tasks: Submit updated tag database. Install latest revisions of all required software. Migrate existing graphic screens, configure and test alarm priorities, and annunciation for all tags. Reconfigure and test all Regulatory Reports in collaboration with Contractor and City staff.

7. Testing:

a. Functional Testing: Devote qualified personnel to test all functions, including alarms, trends, set points, and communication drivers. Demonstrate system functionality and conduct thorough client/workstation testing. Implement an approved cutover plan, removing existing SCADA and PLC programming and verifying system functionality.

b. Installation Acceptance Test (IAT): Perform IAT for hardware and software, including individual end-item verification and integrated testing of all components. Conduct a 72-hour continuous run monitored for each phase, ensuring no function loss or hardware/software failure.

c. Site Acceptance Test (SAT): Perform SAT after system installation, verifying complete operation and integration with all plant PLCs. Demonstrate correct communications, monitoring, control, and reporting.

d. System Availability Demonstration (SAD): Conduct a 30-day SAD, evaluating system availability and performance under day-to-day operation. Provide optimization and corrective support during the demonstration.

8. Training:

a. Training Sessions: Provide two 4-hour training sessions upon completion of work associated with each phase, covering temporary and permanent UV disinfection systems. Deliver an overview of new features, changes to screens, navigation, alarming, reporting, and security features.

9. Warranty and Technical Support:

a. Integration Warranty: Provide an 18-month warranty for the integration, including technical support for all equipment and software. Correct programming errors during the Warranty Period.

b. Onsite Service: Offer 40 hours of onsite service after acceptance for requested improvements or modifications to optimize the operator's experience. This comprehensive approach ensures meticulous planning, transparent coordination, and thorough testing, aligning with the City's requirements and industry best practices throughout the UV Disinfection System Replacement Project.

Project Deliverables List

1. Existing Site Conditions Assessment Report:

- Comprehensive report on identified existing Programmable Logic Controllers (PLCs), RIO racks, Plant SCADA, Human Machine Interface (HMI), and network architecture.
- Documentation of existing PLC and SCADA programs submittal.

2. Proposed Site Changes Submission Drawings Submittal:

- Detailed conceptual drawings illustrating modifications to the existing SCADA and PLC network for each of the three work phases.
- Description of the SCADA headend configuration, installation details, and an updated network architecture drawing.

3. Coordination Meetings Documentation:

- Records of coordination meetings with stakeholders, including Project Kickoff, Progress Meetings, Installation, Testing, and Commissioning Plan Workshops, and Startup Meetings.
4. **Factory Acceptance Test (FAT) Submittal:**
 - FAT plan submitted 30 days prior to planned testing.
 - Report detailing the factory testing of all SCADA and PLC software.
 5. **Installation, Testing, and Commissioning Phased Plan:**
 - Detailed plan outlining the phased approach to installation, testing, and commissioning.
 - Scheduling information provided to the Contractor for incorporation into the overall project construction schedule.
 6. **SCADA And PLC Programming Submittal:**
 - Developed SCADA interface screens aligned with existing standards and industry best practices.
 - Copy and mapping documentation of all tags and history from existing system programming to the new system programming.
 - Updated tag database submission.
 - Documentation of the installation of the latest revisions of all required software.
 - Documentation of new graphic screens configured and tested alarm priorities, and annunciation for all tags.
 - Regulatory Reports documentation, including reconfiguration and testing.
 7. **Testing Documentation:**
 - Reports on functional testing, including alarms, trends, set points, and communication drivers.
 - Cutover plan documentation, including the removal of existing SCADA and PLC programming and verification of system functionality.
 8. **Training Sessions Documentation:**
 - Records of two 4-hour training sessions for each phase, covering temporary and permanent UV disinfection systems. Overview documentation of new features, changes to screens, navigation, alarming, reporting, and security features.
 9. **Warranty and Technical Support Documentation:**
 - 18-month warranty documentation for the integration, including technical support for all equipment and software.
 - Reports on corrections of programming errors during the Warranty Period.
 10. **Onsite Service Documentation:**
 - Documentation of 40 hours of onsite service after acceptance, covering requested improvements or modifications to optimize the operator's experience.

This comprehensive list of deliverables ensures transparency, accountability, and adherence to project requirements throughout the UV Disinfection System Replacement Project.

COMPANY INFORMATION

Headquarters and Remit-to Billing Address	Telstar Instruments 4017 Vista Park Court Sacramento, California 95834 Ph: (916) 646-1999 www.telstarinc.com Tax ID: 94-2785168
Established 1981 Company History	Telstar was formed in 1981 by John D. Gardiner, President, and Robert S. Marston, Jr., Secretary, and they remain as such today.
Business Entity Status	C Corporation, California Corporation No. C1099363
Dept of Industrial Relations No. (DIR)	1000000899
Contracting Licenses	California C-10, C-7, A, & B License #422364
Telstar Areas of Specialization and Expertise	SCADA design and implementation, service, troubleshooting, maintenance, and integration; PLC/HMI programming and troubleshooting; Engineering; Electrical design, installation, and maintenance; Instrumentation support, calibrations, and service; electrical installation and construction.

Telstar Certifications

- California Certified Licensed Electricians
- ISA Control Systems Technicians
- Inductive Automation Gold Certified
- Authorized GE Digital Solution Provider
- Aveva (Wonderware) Registered System Integrator Partner
- Rockwell Automation Recognized System Integrator
- UL 508a Certification for Industrial Control Panels
- Professionally Licensed Engineering
- Schneider Electric Certified Systems Integrator
- Schneider Electric SCADA Certified Alliance Integration Partner
- Two Electrical Professional Engineers, four Control System Professional Engineers

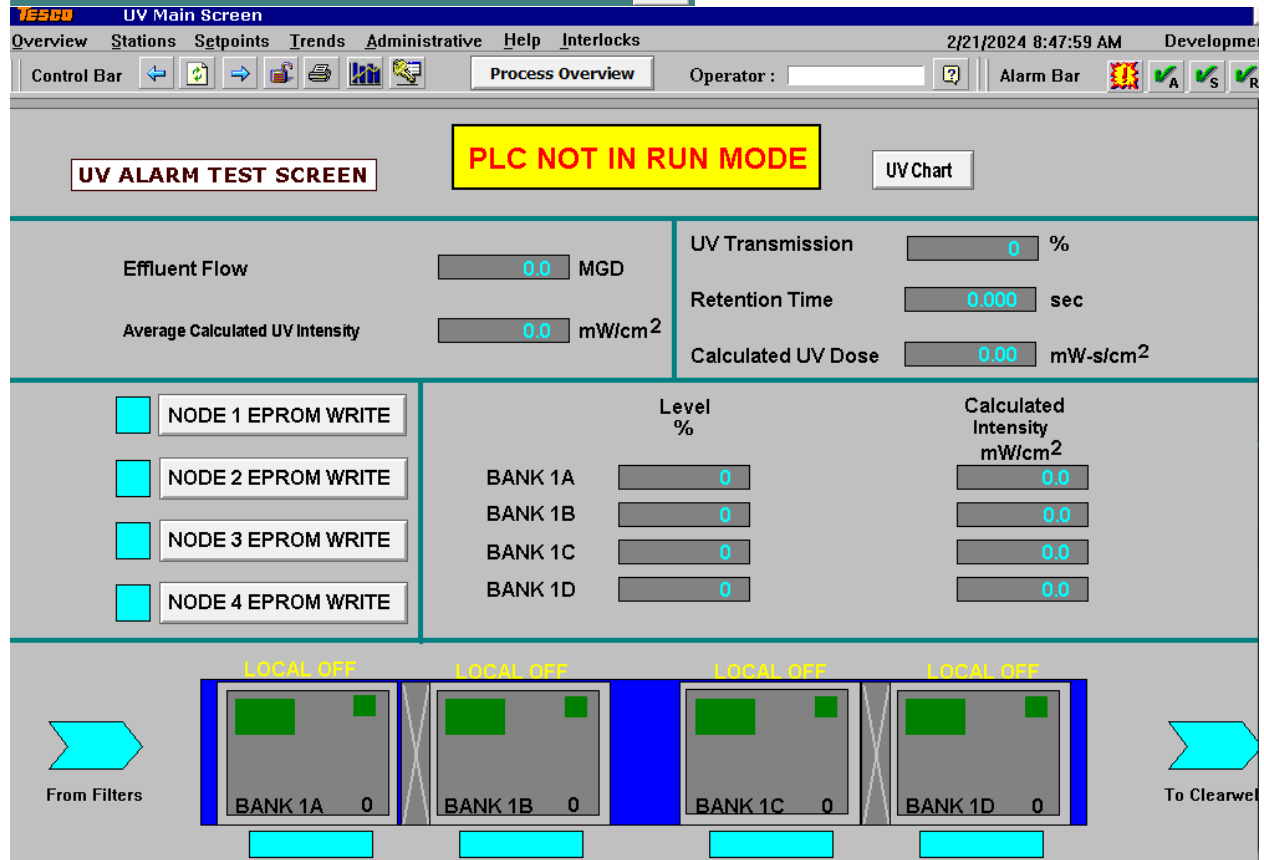
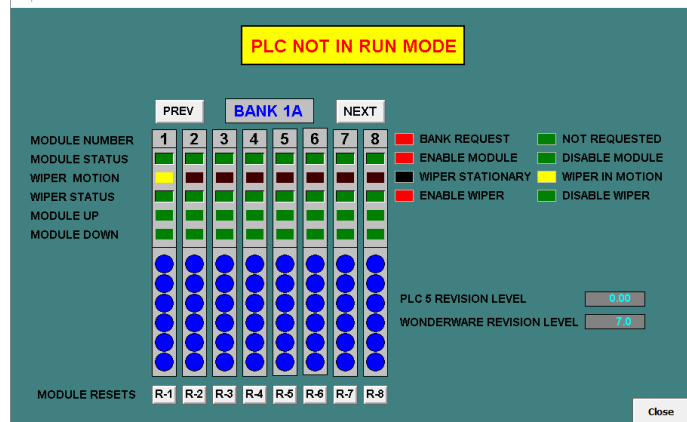
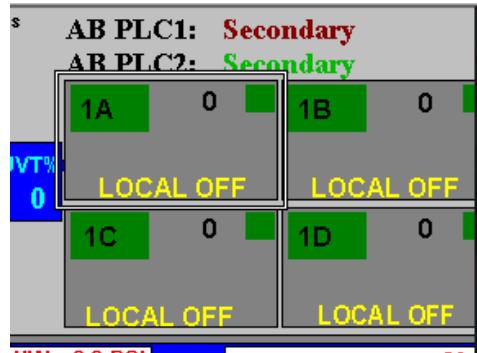


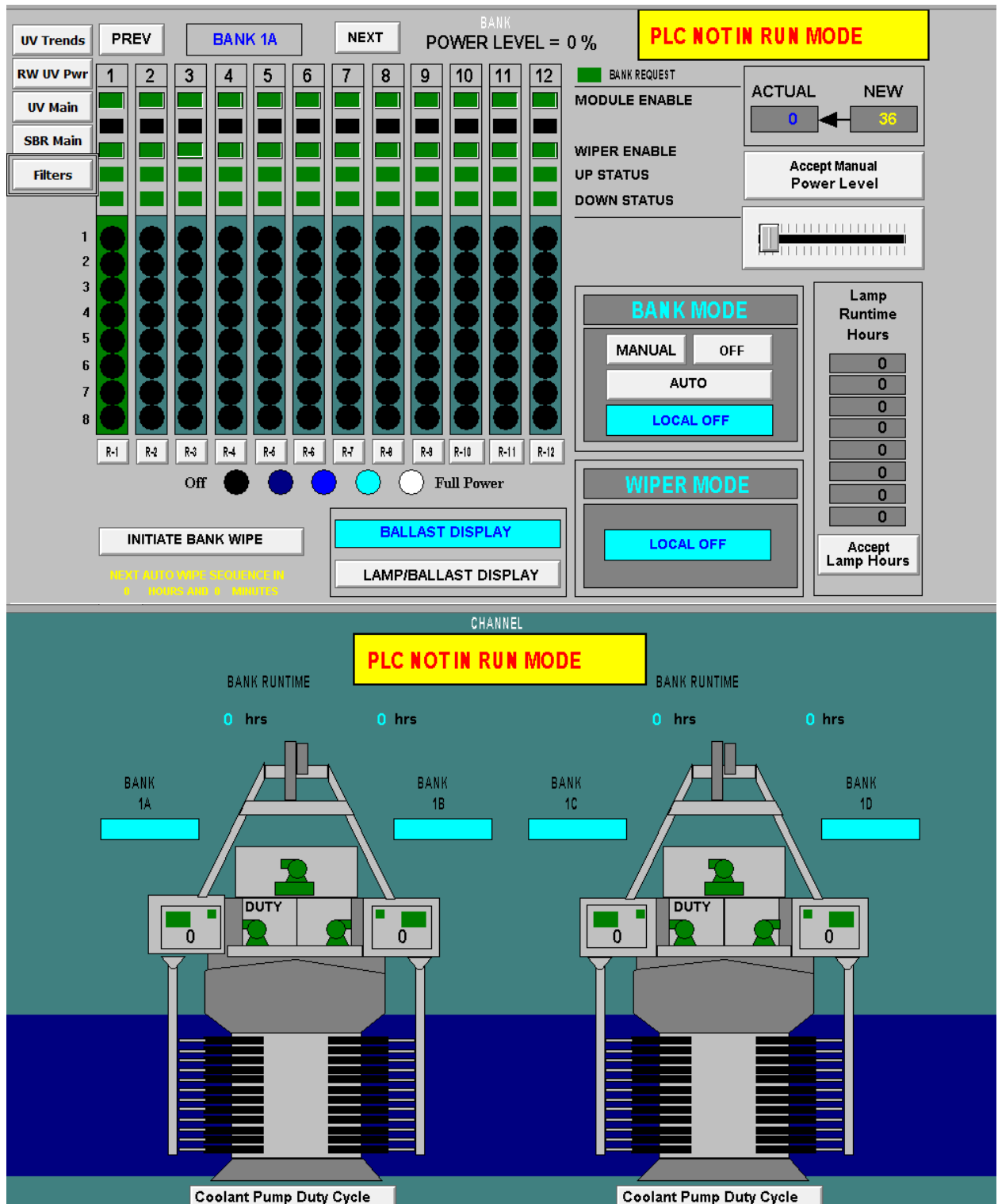
Telstar holds a CSIA Certification through the Control System Integrators Association. CISA Certification is the gold-seal mark of a professionally managed control system integration business. Certification reassures clients that the control system integrator is an established, successful professional services firm that wants to develop a successful, long-term partnership with clients. Telstar is also ISNetWorld certified with a grade A standing.

D. Cost Proposal

Attached separately

Pacifica Current UV SCADA Screens reviewed by Telstar for preparation of our proposal.



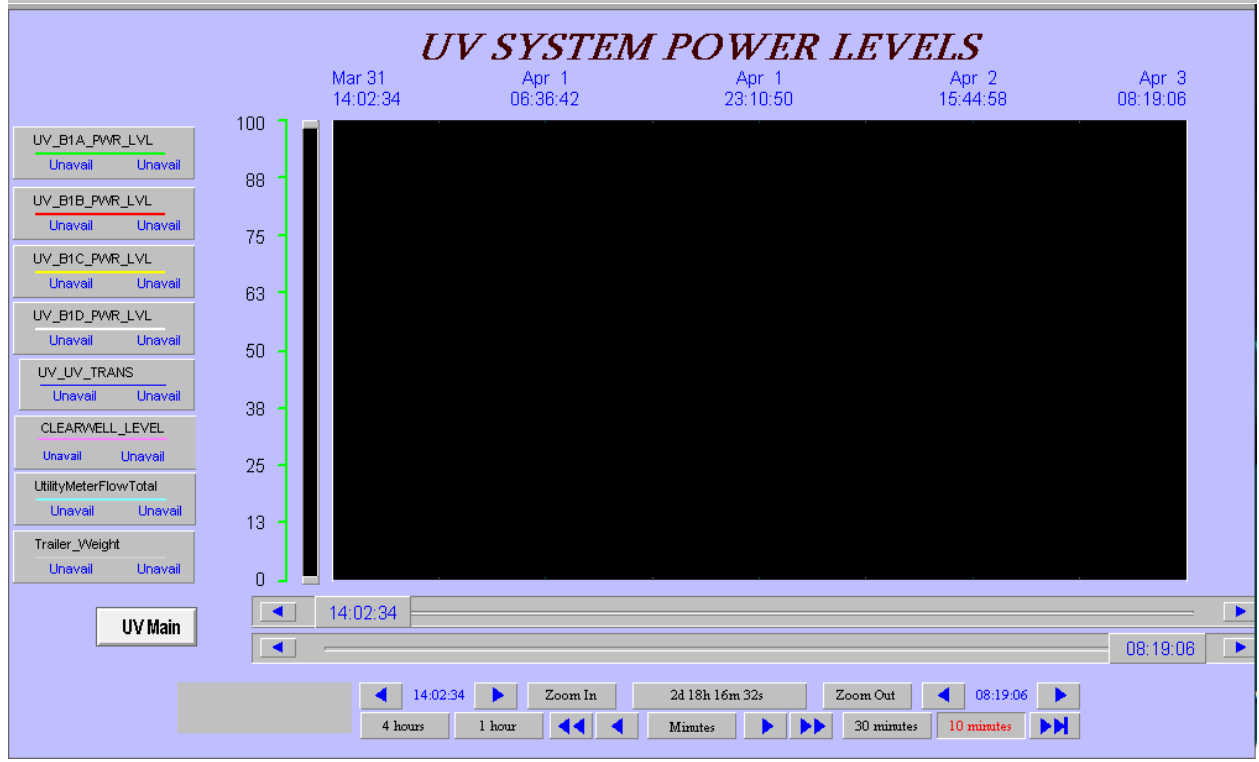


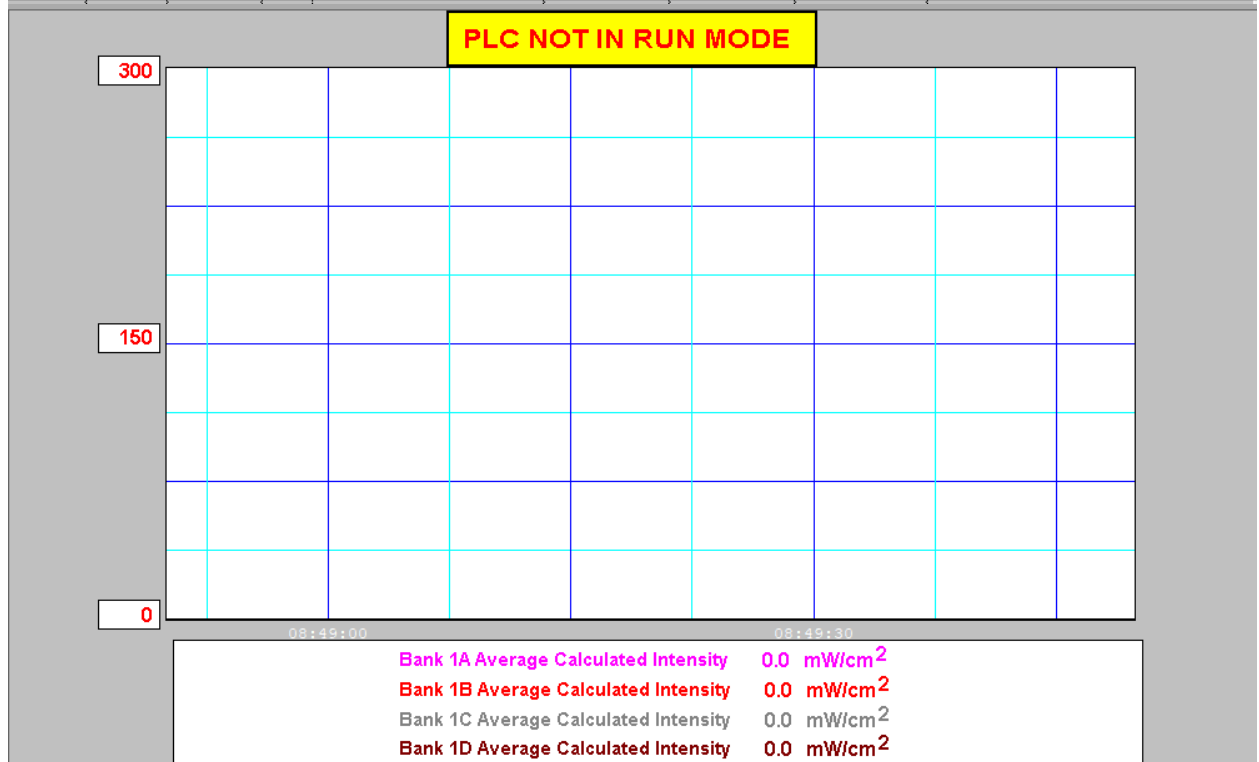
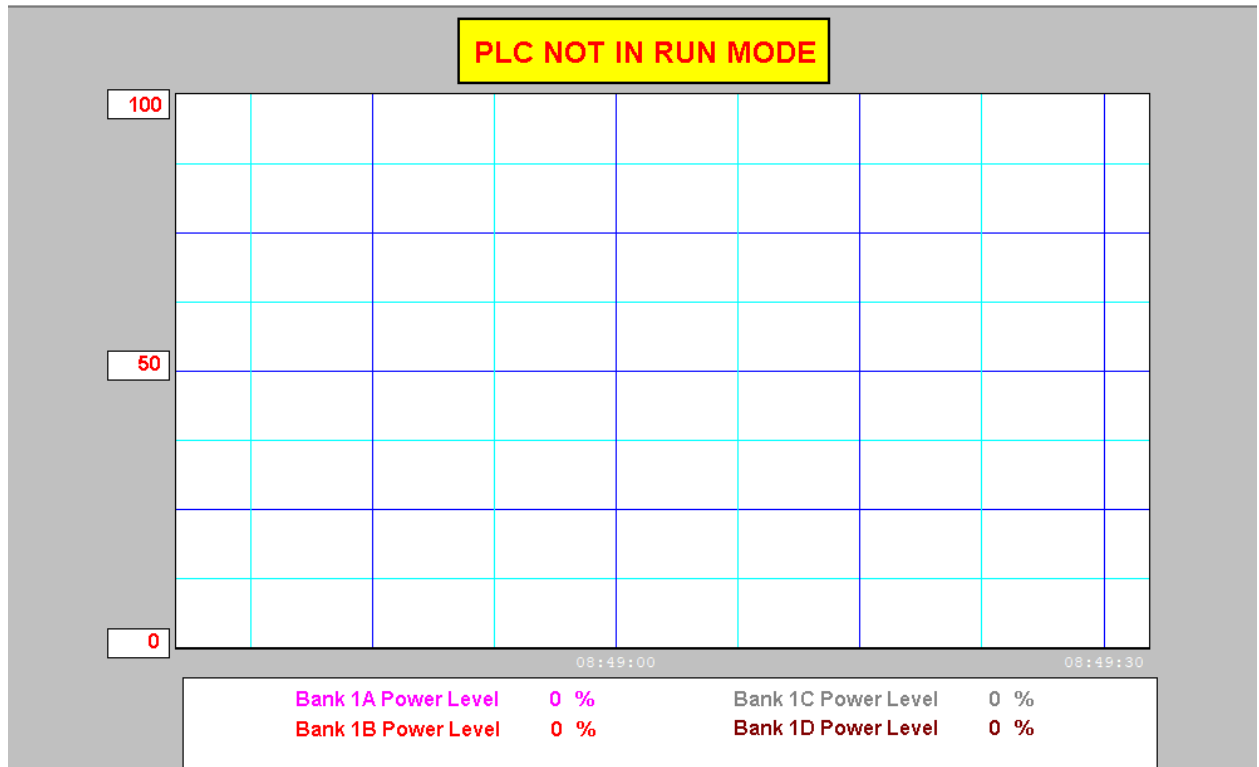
SETTINGS

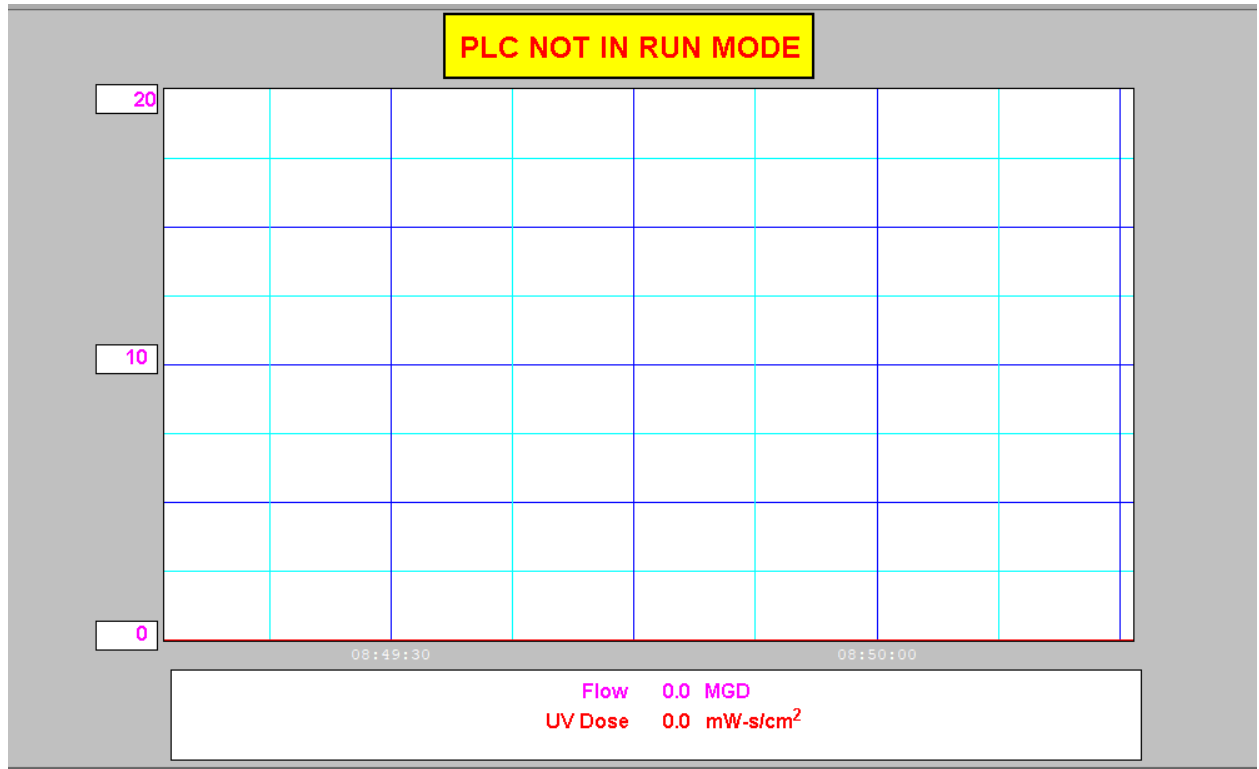
PLC NOT IN RUN MODE

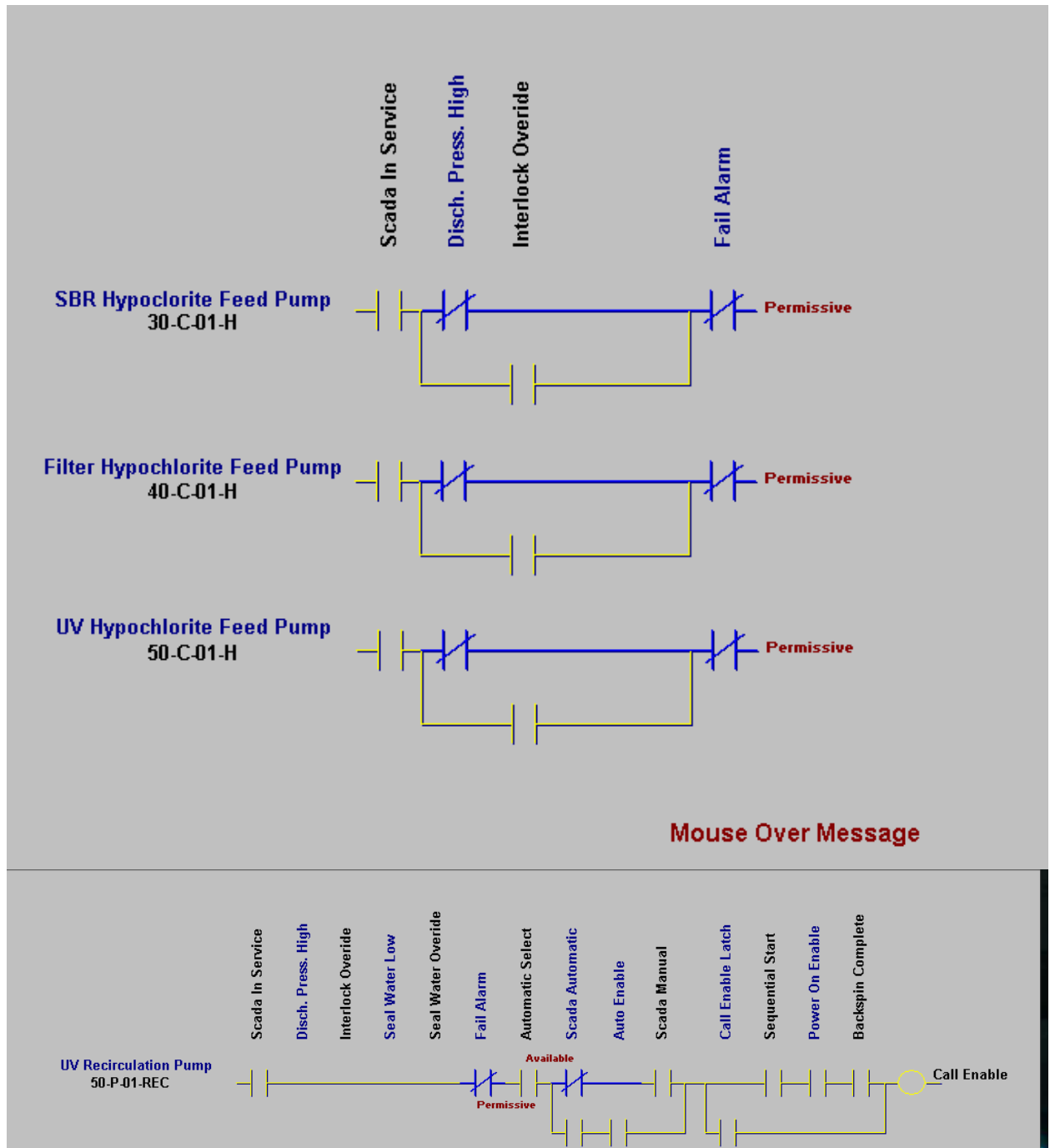
PROCESS	ALARMS
Module Restart Time <input style="width: 50px;" type="text" value="0"/> min	Alarm Delay <input style="width: 50px;" type="text" value="0"/> min
Lamp Warmup Time <input style="width: 50px;" type="text" value="0"/> min	UV Intensity Alarm Offset <input style="width: 50px;" type="text" value="0"/> %
Lead Bank Rotation <input style="width: 50px;" type="text" value="0"/> hrs	UV Dose Alarm Offset <input style="width: 50px;" type="text" value="0"/> %
Time Off Delay <input style="width: 50px;" type="text" value="0"/> min	
Flow Limit for Wiping <input style="width: 50px;" type="text" value="0"/> %	DOSE
Wiper Sequence Time <input style="width: 50px;" type="text" value="0"/> hrs	System Peak Flow <input style="width: 50px;" type="text" value="0.0"/> MGD
Wipe Stroke Time <input style="width: 50px;" type="text" value="0"/> sec	Base Retention Time <input style="width: 50px;" type="text" value="0.000"/> sec
UVT Entered Value <input style="width: 50px;" type="text" value="0"/> %	Design Dose <input style="width: 50px;" type="text" value="0.0"/> mW-s/cm ²
Multiple Lamp Fault <input style="width: 50px;" type="text" value="0"/> lamps	End of Lamp Life Output <input style="width: 50px;" type="text" value="0"/> %

CONTROL	ANALOG RANGES
<input type="button" value="UVT TOGGLE"/> <input style="width: 50px;" type="text" value="ONLINE"/>	Full Scale Flowmeter <input style="width: 50px;" type="text" value="0.0"/> MGD
<input type="button" value="LEAD ROTATE"/> <input style="width: 50px;" type="text" value=""/>	Full Scale UV Intensity <input style="width: 50px;" type="text" value="0.0"/> mW-s/cm ²

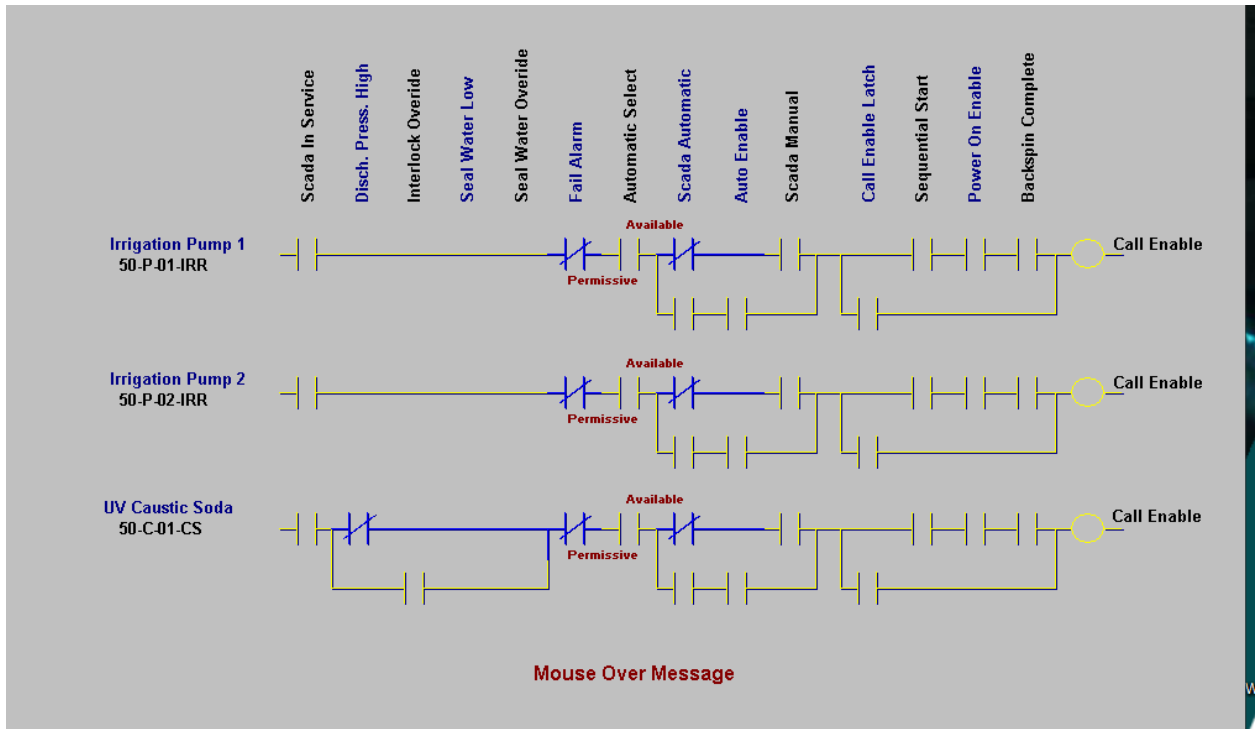








Mouse Over Message



SURESH PATIL
PROGRAMMING MANAGER



Scope of Experience: 21 years, 16 with Telstar Instruments
Areas of Expertise: PLC and SCADA programming
Networking and Virtualization

SUMMARY OF QUALIFICATIONS

Suresh provides a full range of engineering services to SCADA clients including design, engineering of systems, installation, start-up implementation, in addition to training customers and performing on-going preventative maintenance of installed systems. Suresh implements projects for industrial clients using PLC systems and instruments, VFD and MCC applications. His expertise has been instrumental on both large-scale water/wastewater and industrial projects, and Suresh works under as-needed service contracts to resolve every-day programming issues and fixes.

Programming competencies include:

- SCADA: Wonderware, RSView 32, FactoryTalk SE, IFIX, Clear SCADA, and Cimplicity
- PLC: Allen Bradley, Schneider-Modicon, Siemens, GE Fanuc, DirectLogic, SCADAPack, and Automation Direct
- PLC Software: RSLogix 5, 500, 5000, ProWorx32, Concept, Unity, Direct Soft, Telespace, Proficy ME, Indralogic, and Codesys
- Operator Interface Terminals: Panel Builder 32, FactoryTalk ME, Vijeo Designer, Protool, C-more, and Proficy ME

HARDWARE AND SOFTWARE EXPERIENCE

Certifications:

- Rockwell RSLogix 5000 and Rockwell PlantPax
- Wonderware System Platform, Application Server, InTouch, Historian Inductive Automation Ignition

Software:

- PLC: RSlogix5/500/5000, Studio 5000; HMI and SCADA: Wonderware System Platform, InTouch, and Historian, PlantPax, FactoryTalk View SE and ME, RSView 32, PanelBuilder 32; Rockwell Historian including redundancy and clustering. Classic RSView and FTView trends; Other: Integrated Architecture Builder, Architect, DriveTools. Virtualization of distributed SCADA applications with Wonderware, FactoryTalk View SE and PlantPax, VMware ESXI, Active Directory domain control, redundant applications for SCADA/HMI visualization.

Communication:

- DNP3 protocol, ethernet IP/CIP, ControlNet, DeviceNet, DH485, RS232 and RS485 serial ethernet, and serial radio communication
- Processor communications including serial/ethernet messaging and produce/consume relationships Stratix and other managed switches
- Radio communication including GE MDS, Teledesign, and Schneider Trio radios.

Hardware:

- Processors: PLC5, SLC, MicroLogix, CompactLogix, ControlLogix
- Processor and communication channel redundancy
- Input and output modules: digital (solid state and relay), analog voltage and current, RTX/thermocouple, HART-Analog, third-party Prosoft for Modbus, etc.

RELATED PROJECT EXPERIENCE

Suresh manages a team of 18 SCADA and PLC engineers/programmers working on 30+ critical infrastructure projects. He spearheads the development of systems specifically designed for the water/wastewater industry. His programming department includes networking and telemetry; PLC programming; Project Management; SCADA development; service and support; system architecture. Suresh provides remote PLC/SCADA support for our clients utilizing remote access to their system. He analyzes and interprets existing programs and documentation for project modifications and develops standards for programming practices and procedures.

Alameda County Flood Control & Water Conservation District – SCADA & PLC Replacement

- Suresh designed and performed the SCADA and PLC programming for a new SWTP.

This \$9.3M project involves many different complex sites and stakeholders and is a SCADA conversion project using Inductive Automation's Ignition software. Telstar is currently performing this large SCADA System Upgrade Project for the Alameda County Flood Control & Water Conservation District. The project involves replacement of the proprietary HSQ hardware and software at 23 large storm water pump stations throughout the County, in Oakland, San Leandro, Hayward, Union City, and Sunol. Upgrades include installation of Process Automation Controllers (PACs), SCADA Servers, Human Machine Interface (HMI) workstations, portable computer workstations, network equipment, radio communications, and other ancillary equipment. Approximately 42 Schneider Modicon M340 and M580 PLCs are installed as part of this project. Inductive Automation's Ignition SCADA software will replace the HSQ SCADA system. Ignition modules including Visualization, Enterprise, Historian using MySQL, Alarm and Notification, and Reporting were configured and programmed as part of this project. Data from the Ignition Historian was pushed to NEXGEN asset management software using SQL transaction manager to create workorders for preventative maintenance. Kepware OPC server was also utilized.

Suresh hosted preliminary SCADA design review meetings and workshops with Alameda County operations and maintenance staff, developed the control system programming applications to implement the operational control descriptions for all systems and maintained consistent quality of PAC, HMI and SCADA programming throughout the project.

City of Lodi, New Surface Water Treatment Plant (SWTP) and Remote Stations, Lodi, CA

- Suresh designed and performed the SCADA and PLC programming for a new SWTP with 51 remote stations, including 27 water wells, 12 stormwater pumps, and 12 sewer lift stations. New control panels using Allen Bradley PLCs were constructed, tested and installed. The new SCADA system utilized Wonderware InTouch and Historian. Suresh continues to provide PLC and SCADA maintenance for the systems in Lodi.

North Bay Regional Water Treatment Plant (NBRWTP), SCADA Upgrade, City of Fairfield, Fairfield, CA

- Suresh performed a major SCADA upgrade for the NBRWTP, converting existing Allen Bradley PLC-5 code to ControlLogix and iFIX SCADA to Rockwell FactoryTalk. The PLC and SCADA systems utilized Rockwell PlantPax standards and was certified by Rockwell after completion. All PLC control panels at the NBRWTP were replaced as part of this upgrade project.

EDUCATION

- Bachelor of Engineering – Instrumentation and Controls



PAUL BERSON, PE
Sr. Project Engineer/Manager, Telemetry Systems Designer

Scope of Experience: 41 years, 25 with Telstar Instruments
Areas of Expertise: Instrumentation and control systems design and telemetry systems

SUMMARY OF QUALIFICATIONS

Paul Berson is responsible for the management, design, programming, and implementation of the projects throughout the Engineering Department. Under Paul's direction, the Engineering Department is responsible for control systems, instrumentation, software development and applications, electrical design, SCADA systems, and information systems. Paul is also responsible for process instrumentation design and selection, data communication system design, radio path surveys, landline systems, fiber-optics, and surveillance video, and is a senior member in Telstar's Quality Assurance/Quality Control (QA/QC) program. Paul's extensive expertise includes the following platforms, systems, and technologies:

- Allen-Bradley PLC: ControlLogix, CompactLogix, MicroLogix
- Modicon: Quantum, Compact, Micro, ControlMicroSystems ScadaPack PLCs and ClearSCADA
- HMI: Aveva InTouch, Ignition, CiTect, iFix
- Communication protocols: TCP/IP, RS232/422/485, TCP/IP, DF1, DH+, Modbus, Modbus TCP, DNP3
- Telemetry radio: GE MDS (Orbit, SD, iNET), DataRadio (ViPr, Guardian, Integra, DL-3400)
- Servodrive systems: Rockwell Automation and SEW Eurodrive
- RF Service: KeySight (Agilent/HP), Anritsu, Bird, including line sweeping and spectrum analysis

SPECIALIZED TRAINING AND CERTIFICATIONS

- California Registered Professional Engineer, Control Systems #7406
- Wonderware System Platform, Anritsu Line Sweep Certification #F004443D, UL University UL508A, Network +
- Project Management, Instrumentation and Control System Design
- Radio Telemetry System Design and Path Surveys
- System Programming
- Video Surveillance & Perimeter Security

Wireless System Engineering/Radio Surveys

City of Ceres: 12 sites. Upgrades of existing 900 MHz system. Survey all locations and determine requirements for new antenna masts, antennas, radios, and controls.

Alameda County Flood Control District: 25 sites. Replacement of entire control/telemetry system. Installed new 900 MHz tail end links, and 5 GHz backbone throughout County. Prepared computer models of system, field surveyed all locations and determined requirements for new antenna masts, antennas, radios, and networking.

City of Fairfield: 28 sites. Replaced UHF radio network with new 200 MHz licensed network. Includes multiple repeater sites. Prepared computer models of system, performed frequency coordination, field surveyed all locations and determined requirements for new antenna masts, antennas, radios, and networking.

City of Burlingame: 23 sites. Replaced unreliable 900 MHz Utilinet system with new 200 MHz licensed network. Prepared computer models of system, performed frequency coordination, field surveyed all locations and determine requirements for new antenna masts, antennas, radios, and networking.

City of San Jose, Municipal Water: 28 sites. Replaced unreliable 900 MHz licensed radio system with VHF system. Prepared computer models of system, performed frequency coordination, field surveyed all locations and determined requirements for new antenna masts, antennas, and radios.

RELATED PROJECT EXPERIENCE

Fleming Hill Water Treatment Plant, Controls System Upgrade, City of Vallejo, Vallejo, CA

- Paul designed a new plant-wide control system, upgrading 20 PLC systems within the WTP from Allen-Bradley PLC5 to ControlLogix platforms. The legacy fiber optic network using DH+ protocol was converted to EtherNet/IP resulting in a cost savings to the customer of over \$200,000.

Crystal Springs Aqueduct Remote Stations, City of Brisbane, Brisbane, CA

- This design-build project added five stations and a new Rockwell FactoryTalk View SE HMI to the Utility System. Paul designed and installed the system with Allen-Bradley MicroLogix PLCs communicating via DataRadio VHF radio modems using DF1 Radio Modem protocol. Telstar obtained a new licensed radio frequency for the customer.

American Avenue Disposal Site Remote Stations, County of Fresno, CA

- Paul designed and built a new SCADA system to monitor and control 11 new land fill modules, a redesigned LFG Flare control system, new Wonderware InTouch HMI with Historian, custom written visual basic reports, and a large scale WiFi radio network with solar repeater stations.

Mariani Packing, Line 11 Upgrade Project, Vacaville CA

- Paul designed and installed a motion control system for 10 new high-speed pitting machines utilizing SEW-Eurodrive servo motors and drives, Yaskawa and Allen-Bradley VFDs, IFM vision sensors, and Allen-Bradley ControlLogix PLCs. More than 100 motors were designed to work in concert.

EDUCATION

Bachelor of Science in Electrical Engineering, General Motors Institute – Flint, Michigan

TAK KOO
Project Manager



Scope of Experience: 39 years with Telstar Instruments
Areas of Expertise: PLC and SCADA programming
Networking and Virtualization

SUMMARY OF QUALIFICATIONS

System integration and controls experience:

- Instrument component selection: Endress+Hauser, Rosemount, Siemens, Sierra Instruments, Hach, Ashcroft.
- PLC System Supply & Programming: Allen Bradley, Modicon, GE, Siemens, Automation Direct, and more SCADA System Supply & Programming: Wonderware, Intellution, Lookout, Rockwell, Industrial Automation, ClearSCADA.
- HMI Development, preparation of shop drawings, loop and interconnection drawings, and as-built record drawings; design, enhancement, improvements, and modifications of control systems; PID loop tuning; startup & commissioning of instrument and control systems for municipal water and wastewater facilities.

Project management experience:

- Planning and executing project designs, procurements, fabrications, startup and commission activities.
- Scheduling material, tools, and labor resources for executing project activities.
- Documentation of existing systems, new work, changes to contract specifications, and as-built record documents.
- Technical knowledge and support for executing startup and testing of control systems.

RELATED PROJECT MANAGER EXPERIENCE

Yuba City Wastewater Treatment Facility Improvements – Yuba City, CA, 2019

- Medium voltage transformer replacement, including new secondary throughout the plant, new SCADA system, PLCs, dewatering screw conveyer system, and digester covers. Installed new gear and PLCs. Project tasks included plant-wide replacement of Schneider Quantum PLCs with Allen-Bradley ControlLogix PLCs to existing facilities with no control function interruptions. Coordinated PLC replacements with the Owner by having control systems' workshops, prior to the cutovers, with the contractor, engineer, programmer, and owner representatives. Installed a self-healing fiber ring around the plant, replacing most PLCs, and replacing/adding network equipment. Removed existing, obsolete OPTO22 I/O modules; no OPTO 22 hardware remained upon completion of project.

California American Water, Remote Station and SCADA Upgrade – Sacramento and Monterey, CA Design-Build, 2015 – 2019 (\$3.4M)

- Of the existing 159 remote stations in the Sacramento area, Tak has performed upgrades to the control panels and Allen Bradley PLCs for approximately 100 stations. Panel upgrades include replacement of PLCs, communications devices, HMIs. Tak also upgraded the SCADA programming for these stations as part of control panel replacement.

Contra Costa Water District, Remote Station and SCADA Upgrade – Concord, CA Design-Build, 2012 – 2017 (\$1.9M)

- Replacement of control panels with Modicon PLCs for approximately 80 remote stations. Panel upgrades include replacement of PLCs, communications devices, HMIs. Tak also upgraded the SCADA programming for these stations as part of control panel replacement.

*City of Vallejo, Fleming Hill Water Treatment Plant and Remote Station SCADA Upgrade – Vallejo, CA
Design-Build, 2012 – 2019 (\$3.8M)*

- Upgrade of the water treatment plant SCADA system to the latest version of Rockwell
- FactoryTalk SE SCADA with Historian and reporting. Replacement of control panels with Allen Bradley PLCs for approximately 30 remote stations. Panel upgrades include replacement of PLCs, communications devices, HMIs. Tak also upgraded the SCADA programming for these stations as part of control panel replacement.

*City of Hanford, Water and Wastewater Treatment Plant, Well, Sewer and Storm Remote Stations,
SCADA Upgrade – Hanford, CA
Design-Build 2013 – 2018 (\$5.2M)*

- Upgrade of the water and wastewater treatment plant SCADA system to the latest version of Wonderware InTouch with Historian and reporting. Replacement of control panels for 33 lift stations, 16 wells, 26 storm stations, and 3 tank/pumping stations with Allen Bradley PLCs. Panel upgrades include replacement of PLCs, communications devices, HMIs. Tak also upgraded the SCADA programming for these stations as part of control panel replacement.

*City of Sacramento, Sacramento WTP Rehabilitation – Sacramento, CA
2013 – 2018 (Total Construction \$120M; Programming and Controls \$4.2M)*

- Instrumentation specification, procurement, installation, and commissioning; PLC control panel design, build, and startup.

*Linda County Water Agency, WTP Upgrade and Expansion Phase 2 – Olivehurst, CA
2014 – 2016 (Total Construction \$29M; Controls \$1.2M)*

- Instrumentation specification, procurement, installation, and commissioning; PLC control panel design, build, and startup. Designed and constructed a new SCADA upgrade to Wonderware System Platform with new redundant servers.

*Solano Irrigation District, Cement Hill WTP, Electrical & Automation Improvements – Fairfield, CA
Design-Build, 2015 – 2017 (\$2.6M)*

- Design-build replacement of all existing switchgear, MCCs, PLCs, lighting panels, transformers and SCADA system including process and electrical design. Project included instrumentation specification, procurement, installation, and commissioning; PLC & SCADA control design, build, and startup; design and construction of new SCADA system using ClearSCADA.

*County of Kern, Lerdo Campus WTP & WWTP Improvements – Bakersfield, CA
2015 – 2018 (Total Construction \$18M, Electrical and controls \$3.9M)*

- Installation of new MCCs, control panels, SCADA and instrumentation for the existing WTP and WWTP. Project also included instrumentation specification, procurement, installation, and commissioning; power equipment specification, procurement, testing, and commissioning; PLC & SCADA system control design, build, and startup.

EDUCATION

- Bachelor of Science, Electrical Engineering

JAMES HARPER
Senior Project Engineer
Control Panel Engineer



Scope of Experience: 33 years, 20 with Telstar
Areas of Expertise: Instrumentation and Control System Design, System Programming,
Radio Telemetry System Design and Surveys

SUMMARY OF QUALIFICATIONS

As a Senior Project Manager with our Engineering Department, James is responsible for design, estimation, project management, programming, and implementation of our projects. He is responsible for the design and implementation of control systems, software development and applications, electrical design, SCADA systems, and information systems and serves as senior member in our Quality Assurance/Quality Control (QA/QC) program.

James is trained and successfully completed projects in PLC platforms including Allen Bradley's ControlLogix, CompactLogix, MicroLogix, SLC-500 series, and PLC-5; Modicon's Quantum, Compact, and Momentum; Control Micro Systems' SCADAPack programmable controllers; SCADA system platforms including Wonderware's System Platform, InTouch, and Historian; Allen Bradley RSView 32 & SE, GEFenuc's iFIX and Schneider Electric's Citect; Telemetry radio systems including, GE's MDS, iNET, x710; communication protocols including RS232/422/485, TCP/IP, DF1, DH+, Modbus, Modbus+, and ModbusIP; 9810; Modicon's Concept, Proworx Nxt & 32, Unity Pro, Allen Bradley's RSLogix 5, 500, & 5000; and Automation Direct's DirectLogic.

SPECIALIZED TRAINING AND CERTIFICATIONS

- California Certified Journeyman Electrician #114938
- ISA Certified Control Systems Technician, UL University UL508A
- Wonderware InTouch, Historian, and Active Factory, Unity Pro Level 1

RELATED PROJECT EXPERIENCE

City of Roseville, Environmental Utilities Control Panel Upgrades, Roseville

- Telstar partnered with EMA, Inc. to provide services for the City of Roseville's Environmental Utilities Division. EMA and Telstar were selected for this project through the RFP process. The services included the replacement of Square D Sy/max PLC-70 and PLC-90. EMA provided all engineering and programming for the project, and Telstar provided all material, drafting, and electrical labor related to replacing the PLCs. James as Project Manager was responsible for project scheduling, material coordination, engineering, and overall project management.
- This project's scope required Telstar to cutover two complex systems, which was accomplished by utilizing temporary controls and closely coordinating with the City's operation staff. The scope included reconfiguring the existing power distribution to feed PLC-70 and PLC-90 separately for more efficient control. Due to process control constraints, PLC-70 had to be removed, replaced, and running before moving onto PLC-90. This was necessary as PLC-70 and 90 shared I/O for two separate processes.
- The scope included converting the existing I/O from 120VAC to 24VDC, updating the City's network, and moving VFDs from hardwire I/O control to ethernet control. Throughout these complicated cutovers, Telstar, EMA, and City staff quickly resolved all issues with minimal downtime as a team and the project was performed successfully.

City of Lodi, New Surface Water Treatment Plant (SWTP) and Remote Stations, Lodi, CA

- James was responsible for the project's design build, which incorporated SCADA and PLC programming for a new SWTP with 51 remote stations, including 27 water wells, 12 stormwater pumps and 12 sewer lift stations. New control panels using Allen Bradley PLCs were constructed, tested and installed. The new SCADA system utilized Wonderware InTouch and Historian. Oversees Telstar's continued maintenance of Lodi's PLC and SCADA systems.

City of Sacramento, Sacramento WTP Rehabilitation, Sacramento, CA

2013 – 2018 (total construction, \$120M; programming and controls, \$4.2M)

- Instrumentation specification, procurement, installation, and commissioning; PLC control panel design, build, and startup. James and programming team member Shawn Sherwood designed and constructed new SCADA upgrade to Trihedral VTScada with redundant servers and complex networking and communications.

Humboldt Bay Municipal Water District, SCADA and PLC System Replacement, Humboldt, CA

2015 – 2016 (total construction, \$750K)

- Working closely with District staff, James prepared bid-ready design documents, including drawings and specifications, for upgrade of the District's control systems for all PLCs, computer hardware and SCADA software. Telstar was later selected for construction and programming of the District's SCADA System Upgrade Project. James procured Allen Bradley PLC components for the upgrade project and translated existing PLC programs from older PLC-5 and SLC-504 language to new Control Logix Studio 5000 version 24. James was also responsible for upgrading the existing Rockwell RSView32 SCADA platform to the latest version of Rockwell Factory Talk View 9.0 SCADA.

EDUCATION

- Bachelor of Science, Electrical Engineering

ALEKSANDR ARSLANOV
SCADA Engineer/PLC Programmer



Scope of Experience: 18 years, 3 years with Telstar
Areas of Expertise: Systems Integrator, SCADA/PLC Programming

SUMMARY OF QUALIFICATIONS

As a specialist within water and wastewater systems, Aleksandr's experience includes project scope planning, document preparation, identification of software/hardware requirements for fulfillment, configuration, and installation of SCADA and PLC programming infrastructure, as well as ongoing system maintenance.

TRAINING & CERTIFICATIONS

- Certificate of Completion – Rockwell Automation: CCP143/CCV207 Studio 5000 and FactoryTalk View SE Tailored Training

PLC PROGRAMMING PLATFORMS

- Rockwell Automation: RSLogix 5/500/5000/Studio
- Schneider Electric: EcoStruxure Control Expert (Unity Pro)/SoMachine
- GE: Proficy Machine Edition
- Omron: CX-One/CX-Programmer/Sysmac Studio
- Siemens: TIA Portal/Simatic Step 7
- Yokogawa: Logic Designer FCN-FCJ
- B&R: Automation Studio
- Mitsubishi Electric: GX Works
- Delta Electronics" WPLSoft/ISPSOft
- Emerson: ControlWave Designer
- Festo: FST
- Tesco Controls: TESCODE

HMI SOFTWARE PLATFORMS

- Rockwell Automation: FactoryTalk View
- Schneider Electric: Vijeo Designer
- Siemens: WinCC Flexible
- Mitsubishi Electric: GT Designer
- Delta Electronics: ScreenEditor/DOPSOft
- Weintek: EasyBuilder

SCADA SOFTWARE PLATFORMS

- Rockwell Automation: FactoryTalk View SE
- GE: iFIX
- Omron: CX-Supervisor
- Siemens: SIMATIC WinCC

INDUSTRIAL COMMUNICATION NETWORKS

- Modbus RTU/ASCII, Modbus TCP
- Profinet/Profibus
- Ethernet/IP, DeviceNet
- CANOpen
- HART
- CC-Link, MELSECNET
- FINS

RELATED PROJECT EXPERIENCE

City of Lathrop, Woodfield Sewer Pump Station Upgrades

- Pump Station PLC/HMI programming and start up.

Dublin San Ramon Services District – Primary Sedimentation and Improvements

- Wastewater PLC/SCADA control system programming and start up.

City of Vallejo, Cordelia Pump Station PLC Upgrade

- Pump Station PLC/HMI programming and start up.

Coachella Valley Water District, Water Treatment Plant

- PLC/HMI upgrade project (8 control panels) - programming and start up.

City of Orange Potable Water System – Pump/Booster/Reservoir Stations

- PLC upgrade project (37 control panels); performed as software engineer on a two-person team.



City of Pacifica

**REQUEST FOR PROPOSALS (“RFP”)
FOR
CALERA CREEK WATER RECYCLING PLANT
PROGRAMMING FOR THE UV DISINFECTION
SYSTEM REPLACEMENT PROJECT**

**RFP SUBMITTAL DEADLINE:
2:00 PM, FEBRUARY 23, 2024**

**SUBMIT TO:
CITY OF PACIFICA
Via the City’s E-Procurement System:
<https://secure.procurenow.com/portal/cityofpacific>**

**CITY OF PACIFICA
COUNTY OF SAN MATEO**

**CALERA CREEK WATER RECYCLING PLANT PROGRAMMING FOR THE UV
DISINFECTION SYSTEM REPLACEMENT PROJECT**

Table of Contents

1.	PURPOSE.....	1
2.	DEADLINE FOR SUBMITTING RFP RESPONSE.....	2
3.	CONTACT PERSON(S)	<u>34</u>
4.	INSTRUCTIONS TO PROPOSER.....	<u>34</u>
5.	PROPOSED RFP TIMELINE	<u>56</u>
6.	INFORMATION TO BE SUBMITTED	<u>56</u>
7.	CONTRACT TYPE AND METHOD OF PAYMENT.....	<u>67</u>
8.	REVIEW AND SELECTION PROCESS	<u>78</u>
9.	ORAL INTERVIEWS	<u>78</u>
10.	PUBLIC NATURE OF PROPOSAL MATERIAL.....	<u>79</u>

EXHIBIT A – SCOPE OF SERVICES

EXHIBIT B – FEE PROPOSAL FORM

ATTACHMENT 1 - 90% Documents - Selected Specifications for Programming

ATTACHMENT 2 - 90% Documents – Drawings

ATTACHMENT 3 - Current Trojan UV Submittal

REQUEST FOR PROPOSALS (“RFP”)

CALERA CREEK WATER RECYCLING PLANT PROGRAMMING FOR THE UV DISINFECTION SYSTEM REPLACEMENT PROJECT

1. PURPOSE

The purpose of this Request for Proposals (RFP) is for the City of Pacifica (“City”) to solicit proposals from system integration services firms (“Proposer”) to provide services for programming of the existing SCADA front-end systems for monitoring, control, historical database, and alarming as required to replace the existing ultraviolet disinfection (UV) system with a new UV system, including programming of existing Plant PLC equipment associated with the UV replacement. The selected Proposer and proposed fee will be included in the installation contract RFP for the UV Disinfection System Replacement Project (“Project”), and the selected Proposer will be assigned as a subcontractor to the selected installation contractor (“Contractor”) under the Project. The existing architecture is built around Inductive Automation Ignition SCADA software and the existing Plant PLC equipment is a combination of Allen Bradley PLC 5/40 and Allen-Bradley ControlLogix.

The 90 percent Design Drawings and Specifications relevant to programming for the Project are included as Attachments 1 and 2, including the contract terms and conditions for the installation contractor under which the selected Proposer will be subcontracted. In addition, the current Trojan UV Equipment Submittal is included as Attachment 3. The selected Proposer must coordinate with all bidders during the RFP period for the Project. Proposers shall include cost and staffing to support the Project bid period coordination. The Project bid period is planned for April 2024.

The intent is to implement three (3) separate phases of programming to support the Project. All work is scheduled for 2025 and the estimated time for each phase is included below.

The first phase of programming (late February to April 2025) will involve programming modifications to the Plant SCADA and PLC systems to incorporate SCADA control, alarm and indication features related to the temporary UV and associated pumping systems while operating simultaneously with the existing UV system SCADA and PLC programming.

The second phase of programming (August to October 2025) will involve programming modifications to the Plant SCADA and PLC systems to incorporate SCADA control, alarm and indication features associated with the new UV system while operating simultaneously with the temporary UV and associated pumping system and elimination of the SCADA and PLC programming associated with the removed, existing UV system.

The third phase of programming (October to December 2025) will involve removing SCADA and PLC programming associated with the temporary UV system and

associated pumping equipment, leaving only the new UV system SCADA and PLC programming remaining.

Each of the phases described above will occur at different times during the UV project construction period as indicated. Programming of the new UV system PLC and local main UV panel operator interface screen will be performed by the UV system supplier. The Proposer shall include in the proposal effort for coordination with the UV system supplier's (Trojan's) programmer to ascertain required data signal addressing information. The new UV system control system platform is Allen-Bradley ControlLogix with a PanelView Plus 7 graphical display. SCADA graphical programming provided by the Proposer shall be coordinated with graphical programming provided by the UV system supplier for the local UV system main panel graphical display for similar presentation of features and arrangement. Trojan's current submittal is included in Attachment 3 and includes samples of graphical display features.

Proposer must assume that Trojan will not provide the Proposer with proprietary graphical screen or PLC programming software files. The Proposer may coordinate with Trojan and the Contractor to arrange for shared information, but at this time, no agreement to provide this information is in place.

Key project components include, but are not limited to (refer to Attachments for additional information):

- Three graphical displays for temporary bypass pumping and disinfection coordinated with the City and Contractor.
- Data signal addressing for the permanent UV system inputs and outputs shown in the Trojan submittal assuming an additional 10 percent to the number shown in the submittal.
- ~~Seven graphical displays for the permanent UV system.~~ Twelve graphical displays for the permanent UV system.
- Two additional contingency graphical displays.
- Graphical display updates for the filter effluent control valves to change from open/close operation to modulating operation.
- On-site coordination and required travel associated with all phases of the project including site acceptance testing.

2. DEADLINE FOR SUBMITTING RFP RESPONSE

Interested proposers responding to this RFP shall **an electronic submittal** through the City's e-Procurement Portal at the link provided in Section 4.

3. CONTACT PERSON(S)

Technical questions or comments concerning this RFP may be directed to the following individual:

Louis Sun, P.E., Deputy Public Work Director - Wastewater
Office: (650) 738-4662
Cell: (650) 228-6273
Email: lsun@pacifica.gov

Dan Patten, P.E., Engineering Manager - Wastewater
Cell: (650) 922-7248
Email: dpatten@pacifica.gov

4. INSTRUCTIONS TO PROPOSER

Job Site (Calera Creek Water Recycling Plant) Visit

Proposer may schedule a job site visit between: February 12 and February 16, 2024. The site visit is not mandatory. Please contact the following staff to schedule a job site visit:

City of Pacifica
Attn: Louis Sun, P.E., Deputy Public Works Director - Wastewater
(650) 738-4662
lsun@pacifica.gov

Examination of Proposal Documents

The submission of a proposal shall be deemed a representation and certification by the Proposer that they:

- (i) Have carefully read and fully understand the information that is provided by the City to serve as the basis for submission of this proposal.
- (ii) Have the capability to successfully undertake and complete the responsibilities and obligations of the proposal being submitted.
- (iii) Represent that all information contained in the proposal is true and correct.
- (iv) Acknowledge that the City has the right to make any inquiry it deems appropriate to substantiate or supplement information supplied by Proposer and Proposer hereby grants the City permission to make these inquiries, and to provide any and all related documentation in a timely manner.

No request for modification of the proposal shall be considered after its submission on grounds that Proposer was not fully informed to any fact or condition.

Addenda/Clarifications

Should discrepancies or omissions be found in this RFP or should there be a need to clarify this RFP, questions or comments regarding this RFP must be put in writing and received by the City's e-Procurement Portal no later than **5:00 p.m. Monday, February 19, 2024.**

Responses from the City will be communicated in writing to all recipients of this RFP. Inquiries received after the date and time stated will not be accepted and will be returned to senders without a response. All addenda shall become a part of this RFP and shall be acknowledged on the Proposer's Fee Proposal Form (Exhibit B).

Please note the deadline for submitting inquiries. All answers to inquiries will be posted on the City's e-Procurement Portal at the link provided below. Proposers must also click "Follow" on this bid to receive an email notification when answers are posted. It is the responsibility of the bidder to check the website for answers to inquiries. The City shall not be responsible for nor be bound by any oral instructions, interpretations or explanations issued by the City or its representatives.

Submission of Proposals

Proposals shall be submitted electronically to the City's e-Procurement Portal:

<https://secure.procurenow.com/portal/cityofpacific>

Proposers shall create a FREE account with ProcureNow by signing up at <https://secure.procurenow.com/signup>

Once you have completed account registration, browse back to <https://secure.procurenow.com/portal/cityofpacific>

Click on "Submit Response" for this project and follow the instructions to submit the electronic bid.

Withdrawal of Proposals

Proposer may withdraw its proposal at any time before the deadline for submission of proposals as provided in the RFP by delivering a written request for withdrawal signed by, or on behalf of, the Proposer.

Rights of the City of Pacifica

This RFP does not commit the City to enter in a contract, nor does it obligate the City to pay for any costs incurred in preparation and submission of proposals or in anticipation of a contract. The City reserves the right to:

- Make the selection based on its sole discretion;
- Reject any and all proposals;
- Issue subsequent Requests for Proposals;
- Postpone opening for its own convenience;
- Remedy technical errors in the Request for Proposals process;
- Approve or disapprove the use of particular subconsultants;
- Negotiate with any, all, or none of the Proposers;
- Accept other than the lowest offer;
- Waive informalities and irregularities in the Proposals; and/or
- Accept a proposal from another Proposer in the event the originally selected Proposer defaults selection with the City.

5. PROPOSED RFP TIMELINE

The RFP Timeline is as follows:

Begin RFP Process	February 5, 2024
Deadline to Submit Questions	February 19, 2024
Deadline for Submittal of Proposals	February 23, 2024 at 2:00 PM
Review by City Staff and Interviews	TBD
Notify Successful Proposer	TBD
Anticipated Notice to Proceed with Installation Contractor	May 2024

6. INFORMATION TO BE SUBMITTED

These instructions outline the guidelines governing the format and content of the proposal and the approach to be used in its development and presentation. The intent of the RFP is to encourage responses that clearly communicate the Proposer's understanding of the City's requirements and its approach to successfully provide the products and/or services on time and within budget. Only that information which is essential to an understanding and evaluation of the proposal should be submitted. Items not specifically and explicitly related to the RFP and proposal, e.g. brochures, marketing material, etc. will not be considered in the evaluation.

The Proposal shall include:

- A. **Project Overview.** Provide an introduction that describes proposer's understanding of the Scope of Services (Exhibit A) and a commitment to providing the necessary staffing to complete the upgrade within the specified schedule. (1 page)
- B. **Project Team.** Identify the resources who will perform the scope of services and list the availability of each resource. Include the key individuals, including any subconsultants, that will actually be responsible for the project's technical activities and for management of the project. An organization chart should be provided showing

the inter-relation of all the project team members. In a separate appendix, include 2-page resumes for the project manager, all key personnel, including senior technical advisors, supporting staff, and sub-consultants. The project manager will be provided in the installation contract RFP as a point of contact for coordination with potential bidders on the installation contract. (2 pages)

- C. **Project Understanding and Approach.** This section shall clearly convey the proposer’s understanding of the work and Project approach. Proposer should address the overall approach to the project, the reports and deliverables that are to be presented, and a work plan that outlines the proposer’s approach and methodology. (4 pages)
- D. **Cost Proposal.** Provide a Lump Sum cost on the Fee Proposal Form provided in Exhibit “B” for the Work outlined in this RFP and the Attachments. This Lump Sum will be included in the Installation Contract RFP for all Bidders in Section 00 41 00 – Bid Form (See Attachment 1). Itemized costs may be provided but are not required.

7. **CONTRACT TYPE AND METHOD OF PAYMENT**

It is anticipated that the agreement resulting from this proposal if awarded will be a “time and materials with a not to exceed cost” contract with the Installation Contractor.

Proposer shall be prepared to accept the terms and conditions provided in Attachment 1 draft contract documents as a subcontractor to the Installation Contractor. If a Proposer desires to take exceptions to the terms and conditions, Proposer shall include the following in their submittal package:

- Proposer shall clearly identify each proposed change including relevant Attachments.
- Proposer shall furnish the reasons for, as well as specific recommendations, for alternative language.
- Note that this will be the only time the Proposer may comment on the terms of the Installation Agreement with the City. All future negotiations will occur between the Proposer and the Installation Contractor.

The above factors will be taken into account in evaluating proposals. Proposals that take substantial exceptions to be proposed terms and conditions may be determined by the City, at its sole discretion, to be unacceptable and no longer considered.

Insurance Requirements

The selected Proposer(s), at Proposer’s sole cost and expense and for the full term of the Agreement or any extension thereof, shall obtain and maintain the required insurance as specified in the Contract Documents.

All policies, endorsements, certificates and/or binders shall be subject to the approval of the City Manager, the Director of Public Works or their representative as to form and content. These requirements are subject to amendment or waiver if so approved in

writing by the City Manager, Director of Public Works or their representative. The selected Proposer agrees to provide the City with a copy of said policies, certificates and/or endorsement upon award of contract.

Billing

PLEASE NOTE: The City of Pacifica does not pay for services before it receives them. Therefore, do not propose contract terms that call for upfront payments or deposits. The Proposer will be paid as a subcontractor the Installation Contractor.

8. REVIEW AND SELECTION PROCESS

City staff will evaluate the proposals provided in response to this RFP based on the following criteria:

- Responsiveness of the RFP response related to the scope of services;
- Proposer’s written understanding of the proposed scope of services;
- Ability, capacity, and skill of Proposer to perform the services on a qualified and timely basis;
- Responses of the Proposer’s references;
- Experience, expertise, and qualifications of the Proposer and Proposer’s team members to be assigned to this Project;
- The quality, availability, and adaptability of the Proposer’s services as related to the proposed scope of services;
- Proposer’s success record on similar projects;
- Such other information that may be required or secured.

Evaluation criteria are not necessarily listed in order of importance. The City reserves the right to weigh its evaluation criteria in any matter it deems appropriate. In addition, the City reserves the right to reject any or all RFP responses and to waive informalities and irregularities in RFP responses received. Final approval of contract award is subject to the action of the City of Pacifica City Council.

9. ORAL INTERVIEWS

When deemed necessary, City may choose to conduct oral interviews with the top two ranking Proposers for the Project and may base its final ranking on both proposals and oral interviews. The City will then enter into negotiations with the most qualified firm that best matches the City’s needs, and if successful, finalize the Fee Proposal Form in Exhibit B provided by the Proposer.

10. PUBLIC NATURE OF PROPOSAL MATERIAL

Responses to this RFP become the exclusive property of the City of Pacifica. Proposals received shall be regarded as public records after a firm is recommended for selection to the City Manager or City Council as applicable, with the exception of those elements in each proposal which are defined by the Proposer as business or trade secrets and

plainly marked as “Confidential,” “Trade Secret,” or “Propriety.” The City shall not in any way be liable or responsible for the disclosure of any such proposal or portions thereof, if they are not plainly marked as “Confidential,” “Trade Secret,” or “Propriety” or if disclosure is required under the Public Records Act. Any proposal which contains language purporting to render all or significant portions of the proposal “Confidential,” “Trade Secret,” or “Propriety” shall be regarded as non-responsive.

EXHIBIT “A”

SCOPE OF SERVICES

EXHIBIT A

SCOPE OF SERVICES

Project Introduction:

SCADA Programming for the UV Disinfection System Replacement Project (“Project”) is the planned incorporation of both new and temporary UV system programming along with the elimination of removed, existing UV system programming of the existing SCADA Visualization and front-end systems for monitoring, control, historical database, and alarming. The selected proposer (“Programmer”) will be included in the installation contract RFP for the Project, and the Programmer will be assigned as a subcontractor to the selected installation contractor (“Contractor”) under the Project. The existing architecture is built around Inductive Automation Ignition SCADA software and the existing Plant PLC equipment is Allen Bradley PLC 5/40.

The 90 percent Design Drawings and Specifications relevant to programming for the Project are included as Attachments 1 and 2 in the RFP, including the contract terms and conditions for the installation contractor under which the selected Proposer will be subcontracted. In addition, the current UV system supplier's (Trojan's) UV Equipment Submittal is included as Attachment 3. The Programmer must coordinate with all bidders during the RFP period for the Project. Programmer shall include cost and staffing to support the Project bid period coordination. The Project bid period is planned for April 2024.

The intent is to implement three (3) separate phases of programming to support the Project. All work is scheduled for 2025, and the estimated time for each phase is included below.

The first phase of programming (late February to April 2025) will involve programming modifications to the Plant SCADA and PLC systems to incorporate SCADA control, alarm and indication features related to the temporary UV and associated pumping systems while operating simultaneously with the existing UV system SCADA and PLC programming.

The second phase of programming (August to October 2025) will involve programming modifications to the Plant SCADA and PLC systems to incorporate SCADA control, alarm and indication features associated with the new UV system while operating simultaneously with the temporary UV and associated pumping system and elimination of the SCADA and PLC programming associated with the removed, existing UV system.

The third phase of programming (October to December 2025) will involve removing SCADA and PLC programming associated with the temporary UV system and associated pumping equipment, leaving only the new UV system SCADA and PLC programming remaining.

Each of the phases described above will occur at different times during the UV project construction period as indicated. Programming of the new UV system PLC and local main UV panel operator interface screen will be performed by the UV system supplier. The Proposer shall include in the proposal effort for coordination with the UV system supplier's (Trojan's) programmer to ascertain required data signal addressing information. The new

UV system control system platform is Allen-Bradley ControlLogix with a PanelView Plus 7 graphical display. SCADA graphical programming provided by the Programmer shall be coordinated with graphical programming provided by the UV system supplier for the local UV system main panel graphical display for similar presentation of features and arrangement. Trojan's current submittal is included in Attachment 3.

Supply and configuration of redundant Server Class machines that host virtualized SCADA servers include fail-over and automatic reconnection for Workstations and Clients. SCADA Servers are redundant and presently configured to automatically switch hosts in the event of a hardware failure to a server.

Historical data will be populated onto a dedicated Virtual Machine (VM) with SQL Server data stored and mapped to all SCADA servers and clients for trending information.

All HMI Visualization, tag database, historical, security, and alarming system development shall conform to Pacifica SCADA Design Standards.

All virtual machine software, and operating system licensing shall be furnished by the Programmer. The Inductive Automation Ignition software and licensing will be furnished by the City.

SCADA Overview:

The project shall at a minimum include SCADA programming modifications for the following SCADA nodes:

- SCADA Server – Ignition Server - Primary (Virtualized – Network Rack)
- SCADA Server – Ignition Server – Backup (Virtualized – Network Rack)
- SCADA Server – Microsoft SQL Server - Historian (Virtualized – Network Rack)
- SCADA Server – Jump Host for Remote Access (Virtualized DMZ – Network Rack)
- Windows AD Server – Domain Controller
- SCADA Thin Client (Control Room)
- SCADA Thin Client (Operations Office)
- SCADA Thin Client (Plant Management)
- SCADA Thin Client (Laboratory)

All required Inductive Automation Ignition software licenses are CITY-FURNISHED.

- Ignition Custom Package 8.1 (Primary/Backup)
 - Ignition Platform
 - OPC UA Server Module
 - Core Drivers
 - Alarm Notification Module
 - Voice Notification - English Female (Katherine)
 - Voice Notification Module
 - Tag Historian

- SQL Bridge Module
- Reporting Module
- Perspective Module
- Symbol Factory

Programmer must assume that Trojan will not provide the Programmer with proprietary graphical screen or PLC programming software. The Programmer may coordinate with Trojan and the Contractor to arrange for shared information, but at this time, no agreement to provide this information is in place.

Key project components include, but are not limited to (refer to Attachments for additional information):

- Three graphical displays for temporary bypass pumping and disinfection coordinated with the City and Contractor.
- Data signal addressing for the permanent UV system inputs and outputs shown in the Trojan submittal assuming an additional 10 percent to the number shown in the submittal.
- Twelve graphical displays for the permanent UV system (refer to Trojan submittal for screen examples. Product Information section in the O&M User Manual). Note that some of these displays will be repetitive to display information for each of the two channels (gates, wipers, etc.) or each of the six banks (bank, lamp condition, etc.).
- Two additional contingency graphical displays.
- Graphical display updates for the filter effluent control valves to change from open/close operation to modulating operation. The Owner will provide the initial programming of the modulating valves and associated PLCs. An operational flow chart for the filter level rate of control is included as Attachment 4. The plant has five filters and associated level indicators and effluent valves that will need to be addressed in this graphical change.

Detailed Project Tasks:

A. Existing Site Conditions:

- a. The Programmer to identify existing Programmable Logic Controllers (PLCs), RIO racks, Plant SCADA, Human Machine Interface (HMI), existing Plant PLC and SCADA network architecture, and gather existing PLC and SCADA programs.

- b. Modifications to the existing SCADA system programming shall be installed in parallel with the existing SCADA system programming so there is no interruption in monitoring and control, unless written permission is given by the City.
- c. Review existing system documentation and design.

B. Develop Proposed Site Changes:

- a. The Programmer shall submit 30 days prior to the scheduled Installation, Testing, and Commissioning Plan Workshop a submittal including at a minimum:
 - i. Detailed conceptual drawings showing modifications to the existing SCADA and PLC network for the relevant portions of the three (3) work phases described herein;
 - ii. A detailed description of the SCADA headend configuration, installation detail drawings, and an updated network architecture drawing.
- b. Meetings:
 - i. Prior to Construction Manager scheduling of UV project programming coordination meetings, Programmer shall work with the Contractor to identify the schedule of programming coordination meetings with the Owner and Engineer. At a minimum the Programmer shall plan on attending the following meetings:
 1. Project Kickoff
 2. Progress and scheduling meetings during programming (assume 6)
 3. Installation, Testing, and Commissioning Plan Workshop (assume 2)
 4. Startup meetings as required (assume 4)

C. Programming and Testing:

- a. All SCADA and PLC software shall be programmed, and factory tested by the Programmer prior installation at treatment plant.
 - i. Submit Factory Acceptance Test plan 30 days prior to planned factory acceptance testing.

D. Installation, Testing, and Commissioning:

- a. The Programmer to develop a phased plan for installation, testing, and commissioning (in coordination with the Contractor and Trojan) that shall have the least impact on the treatment plant operations.

- b. The Programmer shall be responsible for providing the Contractor with scheduling information for each phase of the programming work to indicate programming elements and associated time durations for incorporation into the Contractor's overall project construction schedule.
- c. The Programmer shall coordinate, schedule and attend two (2) Installation, Testing, and Commissioning Plan Workshop to review the plan in detail with Plant Operation and Maintenance Staff, Engineer, UV system supplier Programmer, Contractor and Construction Manager. One workshop shall be scheduled for the Temporary UV Disinfection System, and one workshop shall be scheduled for the Permanent (Trojan) UV Disinfection System.
 - i. Workshops must be scheduled no fewer than 60 days prior to any installation and testing of the systems to allow implementation and revisions.
 - ii. Workshops shall be conducted to present the layout and functionality of new SCADA Screens to the City for review. Screens shall be updated to optimize viewing on a 16:9 aspect ratio display.
 - iii. All programming coordination meetings and workshops, including the selection of required attendees, shall be coordinated collaboratively by the Contractor and Construction Manager.
 - iv. The Programmer shall make any requested revisions and submit a revised plan, if necessary. The plan will be reviewed in detail by Plant Operations and Maintenance Staff, Engineer, UV system supplier, Contractor and Construction Manager. The plan must be approved by the City prior to proceeding with installation, testing, and commissioning.

E. SCADA And PLC Programming:

- a. The Programmer shall include all the elements listed earlier and as noted below including any additional software required to deliver a fully functional SCADA system.
- b. The existing system generates daily regulatory reports. After the installation of each phase of programming work, each new system will be programmed by the Programmer to generate the same reports.
- c. The Programmer shall develop SCADA interface screens that are similar to the existing screens (examples of industry standards provided by Programmer can be evaluated for consideration) on the existing Ignition SCADA system.
 - i. The new system graphics shall incorporate design elements commensurate with the City's most current system at the time of installation.

- ii. System graphics shall be in a widescreen 16:9 aspect ratio.
- d. All tags [data points] and history from existing system programming which shall remain once new programmed systems are implemented shall be copied to the new system programming and mapped to the new tags developed on the existing Ignition SCADA system.
- e. The City shall provide existing drawings of plant PLC network, plant PLC programs, UV Project Contract Documents, accepted new UV system submittal information and interim UV and associated pumping system submittal information to the Programmer via the Contractor.
- f. The Programmer shall provide a fully integrated Factory Acceptance Test of the modified Ignition SCADA system (for each phase of work described herein), the modifications to existing PLC equipment programming.
 - i. The Factory Acceptance Test shall demonstrate all newly developed SCADA interface screens with simulated live data displayed.
 - ii. Each I/O point shall be tested and demonstrated on the modified Ignition SCADA system programming. Modifications to existing Plant PLC control logic shall also be demonstrated during the Factory Acceptance Test.

F. Integration

- a. The Programmer shall configure the Ignition SCADA servers to retain a redundant arrangement with automatic fail-over and continuous historical data collection. Each virtual machine host shall be capable of running all virtual machines, shall be configured to automatically balance loading between the hosts, and automatically move virtual machines in the case of hardware failure or degradation in performance.
- b. The Programmer shall perform the following tasks as a minimum to ensure a smooth transition to the updated SCADA and PLC programming for each phase of work described herein.
 - i. Submit updated tag database.
 - ii. Install the latest revisions of all required software per the licensing purchased by the City.
 - iii. Migrate existing graphic screens maintaining all existing functionality.
 - iv. Configure and test alarm priorities and annunciation for all tags.
 - v. Reconfigure and test all Regulatory Reports related to the Project, in collaboration with Contractor and City staff.

- vi. Set-up clients/workstations.
- vii. Complete a successful Factory Acceptance Test demonstration of SCADA functions, including all graphic screens, alarming, and system failover.
- viii. Integrate with plant main PLC and other existing plant PLC's (communication drivers).
- ix. Prepare and submit an Operation and Maintenance Manual.
- x. Submit as-built documentation, including but not limited to software user manuals, operations and maintenance guidance, system asset information, software licensing files, and completed project backup files

G. Testing

- a. The SCADA/PLC system integrator shall devote sufficient personnel that shall be qualified to resolve and correct problems encountered with each new system provided during each of the three (3) phases of programming work during testing and commissioning at the plant.
- b. The Programmer shall test all functions, including but not limited to alarms indication, alarm acknowledgement, trends, set points, screen navigation, and communication drivers.
- c. The Programmer shall demonstrate to the City that the system and all functionality operates as intended.
- d. The Programmer shall test clients/workstations, including but not limited to proper connectivity to servers, failover testing including historical data, alarm monitoring and process control.
- e. Complete the approved cutover plan, removing existing SCADA and PLC programming (at each phase of programming work) and verifying system continues to operate as intended.
- f. Installation Acceptance Test (IAT):
 - i. An Installation Acceptance Test and verification for all deliverable programming, software, and associated documentation shall be performed prior to subsystem or major software migration. The tests shall be performed to verify that installed equipment is configured and assembled correctly, is operating as designed, and complies with the contractual requirements of the deliverables. Functional tests shall be performed to verify that the software and hardware will meet the functional and performance requirements of this project.

- ii. Prior to beginning the Installation Acceptance Test, the elements shall be subjected to system deliverable configuration and serialization verification. A copy of the Configuration Inventory Documentation for each site shall be annotated to reflect this verification and shall be included with the Installation Acceptance Test Report. No equipment substitutions or replacements shall be permitted without the approval of the Engineer and City staff.
 - iii. The Installation Acceptance Test for existing equipment (hardware) shall include individual end-item verification and integrated testing of all components. These tests shall include visual inspection verification and running the hardware diagnostics program, plus all special diagnostics programs used by the SCADA system supplier to demonstrate that the hardware integration task has been completed.
 - iv. The SCADA system Programmer shall also perform a system function test to exercise every specified system function and shall include but not limited to the following:
 - 1. Rigorous exercising of all devices both individually and collectively.
 - 2. Verification of proper scanning and data acquisition of all status and data points.
 - 3. Demonstration of all required device control functions.
 - 4. Demonstration of all analog input and output accuracy.
 - 5. Create and process device failure conditions.
 - 6. Demonstration of recovery from power loss.
 - 7. Demonstration of UPS and battery backup functionality.
 - v. After the successful completion of all tests mentioned above, a 72-hour continuous run of the system shall be monitored for each of the three (3) phases of programming work. Each phase of the programming work will be considered successfully complete if no function is lost, no hardware or software failure occurs, and no module automatic failover occurs. The Programmer shall be required to correct any issues associated with the software installation and configuration, while the City will be responsible for the replacement of any failed hardware not provided with the Work.
 - vi. The City of Pacifica will issue an acceptance document officially ending the IAT.
- g. Site Acceptance Test (SAT):

- i. A Site Acceptance Test of the functions, software, and performance shall be conducted after all elements have been installed and the system startup checkout has been completed for each of the three (3) phases of programming work.
- ii. The system SAT shall be performed to verify complete operation of the system and shall include tests required to verify integration with all plant PLCs.
- iii. The Programmer shall:
 - 1. Submit a proposed schedule and agenda for a pre-UV project startup meeting with the City and the Engineer, including review of team members, their responsibilities, and a timeline for proposed dates to test SCADA system, network, and components.
 - 2. Submit a proposed schedule, agenda, and test procedures for performing a Site Acceptance Test (SAT) to be witnessed by representatives of the City and the Engineer.
 - 3. Demonstrate correct communications, monitoring, control, and reporting of the system, equipment, and processes.
 - 4. Demonstrate each functional requirement. This demonstration shall repeat the tests used during the IAT but using real rather than simulated conditions.
 - 5. Demonstrate all equipment control functions, including the operation of automatic control strategies. Actuation of field devices shall be closely coordinated with City staff.
 - 6. Verify system performance, parameters and system responses under field operational conditions.
 - 7. Verify accuracy of documentation.
- iv. The SCADA system Programmer's test support personnel shall be qualified to resolve and correct problems encountered with the system during the tests. In addition, the Programmer shall provide all test equipment and instruments necessary to troubleshoot any problems encountered.
- h. System Availability Demonstration (SAD):
 - i. At the completion of the SAT, City staff will conduct a System Availability Demonstration (SAD) utilizing all equipment, software, and services provided under the project in the normal day-to-day operation of the system. The system shall be subjected to a 30-day SAD evaluation by City staff. If at the end of this period, the system availability is determined to be

less than that required, the SAD shall be continued on a day-by-day basis. This shall continue until the system passes the evaluation.

- ii. During the first week of the SAD the Programmer shall have personnel onsite to perform optimization and correct any deficiencies identified by City staff. The Programmer personnel shall also be available within two hours of notification to correct any issues identified by City staff during all parts of this demonstration.
- iii. The System Availability Demonstration shall be performed under field operating conditions. All functional and performance requirements specified in the project Scope of Services shall be met during the SAD.

H. Training

- a. Provide two (2), 4-hour training sessions at the request of City staff at the Plant upon the completion of Work associated with each of the following phases prior to final commissioning: Temporary disinfection system and the Permanent Trojan UV Disinfection System.
 - i. Training to provide staff with an overview of new features of the software, changes to screens, navigation, alarming, reporting and login and security features.

I. Warranty and Technical Support

- a. The Programmer shall warrant the integration for a period of 18 months after the system has been installed, tested, and is functional from the date of acceptance – Warranty Period. The Programmer shall provide technical support for all provided equipment and software and shall correct programming errors that may arise after commissioning during the Warranty Period.
- b. The Programmer shall provide 40 hours of onsite service after the date of acceptance to make requested improvements or requested modifications to optimize the operators experience with the new SCADA system.

J. SCADA Software furnished by the City

Ignition Custom Package 8.1 (Primary/Backup):

- Ignition Platform
- OPC UA Server Module
- Core Drivers
- Alarm Notification Module
- Voice Notification - English Female (Katherine)
- Voice Notification Module
- Tag Historian
- SQL Bridge Module
- Reporting Module

Perspective Module
Symbol Factory

EXHIBIT B
FEE PROPOSAL FORM

EXHIBIT “B”

FEE PROPOSAL FORM

<p>Proposer Name: _____ Address (<i>principal place of business</i>): _____</p>	<p>Project Name: PROGRAMMING FOR THE ULTRAVIOLET DISINFECTION SYSTEM REPLACEMENT PROJECT</p>
<p>Owner Name: City of Pacifica Address (<i>principal place of business</i>): 540 Crespi Drive Pacifica, CA 94044</p>	<p>Project Location: CALERA CREEK WATER RECYCLING PLANT 700 COAST HIGHWAY PACIFICA, CA 94044</p> <p>Proposal Due: February 23, 2024</p>
<p>Fee Proposal for Programming Services Fee Proposal: \$ _____ Date: _____</p>	<p>Addenda Acknowledged (list addendum number and date received): _____</p>
<p>The above proposed fee will be included in the installation contract RFP for the UV Disinfection System Replacement Project (“Project”), and the selected Proposer will be assigned as a subcontractor to the selected installation contractor (“Contractor”) under the Project. Proposal is based on the Scope of Work and RFP dated February 5, 2024 for the project named above.</p>	
<p>Proposer _____ <i>(Full formal name of Proposer)</i></p> <p>By: _____ <i>(Signature)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p> <p>Attest: _____ <i>(Signature)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p>	<p>City of Pacifica _____</p> <p>By: _____ <i>(Signature)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p> <p>Attest: _____ <i>(Signature)</i></p> <p>Name: _____ <i>(Printed or typed)</i></p> <p>Title: _____</p>

Attachments

Project Title: CCWRP – PROGRAMMING FOR THE UV DISINFECTION SYSTEM REPLACEMENT PROJECT

ATTACHMENTS

ADDENDUM 1

REQUEST FOR PROPOSALS (“RFP”) FOR CALERA CREEK WATER RECYCLING PLANT PROGRAMMING FOR THE UV DISINFECTION SYSTEM REPLACEMENT PROJECT

Proposers on the above-named RFP are hereby notified that the RFP Documents are modified as indicated below. Proposers are required to acknowledge receipt of this Addendum in the space provided on Exhibit B – Fee Proposal Form.

This Addendum shall become part of the Proposal and shall be applied to Proposer’s response to the RFP and the Fee Proposal provided in Exhibit B.

RFP

The following sections are modified as indicated below.

1. RFP Page 2, under Part 1. PURPOSE:

Replace the third bullet under “Key project components [...]”,

- Seven graphical displays for the permanent UV system.

with the following:

- **Twelve** graphical displays for the permanent UV system.

2. Exhibit A – Scope of Services, Page 4:

At the end of the fifth bullet under “Key project components [...] Graphical display updates for the filter effluent control valves to change from open/close operation to modulating operation.”, insert the following”

The Owner will provide the initial programming of the modulating valves and associated PLCs. An operational flow chart for the filter level rate of control is included as Attachment 4. The plant has five filters and associated level indicators and effluent valves that will need to be addressed in this graphical change.

3. Add **ATTACHMENT 4 – Filter Level Rate of Control Flow Chart** (see attached to this Addendum) to the end of the RFP and the Table of Contents.

RESPONSES TO PROPOSER’S QUESTIONS

The following question(s) were received. Response(s) have been provided:

Q1. What is the overall budget for this project?

A1. The engineer's opinion of probable cost for the construction effort is currently \$6.5 million (not including the remaining value of the \$1.13 million Trojan Technologies Contract value). The engineer's opinion of probable cost for the Programming effort outlined in this RFP is \$275-350 thousand.

DOCUMENT 00_43_14
ESCROW BID DOCUMENTS

ARTICLE 1—SCOPE

- 1.01 The 3 lowest Bidders shall submit, within the specified time after receipt of Bids, 1 copy of all documentary information generated in preparation of Bid prices for this Project. This material is hereinafter referred to as "Escrow Bid Documents." The Escrow Bid Documents of the Successful Bidder will be held in escrow for the duration of the contract.
- 1.02 The Successful Bidder agrees, as a condition of award of the contract, that the Escrow Bid Documents constitute the complete, only, and all documentary information used in preparation of his Bid. No other Bid preparation information shall be considered in resolving disputes.
- 1.03 Nothing in the Escrow Bid Documents shall change or modify the terms or conditions of the Contract Documents.

ARTICLE 2—OWNERSHIP

- 2.01 The Escrow Bid Documents are, and shall always remain, the property of Contractor, subject only to joint review by Owner and Contractor, as provided in this Document.
- 2.02 Owner stipulates and expressly acknowledges that the Escrow Bid Documents, as defined in this Document, constitute trade secrets. This acknowledgment is based on Owner's express understanding that the information contained in the Escrow Bid Documents is not known outside the Bidder's business, is known only to a limited extent and only by a limited number of employees of the Bidder, is safeguarded while in Bidder's possession, is extremely valuable to Bidder, and could be extremely valuable to Bidder's competitors by virtue of it reflecting Bidder's contemplated techniques of construction. Owner acknowledges that the Bidder expended substantial sums of money in developing the information included in the Escrow Bid Documents and further acknowledges that it would be difficult for a competitor to replicate the information contained therein. Owner further acknowledges that the Escrow Bid Documents and the information contained therein are made available to Owner only because such action is an express prerequisite to award of the contract. Owner further acknowledges that the Escrow Bid Documents include a compilation of information used in the Bidder's business, intended to give the Bidder an opportunity to obtain an advantage over competitors who do not know of or use the contents of the documentation. Owner agrees to safeguard the Escrow Bid Documents, and all information contained therein, against disclosure to the fullest extent permitted by law.

ARTICLE 3—PROGRAM

- 3.01 Escrow Bid Documents will be used to assist in the negotiation of price adjustments and Change Orders and in the settlement of disputes, claims, and other controversies. They will not be used for pre-award evaluation of Contractor's anticipated methods of construction or to assess Contractor's qualifications for performing the Work.

ARTICLE 4—FORMAT AND CONTENTS

- 4.01 Bidders may submit Escrow Bid Documents in their usual cost-estimating format. It is not the intention of this section to cause the Bidder extra work during the preparation of the Bid, but to ensure that the Escrow Bid Documents will be adequate to enable complete understanding and proper interpretation for their intended use. The Escrow Bid Documents shall be in the language of the Specifications.
- 4.02 It is required that the Escrow Bid Documents clearly itemize the estimated costs of performing the work of each Bid item contained in the Bid schedule. Bid items should be separated into subitems as required to present a complete and detailed cost estimate and allow a detailed cost review. The Escrow Bid Documents shall include all quantity takeoffs; crew; equipment; calculations of rates of production and progress; copies of quotations from equipment manufacturers, Subcontractors, and Suppliers; and memoranda, narratives, consultants' reports, add/deduct sheets, and all other information used by the Bidder to arrive at the prices contained in the Bid Form. Estimated costs should be broken down into the Bidder's usual estimate categories, such as direct labor, repair labor, equipment operation, equipment ownership, expendable materials, permanent materials, and subcontract costs as appropriate. Plant and equipment and indirect costs should be detailed in the Bidder's usual format. Contractor's allocation of plant and equipment, indirect costs, contingencies, markup, and other items to each Bid item shall be included.
- 4.03 All costs shall be identified. For Bid items amounting to less than \$10,000, estimated unit costs are acceptable without a detailed cost estimate, provided that labor, equipment, materials, and subcontracts, as applicable, are included, and provided that indirect costs, contingencies, and markup, as applicable, are allocated.
- 4.04 Bidding Documents provided by the Owner should not be included in the Escrow Bid Documents unless needed to comply with the requirements of this section.

ARTICLE 5—SUBMITTAL

- 5.01 The Escrow Bid Documents shall be submitted in a sealed container within 48 hours after the time of receipt of Bids. The container shall be clearly marked on the outside with the Bidder's name, date of submittal, project name, and the words "Escrow Bid Documents."
- 5.02 The Escrow Bid Documents shall be accompanied with the completed Attachment A Certificate of Bid Documentation, signed by an individual authorized by the Bidder to execute the Bid Form, stating that the material in the Escrow Documentation constitutes the complete, only, and all documentary information used in preparation of the Bid and that he has personally examined the contents of the Escrow Bid Documents container and has found that the documents in the container are complete.
- 5.03 Prior to award, Escrow Bid Documents of the apparent Successful Bidder will be unsealed, examined, organized, and inventoried by representatives of Owner, together with members of Contractor's staff who are knowledgeable in how the Bid was prepared.
- 5.04 This examination is to ensure that the Escrow Bid Documents are authentic, legible, and complete. It will not include review of, and will not constitute approval of, proposed construction methods, estimating assumptions, or interpretations of Contract Documents. This examination is subject to the condition that, as trade secrets, the Escrow Bid Documents are proprietary and confidential as described in this Document. Examination will not alter any condition(s) or term(s) of the contract.

- 5.05 If all the documentation required in this Document has not been included in the original submittal, additional documentation shall be submitted, at Owner's discretion, prior to award of the contract. The detailed breakdown of estimated costs shall be reconciled and revised, if appropriate, by agreement between Contractor and Owner before making the award.
- 5.06 If the contract is not awarded to the apparent Successful Bidder, the Escrow Bid Documents of the Bidder next to be considered for award shall be processed as described above.
- 5.07 Timely submission of complete Escrow Bid Documents is an essential element of the Bidder's responsibility and a prerequisite to contract award. Failure to provide the necessary Escrow Bid Documents will be sufficient cause for Owner to reject the Bid.
- 5.08 If the Bidder's proposal is based on subcontracting any part of the Work, each Subcontractor whose total subcontract price exceeds 5 percent of the total Contract Price proposed by the Bidder shall provide separate Escrow Bid Documents to be included with those of the Bidder. These documents will be opened and examined in the same manner and at the same time as the examination described above for the apparent Successful Bidder.
- 5.09 If Contractor subcontracts any portion of the Work after award, Owner retains the right to require Contractor to submit Escrow Bid Documents from the Subcontractor before the subcontract is approved.
- 5.10 Escrow Bid Documents submitted by unsuccessful Bidders will be returned unopened, unless opened as provided above, as soon as they are no longer needed by Owner and no later than immediately following award of the contract.

ARTICLE 6—STORAGE

- 6.01 The Escrow Bid Documents of the Successful Bidder will be placed in escrow prior to award of the contract, for the life of the contract, in a mutually agreeable institution. The cost of storage will be paid by Owner.

ARTICLE 7—EXAMINATION AFTER AWARD OF CONTRACT

- 7.01 The Escrow Bid Documents shall be examined by both Owner and Contractor, at any time deemed necessary after award of the contract by either Owner or Contractor, to assist in the negotiation of price adjustments and Change Orders, or the settlement of disputes.
- 7.02 Examination of the Escrow Bid Documents after award of the contract is subject to the following conditions:
- 7.03 As trade secrets, the Escrow Bid Documents are proprietary and confidential as described in this Document.
- 7.04 Owner and Contractor shall each designate, in writing to the other party and a minimum of 10 days prior to examination, representatives who are authorized to examine the Escrow Bid Documents. No other person shall have access to the Escrow Bid Documents.
- 7.05 Access to the Escrow Bid Documents will take place only in the presence of duly designated representatives of both Owner and Contractor.

ARTICLE 8—FINAL DISPOSITION

8.01 The Escrow Bid Documents will be returned to Contractor at such time as the contract has been completed and final settlement has been achieved.

END OF DOCUMENT

ATTACHMENT A - CERTIFICATE OF BID DOCUMENTATION

CERTIFICATE OF BID DOCUMENTATION

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THE BID DOCUMENTATION CONTAINED IN THIS DOCUMENT CONSTITUTES THE COMPLETE, ONLY, AND ALL DOCUMENTARY INFORMATION USED IN PREPARATION OF THE BID AND THAT I HAVE PERSONALLY EXAMINED THESE CONTENTS AND HAVE FOUND THAT THIS BID DOCUMENTATION IS COMPLETE.

BY: _____

TITLE: _____

FIRM: _____

DATE: _____

DOCUMENT 00_43_30

BID BOND (PENAL SUM FORM)

<p>Bidder Name: Address <i>(principal place of business):</i></p>	<p>Surety Name: Address <i>(principal place of business):</i></p>
<p>Owner Name: City of Pacifica Address <i>(principal place of business):</i> <p style="text-align: center;">540 Crespi Drive Pacifica, CA 94044</p> </p>	<p>Bid Project <i>(name and location):</i> <p style="text-align: center;">UV Disinfection System Replacement Project – P034 700 Coast Hwy, Pacifica, CA 94044</p> Bid Due Date:</p>
<p>Bond Penal Sum: Date of Bond:</p>	
<p>Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.</p>	
<p>Bidder</p>	<p>Surety</p>
<p style="text-align: center;"><i>(Full formal name of Bidder)</i></p>	<p style="text-align: center;"><i>(Full formal name of Surety) (corporate seal)</i></p>
<p>By: _____ <i>(Signature)</i></p>	<p>By: _____ <i>(Signature) (Attach Power of Attorney)</i></p>
<p>Name: _____ <i>(Printed or typed)</i></p>	<p>Name: _____ <i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p>Attest: _____ <i>(Signature)</i></p>	<p>Attest: _____ <i>(Signature)</i></p>
<p>Name: _____ <i>(Printed or typed)</i></p>	<p>Name: _____ <i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p><u>Notes:</u> (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.</p>	

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation will be null and void if:
 - 3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2. All Bids are rejected by Owner.
 - 3.3. Or Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
5. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than 1 year after the Bid due date.
7. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

END OF DOCUMENT

DOCUMENT 00_43_36

PROPOSED SUBCONTRACTORS FORM

The listing of more than one subcontractor for each item of Work to be performed with the words "and/or" will not be permitted.

Bidder certifies that all Subcontractors listed are eligible to perform the Work and that all Subcontractors to perform more than 0.5% of the Work are listed.

Add additional sheets, if necessary, to list all Subcontractors.

If no Subcontractors are listed, it will be assumed that no Subcontractors are to be employed meeting the above conditions.

BIDDER

(Signature)

(Date)

Work to be Performed	Contractor Name	License Type/Number	Percent of Total Contract	CA DIR Registration Number
1.	Prime Contractor			
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				

The Contractor is responsible for listing the information for the proposed Project Manager responsible for DIR compliance in the space provided below and sign.

Contractor Project Manager Name	Title	E-mail address	Work phone number

END OF DOCUMENT

DOCUMENT 00_45_14.01

CONSTRUCTION CONTRACTOR QUALIFICATIONS FORM

ARTICLE 1 — QUALIFICATION DETERMINATION

1.01 Engineer has sole discretion in the determination of qualified businesses.

ARTICLE 2 — CONTACT AND OWNERSHIP INFORMATION

2.01 Provide contact information for the business:

Legal Name of Business:			
Corporate Office			
Name:		Phone number:	
Title:		Email address:	
Business address of corporate office:			
Local Office			
Name:		Phone number:	
Title:		Email address:	
Business address of local office:			

2.02 Provide information on the business’s organizational structure:

Form of Business:	<input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation		
<input type="checkbox"/> Limited Liability Company <input type="checkbox"/> Joint Venture comprised of the following companies:			
	1.		
	2.		
	3.		
Provide a separate Qualification Statement for each Joint Venturer.			
Date Business was formed:		State in which business was formed:	
Is this business authorized to operate in the Project location?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Pending	

2.03 Identify all businesses that own Business in whole or in part (25 percent or greater), or that are wholly or partly (25 percent or greater) owned by Business:

Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			

2.04 Provide information regarding the business's officers, partners, and limits of authority.

Name:		Title:	
Authorized to sign contracts: <input type="checkbox"/> Yes <input type="checkbox"/> No		Limit of Authority:	\$
Name:		Title:	
Authorized to sign contracts: <input type="checkbox"/> Yes <input type="checkbox"/> No		Limit of Authority:	\$
Name:		Title:	
Authorized to sign contracts: <input type="checkbox"/> Yes <input type="checkbox"/> No		Limit of Authority:	\$
Name:		Title:	

2.05 License requirements:

- A. General Contractor's License Classification: In accordance with California Business and Professions Code, Section 7028, Owner has determined that Contractor shall possess a valid Class A Contractor License at the time of Bid and for the duration of the contract.
 - 1. Failure to possess the specified license shall render the Bid as nonresponsive and shall act as a bar to award of the contract to any Bidder not possessing said license at the time of Bid opening.
- B. Provide information regarding licensure for Business:
 - 1. Licensed in the state where the project is to be constructed continuously for a minimum period of 5 years.

Name of License:			
Licensing			
License No:		Expiration Date:	
Name of License:			
Licensing			
License No:		Expiration Date:	

ARTICLE 3 — FINANCIAL

- 3.01 Financial requirements:
 - A. The financial condition of the business cannot be such that its financial ability to complete the Project is in doubt, in the opinion of the Owner.
- 3.02 Provide the most recent audited financial statement, and if such audited financial statement is not current, also provide the most current financial statement.
- 3.03 Provide information regarding the business’s financial stability.

Financial Institution:		
Business address:		
Date of business’s most recent financial statement:		<input type="checkbox"/> Attached
Date of business’s most recent audited financial statement:		<input type="checkbox"/> Attached
Financial indicators from the most recent financial statement		
Contractor’s Current Ratio (Current Assets ÷ Current Liabilities)		
Contractor’s Quick Ratio ((Cash and Cash Equivalents + Accounts Receivable + Short Term Investments) ÷ Current Liabilities)		
Is the business in bankruptcy?		

ARTICLE 4 — SAFETY PROGRAM

- 4.01 Must have a designated Safety Manager.
- 4.02 Submit a copy of the company’s Safety Program.
- 4.03 Submit the company protocol for call-in of emergency work.
 - A. Must have a 24-hour 7 day a week emergency on call service with a dedicated 1-800 number that is answered by a person and not a recording.
- 4.04 Submit a statement that all employees that perform work:
 - A. Have completed the company safety training.
- 4.05 Provide information regarding Business’s safety organization and safety performance.

Name of Business’s Safety		
Safety Certifications		
Certification Name	Issuing Agency	Expiration

- A. Provide 3 years of data in the format below that includes Contractor’s Worker’s Compensation Insurance Experience Modification Rate (EMR), Total Recordable Injury Rate (TRIR) for incidents, and Total Number of Recorded Man Hours (MH)

based on 29 CFR 1904 OSHA Recording and Reporting Occupational Injuries and Illness requirements. Bidder shall submit Worker's Compensation Insurance Experience Modification Rate (EMR) letter from insurance broker with signed Agreement.

- B. Must have an Average Workers' compensation Experience Modification Rate (EMR) for the last three (3) years of 1 or lower to be considered a responsive bidder.
- C. Must have an Average Total Recordable Incident Rate (TRIR) for the last three (3) years of 3.0 or lower to be considered a responsive bidder.

Year									
Company	EMR	TRIR	MH	EMR	TRIR	MH	EMR	TRIR	MH

ARTICLE 5 — SURETY INFORMATION

5.01 Provide information regarding the surety company that will issue required bonds on behalf of the Business, including but not limited to performance and payment bonds.

Surety Name:			
Surety is a corporation organized and existing under the laws of the state of:			
Is surety authorized to provide surety bonds in the Project location?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Is surety listed in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" published in Department Circular 570 (as amended) by the Bureau of the Fiscal Service, U.S. Department of the Treasury?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):			Phone (claims):

ARTICLE 6 — INSURANCE

6.01 Provide information regarding business’s insurance company(s), including but not limited to its Commercial General Liability carrier. Provide information for each provider.

Name of insurance provider, and type of policy (CLE, auto, etc.):			
Insurance Provider		Type of Policy (Coverage Provided)	
Are providers licensed or authorized to issue policies in the Project location?			<input type="checkbox"/> Yes <input type="checkbox"/> No
Does provider have an A.M. Best Rating of A-VII or better?			<input type="checkbox"/> Yes <input type="checkbox"/> No
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 7 — FACILITIES

7.01 Provide information regarding the facilities:

<u>REQUIREMENT</u>	<u>YES OR NO</u>
Does the business have a permanent service facility?	

ARTICLE 8 — EXPERIENCE AND RESOURCES

8.01 Provide information regarding the business:

<u>REQUIREMENT</u>	<u>YES OR NO</u>
Has the business been operating at least 5 years?	
Has the business had at least \$15.0 million, annual gross revenue?	
Does the business or any of its officers have adverse criminal or legal records, such as criminal convictions, defaults, loss of licenses, etc.?	
Does the business have a poor project performance record, such as repeated claims, litigation, defaults, etc.?	
Does the business have a training program staffed by qualified instructors, to provide proper training in the operation and maintenance of equipment as specified in the Contract Documents?	

8.02 Provide information that will identify the overall size and capacity of the business.

Average number of full-time employees:	
Estimate of gross revenue for the current year:	
Estimate of gross revenue for the previous year:	

8.03 Provide information regarding the business's current workload.

- A. Submit all projects currently under contract using the form provided in Attachment A - Project Experience.

8.04 Provide information regarding the business's previous contracting experience.

Years of experience with projects similar to the proposed project:				
As a general contractor:		As a joint venturer:		
Has business, or a predecessor in interest, or an affiliate identified in Paragraph 1.03:				
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No				
Been barred from contracting by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No				
Been released from a bid in the past 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No				
Defaulted on a project or failed to complete any contract awarded to it? <input type="checkbox"/> Yes <input type="checkbox"/> No				
Refused to construct or refused to provide materials defined in the contract documents or in a change order? <input type="checkbox"/> Yes <input type="checkbox"/> No				
Been a party to any currently pending litigation or arbitration? <input type="checkbox"/> Yes <input type="checkbox"/> No				
Provide full details in a separate attachment if the response to any of these questions is Yes.				

- A. Submit completed projects in the last 5 years using the form provided in Attachment A - Project Experience.
 - 1. Minimum of 3 projects.
 - 2. Maximum of 6 projects.
 - 3. "Completion" means the similar project has been installed and is substantially complete.
- B. Minimum experience requirements:
 - 1. At least 3 projects for a water and/or wastewater system of similar scope and complexity to this Project.
 - a. At least 1 project for a water and/or wastewater UV disinfection system with a dollar value of at least 80 percent of estimated cost for this Project.

ARTICLE 9 — PROJECT STAFFING

- 9.01 Provide resumes on key individuals whom Business intends to assign to the Project.
- A. Key individuals must be permanent employees of the Business.
 - B. Key individuals include the following:
 - 1. Project Manager.
 - 2. Project Superintendent.
 - 3. Quality Manager.
 - 4. Safety Manager.
 - C. Resumes may be provided for Business's key leaders as well.
 - D. Minimum qualifications:
 - 1. Each of the key individuals each must have minimum of 10 years of experience in similar construction projects.
 - 2. Project Manager and Project Superintendent have served in similar roles on at least 2 comparable water and/or wastewater plant project(s) in the past 5 years.
 - 3. Safety Manager must have appropriate certification or license.

ARTICLE 10 — REQUIRED ATTACHMENTS

- 10.01 Provide the following information with the Statement of Qualifications:
- A. If business is a joint venture, provide separate Qualifications Statements for each joint venturer as specified in this Document.
 - B. Provide this Document with information filled out.
 - C. Financial statements as specified in this Document.
 - D. Current projects as specified in this Document.
 - E. Previous experience with similar projects as specified in this Document.
 - F. Resumes for the key individuals listed as specified in this Document.
 - G. Attachments providing additional information as specified in this Document.

END OF DOCUMENT

ATTACHMENT A - PROJECT EXPERIENCE

PROJECT EXPERIENCE

PROJECT NAME:	DATE COMPLETED:
	PROJECT DURATION:
OWNER NAME:	OWNER ADDRESS:
OWNER CONTACT PERSON:	OWNER CONTACT PHONE NO. (Office and mobile number):
DESIGN FIRM NAME:	DESIGN FIRM ADDRESS:
DESIGN FIRM CONTACT PERSON:	DESIGN FIRM CONTACT PHONE NO. (Office and mobile number):
BRIEF DESCRIPTION OF THE PROJECT:	
INITIAL PROJECT COST:	
CHANGE ORDER COST:	
FINAL PROJECT COST:	
COMMENTS OR EXCEPTIONS:	

DOCUMENT 00_45_19

NON-COLLUSION DECLARATION

NON-COLLUSION DECLARATION TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

The undersigned declares:

I am the _____ of _____, the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ **[date]**, at _____ **[city]**, _____ **[state]**.

BIDDER'S SIGNATURE: _____

NAME/TITLE OF SIGNATORY: _____

LEGAL NAME OF BIDDER: _____

END OF DOCUMENT

DOCUMENT 00_51_00

NOTICE OF AWARD

Date of

Owner: City of Pacifica Owner's Project No.: P034

Engineer: Carollo Engineers, Inc. Engineer's Project 201447

Project: UV Disinfection System Replacement

Contract Name:

Bidder:

Bidder's

You are notified that Owner has accepted your Bid dated _____ for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

UV Disinfection System Replacement

The Contract Price of the awarded Contract is \$_____. Contract Price is subject to adjustment based on the provisions of the Contract.

_____ unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within **15 days** of the date of receipt of this Notice of Award:

1. Deliver to Owner _____ counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in the General Conditions.

Owner: City of Pacifica

By (*signature*): _____

Name
(*printed*): _____

Title: _____

Copy: Engineer

END OF DOCUMENT

This document is a MODIFIED version of EJCDC® C-520, Copyright© 2018 by the National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers, or is based in part on excerpts from copyrighted EJCDC documents. All rights reserved. Those portions of the text that originated in copyrighted EJCDC documents remain subject to the copyright.

DOCUMENT 00_52_00

AGREEMENT BETWEEN OWNER AND CONTRACTOR

This Agreement is by and between the City of Pacifica (“Owner”) and _____ (“Contractor”).

Terms used in this Agreement have the meanings stated in the General Conditions.

Owner and Contractor hereby agree as follows:

ARTICLE 1 — WORK

1.01 Contractor shall complete Work as specified or indicated in the Contract Documents. the Work is generally described as follows: UV Disinfection System Replacement Project.

ARTICLE 2 — THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: The work required to remove and replace the existing UV disinfection equipment. The project requires continuous UV disinfection to be accomplished by pumping filtered water from the below grade filter/UV structure to above grade temporary UV disinfection channels. The bypass system is necessary to modify the existing UV channel to accommodate the new system and to create two redundant UV channels from the existing single channel.

ARTICLE 3 — ENGINEER

- 3.01 The part of the Project that pertains to the Work has been designed by Carollo Engineers, Inc.
- 3.02 The Owner will retain a Construction Manager (“Construction Manager” or “CM”) to act as Owner’s representative, assume duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the contract.

ARTICLE 4 — CONTRACT TIMES

- 4.01 Time is of the essence:
- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- 4.02 Contract times: Dates:
- A. The Work will be substantially complete by October 15, 2025, and completed and ready for final payment in accordance with the General Conditions by January 13, 2026.

4.03 Milestones:

- A. Parts of the Work must be substantially completed on or before the following Milestone(s):
1. Milestone 1 – Long-lead submittals, number of days after the date when the Contract Times commence to run as provided in the General Conditions as described below:
 - a. Temporary power equipment and control panels for temporary bypass system, 60 days.
 - b. Trojan temporary UV system (in progress, but will require final coordination), 120 days.
 - c. GLASCO temporary UV system, 120 days.
 - d. Bypass pumps and system configuration, 120 days.
 2. Milestone 2 – Completion of the new conduit and ductbank routing, 10/30/2024.
 3. Milestone 3 – Successfully complete bypass startup and testing, 4/15/2025.
 4. Milestone 4 – Begin permanent system startup testing, 9/15/2025.

4.04 Liquidated damages:

- A. Contractor and Owner recognize that time is of the essence as stated above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):
1. Substantial Completion: Contractor shall pay Owner \$2,000 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
 2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$500 for each day that expires after such time until the Work is completed and ready for final payment.
 3. Milestones: Contractor shall pay Owner \$500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 1, until Milestone 1 is achieved, or until the time specified for Substantial Completion is reached, at which time the rate for Substantial Completion will apply, rather than the Milestone rate.
 4. Milestones: Contractor shall pay Owner \$500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 2, until Milestone 2 is achieved, or until the time specified for Substantial Completion is reached, at which time the rate for Substantial Completion will apply, rather than the Milestone rate.
 5. Milestones: Contractor shall pay Owner \$1,000 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 3, until Milestone 3 is achieved, or until the time specified for Substantial Completion is reached, at which time the rate for Substantial Completion will apply, rather than the Milestone rate.
 6. Milestones: Contractor shall pay Owner \$1,500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for achievement of Milestone 4, until Milestone 4 is achieved, or until the time

specified for Substantial Completion is reached, at which time the rate for Substantial Completion will apply, rather than the Milestone rate.

7. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.
8. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

4.05 Special damages:

- A. The special damages imposed in this paragraph are supplemental to any liquidated damages for delayed completion established in this Agreement.
- B. Contractor shall reimburse Owner for:
 1. Any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and
 2. The actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.
- C. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.

ARTICLE 5 — CONTRACT PRICE

- 5.01 Owner will pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:
- A. Total of Lump Sum Amount \$ _____.
 - B. For Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 — PAYMENT PROCEDURES

- 6.01 Submittal and processing of Payments:
- A. Contractor shall submit Applications for Payment in accordance with the General Conditions.
- 6.02 Progress Payments; Retainage:
- A. Owner will make progress payments on the basis of Contractor's Applications for Payment on or about the 5th day of each month during performance of the Work as

provided in below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.
 - a. If 50 percent or more of the Work has been completed, as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage.
 - b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
 - c. In accordance with California Public Contract Code, Section 7201, 95 percent of the value of the Work completed (with the balance being retainage).
 - d. In accordance with California Public Contract Code, Section 7201, 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion, Owner will pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to the General Conditions, and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 Final payment:

- A. Upon final completion and acceptance of the Work, Owner will pay the remainder of the Contract Price in accordance with the General Conditions.

6.04 Consent of surety:

- A. Owner will not make final payment or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 Interest:

- A. All amounts not paid when due will bear interest at the legal rate unless otherwise specified according to California law.

ARTICLE 7 — CONTRACT DOCUMENTS

7.01 Contents:

- A. The Contract Documents consist of the following:
 1. This Agreement.
 2. Bonds:
 - a. Document 00_61_10 - Performance Bond (together with power of attorney).
 - b. Document 00_61_15 - Payment Bond (together with power of attorney).
 - c. Public Works Bond.
 3. Document 00_72_00 - General Conditions.
 4. Document 00_73_00 - Supplementary Conditions.

5. Specifications as listed in the table of contents of the project manual.
 6. Drawings listed on the sheet index.
 7. Addenda (numbers _____ to _____, inclusive).
 8. Exhibits to this Agreement (enumerated as follows):
 - a. Document 00_43_36 - Proposed Subcontractors Form.
 - b. Document 00_45_14.01 - Qualification Statement.
 - c. Document 00_45_19 - Non-Collusion Declaration.
 - d. Document 00_54_01 - Escrow Agreement for Security Deposits in Lieu of Retention.
 - e. Exhibit A - Successful Bidder's Bid Form.
 9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Document 00_55_00 - Notice to Proceed.
 - b. Document 00_94_22 - Field Orders.
 - c. Document 00_94_20 - Work Change Directives.
 - d. Document 00_94_21 - Change Orders.
 10. The assignment of a procurement contract, previously entered into by Owner (as "Buyer") with a manufacturer or distributor (as "Seller") for the direct purchase of goods (most commonly equipment) and related special services:
 - a. Document 00_54_34 - Assignment of Procurement Contract.
 - b. Document 00_60_09 - Surety's Agreement to Assignment.
 11. The Contract Documents listed above are attached to this Agreement (except as expressly noted otherwise above).
- B. There are no Contract Documents other than those listed above.
- C. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8 — REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 Contractor's representations:

- A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:
1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
 2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Contractor is familiar with Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Contractor has carefully studied the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the General Conditions.
 5. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the General Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on:
 - a. the cost, progress, and performance of the Work;

- b. the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and
 - c. Contractor's safety precautions and programs.
6. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
 7. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
 8. Contractor has given Engineer written notice of conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
 9. The Contract Documents are generally sufficient to indicate and convey understanding of terms and conditions for performance and furnishing of the Work.
 10. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 Contractor's certifications:

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this paragraph:
 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 3. "collusive practice" means a scheme or arrangement between 2 or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

Owner:

The City of Pacifica

(typed or printed name of organization)

By: _____

(individual's signature)

Date: _____

(date signed)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Attest: _____

(individual's signature)

Title: _____

(typed or printed)

Address for giving notices:

Designated Representative:

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Address: _____

540 Crespi Drive

Pacifica, CA 94044

Phone: _____

Email: _____

(If [Type of Entity] is a corporation, attach evidence of authority to sign. If [Type of Entity] is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

Contractor:

(typed or printed name of organization)

By: _____

(individual's signature)

Date: _____

(date signed)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

(If [Type of Entity] is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____

(individual's signature)

Title: _____

(typed or printed)

Address for giving notices:

Designated Representative:

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Address: _____

Phone: _____

Email: _____

License No.: _____

(where applicable)

State: _____

END OF DOCUMENT

This document is a MODIFIED version of EJCDC® C-520, Copyright© 2018 by the National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers, or is based in part on excerpts from copyrighted EJCDC documents. All rights reserved. Those portions of the text that originated in copyrighted EJCDC documents remain subject to the copyright.

EXHIBIT A - SUCCESSFUL BIDDER'S BID FORM

DOCUMENT 00_54_01

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION - CA

This escrow agreement is made and entered into by and between City of Pacifica whose address is 540 Crespi Drive, Pacifica, CA 94044 hereinafter called "Owner," _____ whose address is _____ hereinafter called "Contractor," and _____ whose address is _____ hereinafter called "Escrow Agent."

For the consideration hereinafter set forth, Owner, Contractor, and Escrow Agent agree as follows:

1. In accordance with California Public Contract Code, Section 22300, the Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by Owner pursuant to the construction contract entered into between Owner and Contractor for the UV Disinfection System Replacement in the amount of _____ dated _____ (hereafter referred to as the "contract"). Alternatively, on written request of Contractor, Owner shall make payments of the retention earnings directly to Escrow Agent. When Contractor deposits the securities as a substitute for the contract earnings, Escrow Agent shall notify Owner within 10 days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the contract between Owner and Contractor. Securities shall be held in the name of the _____ and shall designate Contractor as the beneficial owner.
2. Owner shall make progress payments to Contractor for those funds which otherwise would be withheld from progress payments pursuant to the contract provision, provided that Escrow Agent holds securities in the form and amount specified above.
3. When Owner makes payment of retentions earned directly to Escrow Agent, Escrow Agent shall hold them for the benefit of Contractor until such time as the escrow created under this contract is terminated. Contractor may direct the investment of the payments into securities. All terms and conditions of this Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when Owner pays Escrow Agent directly.
4. Contractor shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the escrow account. These expenses and payment terms shall be determined by the Contractor and Escrow Agent.
5. The interest earned on the securities or the money market accounts held in escrow and all interest earned on the interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to Owner.
6. Contractor shall have the right to withdraw all or any part of the principal in the escrow account only by written notice to the Escrow Agent accompanied by written authorization from Owner to the Escrow Agent that Owner consents to the withdrawal of the amount sought to be withdrawn by Contractor.

7. Owner shall have a right to draw upon the securities in the event of default by Contractor. Upon 7 days' written notice to the Escrow Agent from Owner of the default, Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by Owner.
8. Upon receipt of written notification from Owner certifying that the contract is final and complete, and that Contractor has complied with all requirements and procedures applicable to the contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the escrow account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payments of fees and charges.
9. Escrow Agent shall rely on the written notifications from Owner and Contractor pursuant to Sections above, inclusive, of this Agreement and Owner and Contractor shall hold the Escrow Agent harmless from the Escrow Agent's release, conversion, and disbursement of the securities and interest as set forth above.
10. The names of the persons who are authorized to give written notice or to receive written notice on behalf of Owner and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of Owner:

On behalf of Contractor:

Title

Title

Name

Name

Signature

Signature

Address

Address

540 Crespi Drive, Pacifica, CA 94044

On behalf of the Escrow Agent:

Title

Name

Signature

Address

11. At the time the escrow account is opened, Owner and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

END OF DOCUMENT

DOCUMENT 00_54_34

ASSIGNMENT OF PROCUREMENT CONTRACT

This assignment will be effective on the effective date of the construction contract between Buyer (as "Owner") and Contractor/Assignee (as "Contractor").

The Procurement Contract (Attachment A of this section and Appendix D of the Contract Documents) between the City of Pacifica ("Buyer") and Trojan Technologies Group ULC ("Seller") for furnishing Goods and Special Services entitled UV Equipment Procurement and Services (Procurement Contract) is hereby assigned, transferred, and set over to Contractor/Assignee, as assignee, by Buyer, as assignor. Upon assignment the Contractor/Assignee shall have the duties, rights, and obligations of Buyer under the terms of the Procurement Contract, and will be responsible to Owner under the construction contract for the performance of obligations by Seller, which will become a Subcontractor or Supplier to Contractor/Assignee. Buyer, Seller, and Contractor/Assignee hereby acknowledge and agree to be bound by the terms and conditions of assignment set forth in Article 5 of the Agreement Between Buyer and Seller for Procurement Contract.

This assignment will be effective on the Effective Date of the Contract Agreement between the Owner and the Contractor for the General Construction Work.

Assignment Made by Buyer

(typed or printed name of organization)
By: _____ Date: _____
(individual's signature) *(date signed)*
Name: _____ Title: _____
(typed or printed) *(typed or printed)*

If Buyer is a corporation, attach evidence of authority to sign. If Buyer is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of Buyer-Seller Agreement.

Assignment Acknowledged and Accepted by Seller

(typed or printed name of organization)
By: _____ Date: _____
(individual's signature) *(date signed)*
Name: _____ Title: _____
(typed or printed) *(typed or printed)*

If Seller is a corporation, attach evidence of authority to sign.

Assignment Accepted by Contractor/Assignee

(typed or printed name of organization)
By: _____ Date: _____
(individual's signature) *(date signed)*
Name: _____ Title: _____
(typed or printed) *(typed or printed)*

If Contractor/Assignee is a corporation, attach evidence of authority to sign.

END OF DOCUMENT

ATTACHMENT A - PROCUREMENT CONTRACT

DOCUMENT 00_52_64

AGREEMENT BETWEEN BUYER AND SELLER – PROCUREMENT

TABLE OF CONTENTS

	Page
ARTICLE 1 - PROCUREMENT CONTRACT	2
1.01 GOODS AND SPECIAL SERVICES	2
1.02 THE PROJECT	2
1.03 ENGINEER.....	2
1.04 POINT OF DESTINATION	3
ARTICLE 2 - PROCUREMENT CONTRACT TIMES	3
2.01 TIME OF THE ESSENCE	3
2.02 SCHEDULE OF PROCUREMENT CONTRACT TIMES	3
2.03 SHOP DRAWINGS AND SAMPLES	4
2.04 LIQUIDATED DAMAGES.....	4
ARTICLE 3 - PROCUREMENT CONTRACT PRICE	4
3.01 PROCUREMENT CONTRACT PRICE AND TOTAL PRICE—BASED ON ATTACHED BID	4
ARTICLE 4 - PAYMENT PROCEDURES	5
4.01 SUBMITTAL AND PROCESSING OF APPLICATIONS FOR PAYMENT	5
4.02 PROGRESS PAYMENTS; FINAL PAYMENT	5
4.03 INTEREST.....	6
ARTICLE 5 - ASSIGNMENT OF PROCUREMENT CONTRACT	6
5.01 ASSIGNMENT OF CONTRACT.....	6
ARTICLE 6 - PROCUREMENT CONTRACT DOCUMENTS	9
6.01 LIST OF PROCUREMENT CONTRACT DOCUMENTS.....	9
ARTICLE 7 - SELLER’S REPRESENTATIONS AND CERTIFICATIONS	10
7.01 SELLER’S REPRESENTATIONS.....	10
7.02 SELLER’S CERTIFICATIONS.....	10
ARTICLE 8 - CONFIDENTIALITY	11
8.01 CONFIDENTIAL INFORMATION.....	11
8.02 DISCLOSURE OF CONFIDENTIAL INFORMATION	11
8.03 WAIVER OF IMMUNITY	12
ARTICLE 9 - MUTUAL WAIVER	12
9.01 MUTUAL WAIVER OF CONSEQUENTIAL DAMAGES	12

This Procurement Agreement is by and between **City of Pacifica** ("Buyer") and **Trojan Technologies** ____ ("Seller").

Terms used in this Procurement Agreement have the meanings stated in Document 00_72_01 General Conditions - Procurement and Document 00_73_01 - Supplementary Conditions - Procurement.

Buyer and Seller hereby agree as follows:

ARTICLE 1 - PROCUREMENT CONTRACT

1.01 Goods and Special Services

- A. Seller shall furnish the Goods and Special Services as specified or indicated in the Procurement Contract Documents. The Goods and Special Services are generally described as follows:

Permanent replacement Ultraviolet (UV) disinfection equipment temporary bypass UV disinfection system and associated operational equipment. Services include but are not limited to shop drawing submittals, testing, installation support, startup-up, and training related to all provided equipment.

- Provide Design Assistance (Shop drawings, design workshops, and design support, as specified in the Technical Specifications).
- Furnish UV Disinfection System and gates, as specified in the Technical Specifications.
- Furnish Spare parts and special tools, as specified in the Technical Specifications.
- Furnish Freight, as specified in the Technical Specifications.
- Provide Supervision of installation, testing, training, commissioning, warranty, and follow-up support services.

1.02 The Project

- A. The Project, of which the Goods and Special Services are a part, is generally described as follows: The replacement of the Calera Creek Water Recycling Plant's (Plant) permanent UV disinfection system. The replacement includes continuous UV disinfection for NPDES discharge during construction and the modification of the Plant's single UV channel to two channels.

1.03 Engineer

- A. Buyer has retained Carollo Engineers ("Engineer"), to prepare Procurement Contract Documents and act as Buyer's representative. Engineer assumes all duties and responsibilities and has the rights and authority assigned to Engineer in the Procurement Contract Documents in connection with Seller's furnishing of Goods and Special Services.

1.04 Point of Destination

A. The Point of Destination is designated as:

700 Coast Highway

Pacifica, CA 94044

ARTICLE 2 - PROCUREMENT CONTRACT TIMES

2.01 Time of the Essence

A. All time limits for Milestones, including the submittal of Shop Drawings and Samples, the delivery of Goods, and the furnishing of Special Services as stated in the Procurement Contract Documents, are of the essence of the Procurement Contract.

2.02 Schedule of Procurement Contract Times

A. The following schedule sets forth the Procurement Contract Times:

Milestone	Date or Days	Notes
Submit Shop Drawings	5/31/2023	
Deliver acceptable Temporary UV Disinfection Equipment to Point of Destination	3/11/2024	Delivery may be made in the 15-day period before delivery date. Delivery includes all equipment required for operation of the temporary UV disinfection system.
Deliver acceptable Permanent UV Disinfection Equipment to Point of Destination	5/17/2024	Delivery may be made in the 30-day period before delivery date. Delivery includes all equipment required for completion of the permanent UV disinfection system.
Removal of the Temporary UV Disinfection Equipment from Site	No later than: 11/11/2024	
Projected Equipment Installation	July – September 2024	Seller to provide installation and startup services assigned contractor during installation as indicated in this contract.
Projected Startup and Substantial Completion	October 2024	

2.03 Shop Drawings and Samples

- A. Submittal of Shop Drawings and Samples: Seller shall submit all Shop Drawings and Samples required by the Procurement Contract Documents to Engineer for its review and approval.
- B. Engineer's Review: It is the intent of the parties that Engineer will conduct its review of Shop Drawings and Samples and issue its approval, or a denial accompanied by substantive comments regarding information needed to gain approval, within 21 days after Seller's submittal of such Shop Drawings and Samples, or within such longer period that is needed because of the quantity and quality of such submittals. Resubmittals will be limited whenever possible.

2.04 Liquidated Damages

- A. Buyer and Seller recognize that time is of the essence, and that Buyer will suffer financial and other losses if the Goods are not delivered to the Point of Destination and ready for receipt of delivery by Buyer within the time specified in this Document, plus any extensions thereof allowed in accordance with this Procurement Contract.
- B. The parties also recognize that the timely performance of services by others involved in the Project is materially dependent upon Seller's specific compliance with the delivery requirements.
- C. Further, the parties recognize the time, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the loss (whether direct, consequential, or otherwise) suffered by Buyer if complete, acceptable Goods are not delivered on time.
- D. Accordingly, instead of requiring any such proof, Buyer and Seller agree that as liquidated damages for delay (but not as a penalty) Seller shall pay Buyer according to the table below for each day that expires after the time specified in this Document for delivery of acceptable Goods and/or Services.

<u>Item</u>	<u>Liquidated Damages, per day</u>
Initial receipt by Engineer of Shop Drawings	\$ 500
Completion of delivery of Goods to the Point of Delivery	\$ 5,000

The Parties agree that the liquidated damages payable pursuant to hereto shall not exceed two hundred and fifty thousand dollars (\$250,000.00).

ARTICLE 3 - PROCUREMENT CONTRACT PRICE

3.01 Procurement Contract Price and Total Price—Based on Attached Bid

- A. The Procurement Contract Price is comprised of the Lump Sum amounts set forth in the attached Bid Form, Bid Schedule "A". **(see end of Agreement)**
- B. For furnishing the Goods and Special Services in accordance with the Procurement Contract Documents, Buyer shall pay Seller the prices stated in Seller's Bid,

attached hereto as an exhibit, subject to final adjustments for Unit Price Goods and Special Services and Buyer's Contingency Allowance.

ARTICLE 4 - PAYMENT PROCEDURES

4.01 Submittal and Processing of Applications for Payment

- A. Seller shall submit Applications for Payment in accordance with Article 13 of Document 00_72_01 - General Conditions - Procurement and the following paragraphs. Engineer and Buyer will process such Applications for Payment in accordance with said Article 13.

4.02 Progress Payments; Final Payment

- A. A. Seller may submit an Application for Payment requesting the stated percentage of the referenced line item in the table below upon attainment of each of the following task's completion:

Task	Percent Payment of Total Contract
Purchase Order	5 percent
Accepted Shop Drawings - Both Permanent UV & Temporary UV	5 percent
Release to Fabrication - Permanent UV	35 percent
Delivery and Startup - Temporary UV	5 percent
Delivery - Permanent UV	30 percent
Successful Startup & Training - Permanent UV	10 percent
Final Payment after Substantial Completion & correction of non-conformities, final O&M, and final documentation required by contract.	10 percent

- B. For Unit Price Goods and Special Services, if any, or for payments owed to Seller as a result of authorizations by Buyer under the Buyer's Contingency Allowance (if any), Seller shall submit a separate Application for Payment, no more frequently than monthly, that states (1) the actual quantities of such Unit Price Goods and Special Services that have been furnished, and the applicable unit prices; and (2) the services or items performed or furnished under the Buyer's Contingency Allowance, and the amounts owed. If practical, and at Seller's option, Seller may apply for such unit price and Buyer's Contingency Allowance payments in a separate section of an Application for Payment submitted for lump sum items.
- C. Buyer shall pay Seller the amount owed under an Application for Payment or otherwise hereunder within 45 days after Seller's invoice during the equipment procurement and delivery period of the Project; and within 60 days after Seller's invoice after this agreement has been assigned to the General Contractor which covers work during the installation, startup and training period of the Project.

4.03 Interest

- A. All amounts not paid when due will bear interest as the rate of 5 percent per annum.

ARTICLE 5 - ASSIGNMENT OF PROCUREMENT CONTRACT

5.01 Assignment of Contract

- A. Buyer has the right to assign this Procurement Contract for furnishing Goods and Special Services, but only to a person or entity with sufficient and apparent ability to satisfy all of Buyer's obligations under this Procurement Contract, and Seller hereby consents to such assignment. Forms documenting the assignment of the Procurement Contract, and consent of Seller's surety to the assignment, have been executed by Buyer, Seller, and Seller's surety, and are attached as exhibits to this Procurement Agreement.
- B. If so, assigned the following provisions apply:
 - 1. The Procurement Contract is initially executed in the name of the entity identified in this Document as Buyer and will be assigned by such Buyer (as assignor) to a construction contractor (Contractor/Assignee) designated by such Buyer. The assignment will occur on the effective date of the construction contract between such Buyer (Project Owner) and the Contractor/Assignee, which is expected to occur on or about **January 22, 2024**. Commencing on the date of acceptance of assignment by the Contractor/Assignee, all references in the Procurement Contract to "Buyer" shall mean the designated Contractor/Assignee.

2. The assignment of this Procurement Contract relieves the assignor from all further obligations and liabilities under this Procurement Contract. After assignment, Seller shall become a subcontractor or supplier to the Contractor/Assignee and, except as noted in this Document, all rights, duties, and obligations of Buyer under the Procurement Contract become the rights, duties, and obligations of the Contractor/Assignee.
3. After assignment:
 - a. The Procurement Drawings and Procurement Specifications, and any modifying Addenda will become "Contract Documents" under the construction contract.
 - b. If the Procurement Drawings or Procurement Specifications, as "Contract Documents" under the construction contract, are duly modified under such construction contract, then Seller and Contractor/Assignee shall enter into a corresponding Change Order under the applicable provisions of this Procurement Contract.
 - c. The Procurement Drawings and Procurement Specifications may not be modified by Seller or Contractor/Assignee, singly or in tandem, except as such Procurement Drawings or Procurement Specifications, as "Contract Documents" under the construction contract, have been duly modified under such construction contract.
 - d. All performance warranties, guarantees, and indemnifications required by the Procurement Contract will continue to run for the benefit of assignor (Project Owner) and, in addition, for the benefit of the Contractor/Assignee. However, if assignor (Project Owner) and Contractor/Assignee make the same warranty or guarantee claim, then Seller shall only be liable once for such claim. Other than its remedies under such warranties, guarantees, and indemnifications, assignor will not retain direct rights under this Procurement Contract, but will have rights and remedies as a party to the construction contract, whose scope of work will encompass the Procurement Drawings, Procurement Specifications, and modifying Addenda; provided, however, that any limitations on Seller's liability in this Procurement Contract will continue to bind the original Buyer (assignor) after assignment.
 - e. The Contractor/Assignee shall have all the rights of the Buyer under the Performance Bond and Payment Bond.
 - f. The Contractor/Assignee shall have all the rights of the Buyer under any pending Claim by Buyer.

- g. All Claims and supporting documentation will be submitted directly by the claimant party (either Buyer or Contractor/Assignee or Seller), to the other party, without submittal to Engineer:
 - 1) The other party will render a response in writing within 30 days of receipt of the last submittal of claimant.
 - 2) If the other party does not render a written response to a Claim within 30 days after receipt of the last submittal of the claimant, the other party shall be deemed to have approved the Claim in its entirety.
 - 3) The other party's written response to a Claim, or the approval of the Claim in its entirety as a function of failure to respond within 30 days, will be final and binding upon Buyer and Seller 30 days after it is issued, unless within such 30 days of issuance either Buyer or Seller appeals the result by initiating the mediation of the Claim in accordance with the dispute resolution procedures.
 - 4) Any Claim by Seller that Contractor/Assignee may choose to submit, present, or forward to Project Owner must be submitted to Buyer within sufficient time for Contractor/Assignee to preserve its rights under the construction contract, notwithstanding any procedures or time limits in this Procurement Contract.
- h. Seller's recovery of additional cost, time, or both cost and time for any Claim attributable to the Project Owner will be limited to the proportionate recovery by Contractor/Assignee against Project Owner for such Claim. Seller will cooperate and assist Contractor/Assignee in pursuing any Claim by Contractor/Assignee against Project Owner on behalf of Seller, including the timely preparation and delivery of supporting documentation.
- i. If the pursuit of any claim by Contractor/Assignee against Project Owner on Seller's behalf requires the expenditure by Contractor/Assignee of legal or consulting fees, or results in litigation, arbitration, or any dispute resolution procedures, Seller agrees to pay for a proportionate share of attorneys' fees, consultant fees, and litigation, arbitration, and other resolution costs incurred by Contractor/Assignee in pursuing the claim on behalf of Seller, based upon the amount claimed by Seller as compared to the total value of the claim pursued by the Contractor/Assignee.
- j. All rights, duties, and obligations of Engineer to Contractor/Assignee and Seller under this Procurement Contract will cease.
- k. Subject to the foregoing provisions, all references in the Procurement Contract to submitting items to Engineer, or to Engineer having tasks or obligations, will be read after such an assignment as requiring submittal to Contractor/Assignee, or as Contractor/Assignee having such tasks or obligations (which Contractor/Assignee may delegate when appropriate).
- l. If the Procurement Contract includes a Buyer's Contingency Allowance, upon assignment such allowance will be automatically reduced to the amount previously authorized by Buyer (Project Owner) and cease to be operational.

- C. No other assignment by a party hereto of any rights under or interests in the Procurement Contract will be binding on another party hereto without the written consent of the party sought to be bound. Specifically, but without limitation, Procurement Contract payments or other money that may become due, and Procurement Contract payments or other money that are due, may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by Laws and Regulations). Unless specifically stated to the contrary in any written consent to such an assignment, such an assignment will not release or discharge the assignor from any duty or responsibility under the Procurement Contract Documents.

ARTICLE 6 - PROCUREMENT CONTRACT DOCUMENTS

6.01 List of Procurement Contract Documents

- A. The Procurement Contract Documents consist of the following:
1. This Procurement Agreement.
 2. Document 00_72_01 - General Conditions - Procurement.
 3. Document 00_73_01 - Supplementary Conditions - Procurement.
 4. Procurement Specifications.
 5. Procurement Drawings (not attached but incorporated by reference).
 6. Addenda Numbers 01 to 01..
 7. Bonds:
 - a. Performance bond (together with power of attorney).
 - b. Payment bond (together with power of attorney).
 8. Exhibits to this Procurement Agreement (enumerated as follows):
 - a. Seller's Bid, solely as to the prices set forth.
 - b. Exhibit A, Assignment of Contract, Consent to Assignment, and Acceptance of Assignment.
 - c. Exhibit B, Surety's Consent to Assignment.
 - d. Documentation submitted by Seller Trojan Technologies _____; and
 - e. Other Exhibits:_____.
 9. The following which may be delivered or issued on or after the Effective Date of the Procurement Contract and are not attached hereto:
 - a. Change Orders;
 - b. Change Directives; and
 - c. Field Orders.
- B. The documents listed under List of Procurement Contract Documents are attached to this Procurement Agreement (except as expressly noted otherwise above).
- C. There are no Procurement Contract Documents other than those listed above.
- D. The Procurement Contract Documents may only be amended or supplemented as provided in Paragraph 11.01 of Document 00_72_01 - General Conditions - Procurement.

ARTICLE 7 - SELLER'S REPRESENTATIONS AND CERTIFICATIONS

7.01 Seller's Representations

- A. In order to induce Buyer to enter into this Procurement Agreement, Seller makes the following representations:
1. Seller has examined and carefully studied the Procurement Contract Documents.
 2. If required by the Instructions to Bidders to visit the Point of Destination and the site where the Goods are to be installed or Special Services will be provided, or if, in Seller's judgment, any observable local or site conditions may affect the delivery, cost, progress, or furnishing of the Goods and Special Services, then Seller has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided (as applicable) and become familiar with and is satisfied as to the observable local and site conditions that may affect delivery, cost, progress, and furnishing of the Goods and Special Services.
 3. Seller is familiar with and is satisfied as to all Laws and Regulations that may affect the cost, progress, and performance of Seller's obligations under the Procurement Contract.
 4. Seller has carefully studied, considered, and correlated the information known to Seller with respect to the effect of such information on the cost, progress, and performance of Seller's obligations under the Procurement Contract.
 5. Seller has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Seller has discovered in the Procurement Contract Documents, and the written resolution (if any) thereof by Engineer is acceptable to Seller.
 6. The Procurement Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of Seller's obligations under the Procurement Contract.
 7. Seller's entry into this Procurement Contract constitutes an incontrovertible representation by Seller that without exception all prices in the Procurement Agreement are premised upon furnishing the Goods and Special Services as required by the Procurement Contract Documents.

7.02 Seller's Certifications

- A. Seller certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Procurement Contract. For the purposes of this Document:
1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Procurement Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Procurement Contract to the detriment of Buyer, (b) to establish bid or contract prices at artificial non-competitive levels, or (c) to deprive Buyer of the benefits of free and open competition;
 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Buyer, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Procurement Contract.

ARTICLE 8 - CONFIDENTIALITY

8.01 Confidential Information

Confidential information is information in technical submittal documents and O&M Manuals submitted by Seller that is a trade secret, proprietary, or confidential. Such documents, if any, will be maintained in a manner that endeavors to avoid disclosing confidential information to third parties, to the extent allowed by Laws and Regulations.

8.02 Disclosure of Confidential Information

- A. If Buyer is requested to disclose confidential information, or becomes legally compelled (by oral questions, interrogatories, requests for information or documents, subpoena, civil or criminal investigative demand, public information requests, or other requests under Laws and Regulations) to disclose confidential information, or is required by a regulatory body, governing agency, or controlling authority to disclose confidential information, or make any other disclosure that is prohibited or otherwise constrained by the Procurement Contract, Buyer will provide Seller with prompt notice so Seller may seek an appropriate protective order or other remedy. Seller will be solely responsible for submitting to the regulatory body, governing agency, or controlling authority any arguments, briefs, memoranda, motions, authorities, or other information in opposition to disclosure.
- B. Buyer's obligations with respect to confidential information are nullified by the following exceptions:
 1. Confidential information becomes a part of the public domain through publication or otherwise, through no fault of the Buyer;
 2. Buyer can demonstrate through suitable documentation that the confidential information was already in the Buyer's possession or was otherwise publicly available prior to the Effective Date of the Procurement Contract;
 3. The confidential information is subsequently and independently disclosed to the Buyer by a third party who has a lawful right to disclose such information; or
 4. Buyer is required to disclose the confidential information by court order or by applicable Laws and Regulations.

8.03 Waiver of Immunity

- A. Notwithstanding any other provision of the Procurement Contract, it is stipulated and agreed that by accepting confidential information, Buyer has not and does not waive its legal immunity (if any) from suit or liability.

ARTICLE 9 - MUTUAL WAIVER

9.01 Mutual Waiver of Consequential Damages and Liability Cap; Indemnification Limitation

- A. Buyer and Seller waive against each other, and against the other's officers, directors, members, partners, employees, agents, consultants, and subcontractors, any and all claims for or entitlement to incidental, indirect, or consequential damages arising out of, resulting from, or related to the Procurement Contract. If Buyer (Project Owner) assigns this Procurement Contract to a construction contractor (Contractor/Assignee), then the terms of this Paragraph will be binding upon the Contractor/Assignee with respect to Seller and assignor. The terms of this mutual waiver do not apply to or limit any claim by either Buyer or Seller against the other based on any of the following: (a) liquidated damages, (b) gross negligence; or (c) intentional or reckless wrongful conduct.
- B. THE TOTAL LIABILITY OF SELLER AND ITS SUBSIDIARIES, AFFILIATES, EMPLOYEES, DIRECTORS, OFFICERS AND AGENTS ARISING OUT OF PERFORMANCE, NONPERFORMANCE, OR OBLIGATIONS IN CONNECTION WITH THE DESIGN, MANUFACTURE, SALE, DELIVERY, AND/OR USE OF GOODS AND/OR SERVICES IN NO CIRCUMSTANCE SHALL EXCEED THE TOTAL AMOUNT OF COMPENSATION ACTUALLY PAID TO SELLER UNDER THE AGREEMENT, EXCEPT ONLY IN THE CASE OF DAMAGES ARISING DUE TO SUPPLIER'S WILLFUL MISCONDUCT OR GROSS NEGLIGENCE. THIS LIMITATION IS EXCLUSIVE OF THE FULL AMOUNTS OF INSURANCE COVERAGES REQUIRED OF SELLER BY THIS AGREEMENT.
- C. Any and all indemnification obligations imposed upon Seller are limited to the extent of those damages proportionately caused by Seller's breach of the Agreement, negligence, wrongful conduct, or violations of law. In no case is Seller liable for any damages caused by negligence, misuse or misapplication of goods by others.

ARTICLE 10 – ADDITIONAL PROVISIONS

10.01 **Warranty.** Seller warrants the Goods in accordance with its then-current standard warranty covering the specific Goods ordered, generally under which Supplier warrants to the Buyer that during the period of 24 months from the date of Acceptance of Substantial Completion, Goods which are manufactured by Seller will be free from defects in material and workmanship and will function in accordance with the specifications specified in any quotation. If Seller breaches this warranty and the Buyer notifies Seller of such breach within 30 days of the end of the applicable warranty period, Seller will, at its option, either replace or repair the nonconforming Goods, or re-perform any nonconforming Services, or refund the amounts paid by Buyer to Seller for the nonconforming Goods and/or Services.

10.02 **Intellectual Property; Information Technology; Privacy.** Seller retains all rights in and to any intellectual property and confidential information created by it or its representatives at any time, and Buyer receives licenses to use such intellectual property and information only to the extent provided by implied

license under applicable law. No Buyer information technology requirements apply, except to the extent such requirements specifically apply to equipment being sold to Buyer. To help ensure mutual compliance with applicable privacy laws, Buyer will not provide to or share with Seller any personal data or personally identifiable information.

10.03 Performance Guarantees. All product warranties and performance guarantees shall only be enforceable if (a) all equipment is properly installed, inspected regularly and is in good working order in accordance with the bid documents and Seller's written installation instructions, (b) all operations are consistent with Seller recommendations in accordance with Seller's O&M Manual, and (c) operating conditions at the Buyer/Owner site have not materially changed and remain within anticipated specifications.

10.04 Acceptance and Set-off. Except to the extent agreed upon in writing by Seller's CFO, all Goods and Services are deemed accepted upon delivery and early payment discounts do not apply. Any set-off claims will be made in connection with the corresponding payment application. This revision does not adversely impact any of Buyer's rights under Seller's warranties.

10.05 Funds Transfers (Payments). The parties both recognize that there is a risk of banking fraud when individuals impersonating a business demand payment under new banking or mailing instructions. To avoid this risk, Buyer must verbally confirm any new bank or mailing instructions by calling Seller and speaking with Seller's accounts receivable contact before mailing or transferring any monies using the new instructions. Both parties agree that they will not institute mailing or bank transfer instruction changes and require immediate payment under the new instructions but will instead provide a ten (10) day grace period to verify any payment instruction changes before any new or outstanding payments are due using the new instructions.

10.06 Force Majeure. Seller is excused from performance of its obligations under this Agreement to the extent caused by acts or omissions that are beyond its control, including but not limited to Government embargoes, blockages, seizures or freezing of assets, delays, or refusals to grant an export or import license, or the suspension or revocation thereof, or any other acts of any Government; fires, floods, severe weather conditions, or any other acts of God; quarantines; epidemics and pandemics other than COVID-19; labor strikes or lockouts; riots; strife; insurrections; civil disobedience or acts of criminals or terrorists; war. In the event of the existence of any force majeure circumstances, the period of time for delivery, payment terms, and payments under any letters of credit will be extended for a period of time equal to the period of delay.

10.07 Services. The Services shall be limited to those services specifically described herein. For the avoidance of doubt, and without limitation, Seller has no responsibility for the supervision or actions of Buyer's employees or contractors or for non-Seller items (e.g., chemicals or equipment) and disclaims all liability and responsibility for any loss or damage that may be suffered as a result of such actions or items, or any other actions or items not under Supplier's control. Seller is only liable to owner or Customer's customer to the extent explicitly set forth herein and not as incorporated herein by reference as Seller is not a party to any such agreement and only agrees to bound by the terms explicitly set forth herein.


10.08 Miscellaneous. Supplier may include Customer and their Affiliates as an Additional Insured party. Nothing in the General Conditions or Supplementary Conditions supersedes or nullifies the provisions of this Agreement; and, in the event of a conflict between the General Conditions and Supplementary Conditions and this Agreement, the terms of this Agreement shall govern and control.

IN WITNESS WHEREOF, Buyer and Seller have signed this Procurement Agreement. Counterparts have been delivered to Buyer and Seller.

The Effective Date of the Procurement Contract is June 8, 2023.

Buyer **City of Pacifica**


City of Pacifica
(typed or printed name of organization)

By: 
(individual's signature)

Date: 09/14/2023
(date signed)

Name: Kevin Woodhouse
(typed or printed)

Title: City Manager
(typed or printed)

Attest: 
(individual's signature)

Title: City Clerk
(typed or printed)

Address for giving notices:
City of Pacifica
Attn: Kevin Woodhouse, City Manager

540 Crespi Dr, Pacifica CA 94044

Designated Representative:

Name: Louis Sun
(typed or printed)

Title: WWTP Plant Manager
(typed or printed)

Address:
700 Pacific Coast Highway
Pacifica, Ca 94044

Phone: 650-738-4662

Email: lsun@pacifica.gov

(If Buyer is a corporation, attach evidence of authority to sign. If Buyer is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

Seller **Trojan Technologies**

Trojan Technologies Group ULC
(typed or printed name of organization)

By: 
(individual's signature)

Date: June 8, 2023
(date signed)

Name: Kevin Spehr
(typed or printed)

Title: VP Global Sales & Customer Experience
(typed or printed)

(If Seller is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Address for giving notices:
3020 Gore Road, London Ontario Canada
N5V4T7

Designated Representative:

Name: Jordan Fournier
(typed or printed)

Title: Regional Manager
(typed or printed)

Address:
3020 Gore Road, London Ontario Canada
N5V4T7

Phone: 519-619-7352

Email: jfournier@trojantechnologies.com

END OF DOCUMENT

BID SCHEDULES

BID SCHEDULE "A": EQUIPMENT COSTS




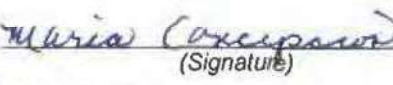
Equipment Costs		
Item No.	Description	Write Price in Figures
A-1.	Design Assistance (Shop drawings, design workshops, and design support, as specified in the Technical Specifications) for the Lump Sum:	\$ <u>75,000</u>
A-2.	UV Disinfection System, as specified in the Technical Specifications for the Lump Sum: (includes Tax)	\$ <u>879,736.16</u>
A-3.	Spare parts and special tools, as specified in the Technical Specifications for the Lump Sum: (includes Tax)	\$ <u>39,917.59</u>
A-4.	Freight, as specified in the Technical Specifications for the Lump Sum:	\$ <u>35,000.00</u>
A-5.	Supervision of installation, testing, training, commissioning, warranty, and follow-up support services (Technical Specifications Sections 46_66_85, 40_61_05 and 40_05_59.20 and associate equipment) for the Lump Sum:	\$ <u>63,000.00</u>
A-6.	Temporary UV Disinfection System : including design assistance shop drawings, spare parts and special tools, freight, installation, startup, testing, training, and follow-up support services while system is on site (Technical Specifications Section 46_66_75 and associate equipment) for the Lump Sum: (includes Tax)	\$ <u>43,950.00</u>
A-7 Total Equipment Price Schedule "A" (Sum of Items # A-1 - A-6) for the Lump-Sum price of (WRITTEN IN WORDS): (includes Tax)		\$ <u>1,136,603.75</u>

END OF BID SCHEDULE "A"

DOCUMENT 00_61_12

WARRANTY BOND

Bond Number: 107676795

<p>Seller Name: Trojan Technologies Address (principal place of business): [Address of Seller's principal place of business] 3020 Gore Road London, ON N5V 4T7</p>	<p>Surety Travelers Casualty and Surety Name: Company of America Address (principal place of business): [Insert address of Surety's principal place of business] One Tower Square Hartford, CT 06183</p>
<p>Buyer Name: City of Pacifica Address (principal place of business): 540 Crespi Drive Pacifica, CA 94044</p>	<p>Procurement Contract Description (name and location): UV Disinfection Replacement Equipment – Project P034 700 Coast Highway, Pacifica, CA 94044 Contract Price: \$1,050,000.00 Effective Date of Contract: Contract's Date of Substantial Completion:</p>
<p>Bond Bond Amount: \$1,050,000.00 Date of Bond: July 18 2023 Modifications to this Bond form: <input checked="" type="checkbox"/> None <input type="checkbox"/> See Paragraph 9</p>	
<p>Surety and Seller, intending to be legally bound hereby, subject to the terms set forth in this Document, do each cause this Warranty Bond to be duly executed by an authorized officer, agent, or representative.</p>	
<p>Seller as Principal Trojan Technologies</p>	<p>Surety Travelers Casualty and Surety Company of America</p>
<p>(Full formal name of Seller)</p>	<p>(Full formal name of Surety) (corporate seal)</p>
<p>By:  (Signature)</p>	<p>By:  (Signature) (Attach Power of Attorney)</p>
<p>Name: Jo Anne VanHoydonk (Printed or typed)</p>	<p>Name: Elizabeth A. Hartzberg (Printed or typed)</p>
<p>Title: CFO</p>	<p>Title: Attorney-in-Fact</p>
<p>Attest:  (Signature)</p>	<p>Attest:  (Signature)</p>
<p>Name: Jordan Fournier (Printed or typed)</p>	<p>Name: Maria Concepcion (Printed or typed)</p>
<p>Title: Regional Sales Manager</p>	<p>Title: Asst. VicePresident</p>
<p>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Seller, Surety, Buyer, or other party is considered plural where applicable.</p>	



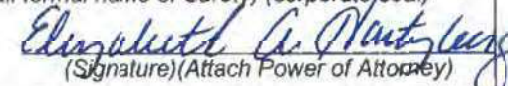
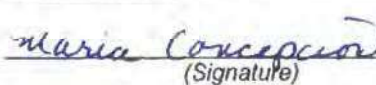
1. The Seller and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Buyer for the performance of the Construction Contract's Correction Period Obligations. The Construction Contract is incorporated in this Document by reference.
2. If the Seller performs the Correction Period Obligations, the Surety and the Seller shall have no obligation under this Warranty Bond.
3. If Buyer gives written notice to Seller and Surety during the Bond Period of Seller's obligation under the Correction Period Obligations, and Seller does not fulfill such obligation, then Surety shall be responsible for fulfillment of such Correction Period Obligations. Surety shall either fulfill the Correction Period Obligations itself, through its agents or contractors, or, in the alternative, Surety may waive the right to fulfill the Correction Period Obligations itself, and reimburse the Buyer for all resulting costs incurred by Buyer in performing Seller's Correction Period Obligations, including but not limited to correction, removal, replacement, and repair costs.
4. The Surety's liability is limited to the amount of this Warranty Bond. Renewal or continuation of the Warranty Bond will not modify such amount, unless expressly agreed to by Surety in writing.
5. The Surety shall have no liability under this Warranty Bond for obligations of the Seller that are unrelated to the Construction Contract. No right of action will accrue on this Warranty Bond to any person or entity other than the Buyer or its heirs, executors, administrators, successors, and assigns.
6. Any proceeding, legal or equitable, under this Warranty Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and must be instituted within 2 years after the Surety refuses or fails to perform its obligations under this Warranty Bond.
7. Written notice to the Surety, the Buyer, or the Seller must be mailed or delivered to the address shown in this Warranty Bond.
8. Definitions:
 - 8.1. Construction Contract—The agreement between the Buyer and Seller identified on the cover page of this Warranty Bond, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 8.2. Contract Documents—All the documents that comprise the agreement between the Buyer and Seller.
 - 8.3. Correction Period Obligations—The duties, responsibilities, commitments, and obligations of the Seller with respect to correction or replacement of defective Work, as set forth in the Construction Contract's Correction Period clause, Document 00_72_01 - General Conditions - Procurement, Paragraph 15.08, as duly modified.
 - 8.4. Substantial Completion—As defined in the Construction Contract.
 - 8.5. Work—As defined in the Construction Contract.
9. Modifications to this Bond are as follows: None.

END OF DOCUMENT

DOCUMENT 00_61_14

PERFORMANCE BOND - PROCUREMENT

Bond Number: 107676795

<p>Seller Name: Trojan Technologies Address (principal place of business): 3020 Gore Road London, ON N5V 4T7</p>	<p>Surety Travelers Casualty and Surety Name: Company of America Address (principal place of business): One Tower Square Hartford, CT 06183</p>
<p>Buyer Name: City of Pacifica Mailing address (principal place of business): 540 Crespi Drive Pacifica, CA 94044</p>	<p>Procurement Contract Description (name and location): UV Disinfection Replacement Equipment – Project P034 700 Coast Highway, Pacifica, CA 94044 Procurement Contract Price: \$1,050,000.00 Effective Date of Procurement Contract:</p>
<p>Bond Bond Amount: \$1,050,000.00 Date of Bond: July 18 2023 (Date of Bond cannot be earlier than Effective Date of Procurement Contract) Modifications to this Bond form: <input checked="" type="checkbox"/> None <input type="checkbox"/> See modifications in this Document</p>	
<p>Surety and Seller, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.</p>	
<p>Seller as Principal Trojan Technologies (Full formal name of Seller) By:  (Signature) Name: Jo Anne VanHooydonk (Printed or typed) Title: CFO Attest:  (Signature) Name: Jordan Fourrier (Printed or typed) Title: Regional Sales Manager</p>	<p>Surety Travelers Casualty and Surety Company of America (Full formal name of Surety) (corporate seal) By:  (Signature)(Attach Power of Attorney) Name: Elizabeth A. Hartzberg (Printed or typed) Title: Attorney-in-Fact Attest:  (Signature) Name: Maria Concepcion (Printed or typed) Title: Asst. Vice President</p>
<p>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Seller, Surety, Buyer, or other party is considered plural where applicable.</p>	

1. The Seller and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Buyer for the performance of the Procurement Contract, which is incorporated herein by reference.
2. If the Seller performs the Procurement Contract, the Surety and the Seller shall have no obligation under this Bond, except when applicable to participate in a conference as provided in this Document.
3. If there is no Buyer Default under the Procurement Contract, the Surety's obligation under this Bond will arise after:
 - 3.1. The Buyer first provides notice to the Seller and the Surety that the Buyer is considering declaring a Seller Default. Such notice may indicate whether the Buyer is requesting a conference among the Buyer, Seller, and Surety to discuss the Seller's performance. If the Buyer does not request a conference, the Surety may, within 5 business days after receipt of the Buyer's notice, request such a conference. If the Surety timely requests a conference, the Buyer shall attend. Unless the Buyer agrees otherwise, any conference requested under this provision will be held within 10 business days of the Surety's receipt of the Buyer's notice. If the Buyer, the Seller, and the Surety agree, the Seller shall be allowed a reasonable time to perform the Procurement Contract, but such an agreement does not waive the Buyer's right, if any, subsequently to declare a Seller Default;
 - 3.2. The Buyer declares a Seller Default, terminates the Procurement Contract, and notifies the Surety; and
 - 3.3. The Buyer has agreed to pay the Balance of the Procurement Contract Price in accordance with the terms of the Procurement Contract to the Surety or to a seller selected to perform the Procurement Contract.
4. Failure on the part of the Buyer to comply with the notice requirement in Document does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Buyer has satisfied the conditions specified in this Document, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 5.1. Arrange for the Seller, with the consent of the Buyer, to perform and complete the Procurement Contract;
 - 5.2. Undertake to perform and complete the Procurement Contract itself, through its agents or independent contractors;
 - 5.3. Obtain bids or negotiated proposals from qualified sellers acceptable to the Buyer for a contract for performance and completion of the Procurement Contract, arrange for a contract to be prepared for execution by the Buyer and a seller selected with the Buyer's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Procurement Contract, and pay to the Buyer the amount of damages as specified in this Document in excess of the Balance of the Procurement Contract Price incurred by the Buyer as a result of the Seller Default; or

- 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new seller, and with reasonable promptness under the circumstances:
 - 5.4.1 After investigation, determine the amount for which Surety may be liable to the Buyer and, as soon as practicable after the amount is determined, make payment to the Buyer; or
 - 5.4.2 Deny liability in whole or in part and notify the Buyer, citing the reasons for denial.
6. If the Surety does not proceed as specified in this Document with reasonable promptness, the Surety shall be deemed to be in default on this Bond 7 days after receipt of an additional written notice from the Buyer to the Surety demanding that the Surety perform its obligations under this Bond, and the Buyer shall be entitled to enforce any remedy available to the Buyer. If the Surety proceeds as specified in this Document and the Buyer refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Buyer shall be entitled to enforce any remedy available to the Buyer.
7. If the Surety elects to act, then the responsibilities of the Surety to the Buyer will not be greater than those of the Seller under the Procurement Contract, and the responsibilities of the Buyer to the Surety will not be greater than those of the Buyer under the Procurement Contract. Subject to the commitment by the Buyer to pay the Balance of the Procurement Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Seller for correction of defective or non-conforming Goods and Special Services, and completion of the Procurement Contract;
 - 7.2. additional legal, design professional, and delay costs resulting from the Seller's Default, and resulting from the actions or failure to act of the Surety; and
 - 7.3. liquidated damages, or if no liquidated damages are specified in the Procurement Contract, actual damages caused by delayed performance or non-performance of the Seller.
8. If the Surety elects to act, the Surety's liability is limited to the amount of this Bond.
9. The Surety shall not be liable to the Buyer or others for obligations of the Seller that are unrelated to the Procurement Contract, and the Balance of the Procurement Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Buyer or its heirs, executors, administrators, successors, and assigns.
10. The Surety hereby waives notice of any change, including changes of time, to the Procurement Contract or to related subcontracts, purchase orders, and other obligations.
11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction where the Point of Destination is located and must be instituted within 2 years after a declaration of Seller Default, or within 2 years after the Seller ceased working, or within 2 years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
12. Notice to the Surety, the Buyer, or the Seller must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Point of Destination, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted from this Bond and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions:

14.1. Balance of the Procurement Contract Price—The total amount payable by the Buyer to the Seller under the Procurement Contract after all proper adjustments have been made including allowance for the Seller for any amounts received or to be received by the Buyer in settlement of insurance or other claims for damages to which the Seller is entitled, reduced by all valid and proper payments made to or on behalf of the Seller under the Procurement Contract.

14.2. Buyer Default—Failure of the Buyer, which has not been remedied or waived, to pay the Seller as required under the Procurement Contract or to perform and complete or comply with the other material terms of the Procurement Contract.

14.3. Goods and Special Services—The full scope of materials, equipment, other items, and services to be furnished by Seller, as defined in the Procurement Contract.

14.4. Point of Destination—The location where delivery of the Goods shall be made, as stated in the Procurement Contract.

14.5. Procurement Contract—The contractual agreement between the Buyer and Seller identified on the cover page, including all Procurement Contract Documents and changes made to the Procurement Contract.

14.6. Seller Default—Failure of the Seller, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Procurement Contract.

14.7. Procurement Contract Documents—All the documents that comprise the contractual agreement between the Buyer and Seller.

15. Modifications to this Bond are as follows: None.

END OF DOCUMENT

This document is a MODIFIED version of EJCDC® P-615, Copyright© 2018 by the National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers, or is based in part on excerpts from copyrighted EJCDC documents. All rights reserved. Those portions of the text that originated in copyrighted EJCDC documents remain subject to the copyright.

DOCUMENT 00_61_73

PAYMENT BOND - PROCUREMENT

Bond Number: 107676795

<p>Seller Name: Trojan Technologies Address (principal place of business): 3020 Gore Road London, ON N5V 4T7</p>	<p>Surety Travelers Casualty and Surety Name: Company of America Address (principal place of business): One Tower Square Hartford, CT 06183</p>
<p>Buyer Name: City of Pacifica Mailing address (principal place of business): 540 Crespi Drive Pacifica, CA 94044</p>	<p>Procurement Contract Description (name and location): UV Disinfection Replacement Equipment – Project P034 700 Coast Highway, Pacifica, CA 94044 Procurement Contract Price: \$1,050,000.00 Effective Date of Procurement Contract:</p>
<p>Bond Bond Amount: \$1,050,000.00 Date of Bond: <u>July 18 2023</u> (Date of Bond cannot be earlier than Effective Date of Procurement Contract) Modifications to this Bond form: <input checked="" type="checkbox"/> None <input type="checkbox"/> See modifications as specified in this Document</p>	
<p>Surety and Seller, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.</p>	
<p>Seller as Principal <u>Trojan Technologies</u> (Full formal name of Seller)</p>	<p>Surety <u>Travelers Casualty and Surety</u> <u>Company of America</u> (Full formal name of Surety) (corporate seal)</p>
<p>By: <u>[Signature]</u> (Signature)</p>	<p>By: <u>[Signature]</u> (Signature) (Attach Power of Attorney)</p>
<p>Name: <u>Jo Anne Van Hooydonk</u> (Printed or typed)</p>	<p>Name: <u>Elizabeth A. Hartzberg</u> (Printed or typed)</p>
<p>Title: <u>CEO</u></p>	<p>Title: <u>Attorney-in-Fact</u></p>
<p>Attest: <u>[Signature]</u> (Signature)</p>	<p>Attest: <u>[Signature]</u> (Signature)</p>
<p>Name: <u>Jordan Fournier</u> (Printed or typed)</p>	<p>Name: <u>Maria Concepcion</u> (Printed or typed)</p>
<p>Title: <u>Regional Sales Manager</u></p>	<p>Title: <u>Asst. Vice President</u></p>
<p>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Seller, Surety, Buyer, or other party is considered plural where applicable.</p>	

1. The Seller and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Buyer to pay for labor, materials, and equipment furnished for use in the performance of the Procurement Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Seller promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Buyer from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Procurement Contract, then the Surety and the Seller shall have no obligation under this Bond.
3. If there is no Buyer Default under the Procurement Contract, the Surety's obligation to the Buyer under this Bond will arise after the Buyer has promptly notified the Seller and the Surety of claims, demands, liens, or suits against the Buyer or the Buyer's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Procurement Contract, and tendered defense of such claims, demands, liens, or suits to the Seller and the Surety.
4. When the Buyer has satisfied the conditions of notification, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Buyer against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Seller
 - 5.1.1 have furnished a written notice of non-payment to the Seller, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within 90 days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2 have sent a Claim to the Surety.
 - 5.2. Claimants who are employed by or have a direct contract with the Seller have sent a Claim to the Surety.
6. If a notice of non-payment is given by the Buyer to the Seller, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment.
7. When a Claimant has satisfied the specified conditions, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Buyer, within 60 days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations will not be deemed to constitute a waiver of defenses the Surety or Seller may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Buyer to the Seller under the Procurement Contract will be used for the performance of the Procurement Contract and to satisfy claims, if any, under any procurement performance bond. By the Seller furnishing and the Buyer accepting this Bond, they agree that all funds earned by the Seller in the performance of the Procurement Contract are dedicated to satisfying obligations of the Seller and Surety under this Bond, subject to the Buyer's priority to use the funds for the completion of the Goods and Special Services.
10. The Surety shall not be liable to the Buyer, Claimants, or others for obligations of the Seller that are unrelated to the Procurement Contract. The Buyer shall not be liable for the payment of any costs or expenses of any Claimant under this Bond and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Procurement Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the Point of Destination is located or after the expiration of 1 year from the date (1) on which the Claimant sent a Claim to the Surety pursuant or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Procurement Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Buyer, or the Seller must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement where the Point of Destination is located, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted from this Bond and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Seller and Buyer shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
 - 16.1. Buyer Default—Failure of the Buyer, which has not been remedied or waived, to pay the Seller as required under the Procurement Contract or to perform and complete or comply with the other material terms of the Procurement Contract.
 - 16.2. Claim—A written statement by the Claimant including at a minimum:
 - 16.2.1 The name of the Claimant;
 - 16.2.2 The name of the person for whom the labor was done, or materials or equipment furnished;

- 16.2.3 A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Procurement Contract;
 - 16.2.4 A brief description of the labor, materials, or equipment furnished;
 - 16.2.5 The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Procurement Contract;
 - 16.2.6 The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.2.7 The total amount of previous payments received by the Claimant; and
 - 16.2.8 The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.3. Claimant—An individual or entity having a direct contract with the Seller or with a subcontractor of the Seller to furnish labor, materials, or equipment for use in the performance of the Procurement Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Point of Destination is located or where the Goods and Special Services are to be installed or furnished. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Procurement Contract, architectural and engineering services required for performance of the work of the Seller and the Seller's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
- 16.4. Goods and Special Services—The full scope of materials, equipment, other items, and services to be furnished by Seller, as defined in the Procurement Contract.
- 16.5. Point of Destination—The location where delivery of the Goods shall be made, as stated in the Procurement Contract.
- 16.6. Procurement Contract—The contractual agreement between the Buyer and Seller identified on the cover page, including all Procurement Contract Documents and all changes made to the Procurement Contract.
- 16.7. Procurement Contract Documents—All the documents that comprise the contractual agreement between the Buyer and Seller.
17. Modifications to this Bond are as follows: None.

END OF DOCUMENT



**Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company**

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint Elizabeth A. Hartzberg of Pittsburgh Pennsylvania, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this 21st day of April, 2021.



State of Connecticut

City of Hartford ss.

By:
Robert L. Raney, Senior Vice President

On this the 21st day of April, 2021, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the 30th day of June, 2026



Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this 18th day of July, 2023.



Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.

Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

**ADDENDUM NO. 1
(FOR REFERENCE)**



**CITY OF PACIFICA
PACIFICA, CALIFORNIA**

UV REPLACEMENT PROJECT

CLIENT PROJECT NO. P034

**ADDENDUM NO. 1
TO THE
CONTRACT DOCUMENTS
UV PRE-PURCHASE SUBMITTAL**

MARCH 10, 2023

Digitally signed by Paul V. Friedlander
Contact Info: Carollo Engineers, Inc.
Date: 2023.03.10 13:56:50 -0800

REGISTERED PROFESSIONAL ENGINEER
PAUL V. FRIEDLANDER
No. 55565
CIVIL
STATE OF CALIFORNIA

Digitally signed by Bryan A. Burnitt
Contact Info: Carollo Engineers, Inc.
Date: 2023.03.10 13:20:56 -0800

REGISTERED PROFESSIONAL ENGINEER
BRYAN A. BURNITT
No. 83046
CIVIL
STATE OF CALIFORNIA



Bidders on the above-named project are hereby notified that the Bidding Documents are modified as indicated below. Bidders are required to acknowledge receipt of this Addendum in the space provided on the Document 00_41_63 Bid Form - Procurement.

This Addendum shall become part of the Contract and provisions of the Contract apply.

SPECIFICATIONS

The following sections are modified as indicated below.

1. SECTION 46_66_75 – TEMPORARY ULTRAVIOLET DISINFECTION SYSTEM:
 - a. INSERT the following text at the end of PART 1.04 A.1.c:

“If Third-Party Reactor Validation Testing is not available for the proposed system, supporting documentation and calculations must be provided to support the system capacity claimed by the Supplier at the specified water quality parameters.”
 - b. REPLACE PART 2.05 A.2 as shown below:

“2. If the system shall utilize utilizes active dose control based on the Third-Party Reactor Validation Testing and using it shall use the following parameters:
 - c. REPLACE PART 2.06 I.10 as shown below:

“10. The Master UV PLC shall be provided with networking equipment required to properly communicate information to the plant SCADA system.”
 - d. REPLACE PART 3.05 B.4 as shown below:

“4. The Contractor shall collect and process duplicate influent and effluent samples two times per day for a total of 3 days.”
2. SECTION 46_66_85 - ULTRAVIOLET DISINFECTION SYSTEM:
 - a. INSERT the following under PART 1.05 A.2.c:

“d. Shop drawings must include the spacing and layout of equipment and panel/cabinet area required that allow for the future banks shown in the P&ID drawing, 40N01 or 40N04, as applicable. The proposed system and future expansion must fit within the areas identified on drawing M02 and meet accessibility and code requirements.”
 - b. REPLACE PART 1.07 A with the following:

“A. NOT USED”
 - c. REPLACE PART 1.09 A.2 as shown below:

“2. Product data and shop drawing submittal review workshop:
 - a. Supplier shall participate in a virtual, half-day long workshop with the Engineer to review and discuss UV equipment submittal.”

d. INSERT the following under PART 3.08:

“3.09 SUPPORT DURING SPOT-CHECK BIOASSAY

A. The Engineer or Owner’s Representative will provide a minimum of 30-day notice to the Contractor and Supplier prior to spot-check bioassay testing.

B. The spot-check bioassay will be conducted over several days and shall be conducted by the Engineer or Owner’s Representative with the assistance of the Contractor and Supplier.

1. Supplier shall include 1 day of on-site support for the first day of the spot-check bioassay.

a. On-site supplier representative must be knowledgeable on all system operations with the proper tools and training to troubleshoot system components and repair or replace malfunctioning equipment as needed.

2. Supplier shall include a minimum of 2 person-days of remote support to the spot-check bioassay testing over the remaining 2 days of testing.”

TROJAN TECHNOLOGIES
SCOPE CLARIFICATIONS

(Email dated 3/29/23, Trojan
Clarifications in bold)

Schlater, Nelson

From: Fournier, Jordan <jfournier@trojantechnologies.com>
Sent: Wednesday, March 29, 2023 12:08 PM
To: Schlater, Nelson; brad@chcwater.com
Cc: Bill Sotirakos; Bryan Burnitt; Paul Friedlander; Aguilar, Maria; Sun, Louis; Peel, Dave
Subject: RE: Pacifica UV Replacement Project - UV Pre-Purchase - Questions

[CAUTION: External Email]

Hello Nelson,

Please see below in **Bold** for our response. We appreciate the opportunity to clarify our proposal.

Do not hesitate to reach out if there are any other questions.

Regards,
Jordan

JORDAN FOURNIER, P.Eng | REGIONAL SALES MANAGER

TROJANUV

(519) 457-3400 ext. 2193 *office* | (519) 619-7352 *mobile*

jfournier@trojantechnologies.com

From: Schlater, Nelson <nschlater@pacific.gov>
Sent: Tuesday, March 28, 2023 2:13 PM
To: Fournier, Jordan <jfournier@trojantechnologies.com>; brad@chcwater.com
Cc: Bill Sotirakos <bsotirakos@carollo.com>; Bryan Burnitt <bburnitt@carollo.com>; Paul Friedlander <pfriedlander@carollo.com>; Aguilar, Maria <maguilar@pacific.gov>; Sun, Louis <lsun@pacific.gov>; Peel, Dave <dpeel@pacific.gov>
Subject: Pacifica UV Replacement Project - UV Pre-Purchase - Questions

This Message Is From an External Sender

This message came from outside your organization. Use caution when opening.

Brad and Jordan,

Thank you for the proposal and reaching out to follow up. We are completing our review of the proposals we have received and have identified a few discrepancies we would like to confirm before making our final decision.

- Proposed ultrasonic level sensors (Qty. 3) when radar level sensors are specified. Please confirm radar level sensors will be provided. **TUV: Radar level sensors will be provided. We typically work with Endress+Hauser but have reached out to Vega to see if this unit will be feasible. We have not heard back yet but will confirm once we do.**

- The City staff has additionally indicated a sole-sourced preference for the following manufacturer and unit (included in the specifications as a named manufacturer). Please indicate if providing this specific unit is feasible.
 - Radar Level Sensor: VegaPuls C21
 - Controller: Vegamet 861 or 862
- There is a warranty duration discrepancy on pages 39 and 85. 24-month warranty is specified. Please confirm 24-month warranty is being provided as shown on Page 39 of the proposal. **TUV: 24 month warranty will be provided.**
- Tax information on pages 7 and 85 do not agree. Please confirm taxes were included as indicated on Page 7 of the proposal. **TUV: Taxes are included as indicated on page 7. The line on page 85 regarding the selling price not including taxes can be stricken.**
- Proposed a low water level sensor and a level sensor control box, one set per channel, when specifications indicate low level signal is coming from downstream radar level sensor. Confirm the specified design will be acceptable. **TUV: The specified design is acceptable. Please note, in addition to this, our system will use our electrode level sensor to extinguish lamps upon a low level condition.**
- The following spare parts were not included as specified; please confirm these will be included:
 - Missing 1 reference UV sensor per Section 46_66_85, Article 2.06.K.4.a. **TUV: This was missed in the review of the spec but we will include this.**
 - Missing 1 ballast backplane chassis printed circuit board. **TUV: This was missed in the review of the spec but we will include this.**
 - Fuses – Supplying 1 of each type used when 5 of each type specified. **TUV: This is included. Page 84 of the proposal.**
 - Missing 6 lamp cables. **TUV: This was not listed but is included.**
 - Missing 100% of the cabinet intake filters. **TUV: This was not listed but is included.**
 - Missing 6 lamp sealing rings or holder seals. **TUV: This was not listed but is included.**

Please provide comment or confirmation on the above items by Wednesday 3/29/2023.

Thank you again for the proposal, and we will be in contact regarding our decision soon.

Please acknowledge receipt.

Regards,
Nelson

Nelson Schlater, P.E.
Engineering Manager - Wastewater
Public Works-Wastewater



151 Milagra Drive
Pacifica, California 94044
C (415)722-8711
nschlater@pacifica.gov

Confidential - Company Proprietary

Please be advised that this email may contain confidential information. If you are not the intended recipient, please notify us by email by replying to the sender and delete this message. The sender disclaims that the content of this email constitutes an offer to enter into, or the acceptance of, any agreement; provided that the foregoing does not invalidate the binding effect of any digital or other electronic reproduction of a manual signature that is included in any attachment.

CAUTION: This email originated from outside of the City of Pacifica. Unless you recognize the sender's email address and know the content is safe, do not click links, open attachments or reply.

TROJAN TECHNOLOGIES
BID

March 15, 2023

City of Pacifica
700 Coast Highway
Pacifica, CA 94044

RE: **CITY OF PACIFICA UV REPLACEMENT PROJECT**

To Whom it may Concern;

During our 45-year history, Trojan has led the world's innovations in UV: from the introduction of the first large-scale medium-pressure lamp UV system to the commercialization of electronic ballasts and automated cleaning systems. This leadership is evidenced by the development of a high-efficiency UV reactor for the world's largest UV installation: the Catskill-Delaware Water Treatment Plant in New York City, New York, USA. In 2013 Trojan **TrojanUVSigna™** System received the **WEF Innovation Technology Award** which has led the trend in the industry toward inclined systems using the same SOLO 1000W lamp and ballast as proposed for the City of Pacifica UV Disinfection Replacement Project.

*The Signa design proposed for Pacifica is based on the **TrojanUVSigna™ 2 Row System**. The **TrojanUVSigna™ 2 Row** is the latest variation of the SIGNA system.*

The UV system design has two (2) channels, with three (3) banks (2 duty, 1 redundant) of ten (10) lamps per channel. The system can accommodate both the discharge requirements and reuse requirements consisting of 2.5 MGD, 56% UVT, 102 mJ/cm² MS2 (NWRI 2012) and 20 MGD, 56% UVT, 14 mJ/cm² T1 (IUVA) Respectively. The total lamp count is 60 which is far less than any other manufacturer can offer.

We would like to take this opportunity to outline the key features that differentiate the proposed TrojanUVSigna™ System. The TrojanUVSigna™ offers the following advantages over other UV systems:

- Reactor and Lamp Orientation – the lamp orientation of the TrojanUVSigna™ is a unique staggered, inclined array. This orientation was selected because it combines the best benefits of both horizontal and vertical lamp UV systems.
 - Like a horizontal system, it offers high disinfection performance, hydraulic benefits and is effective over a wide range of water quality. Like a vertical system, it offers maintenance benefits (e.g. easy lamp replacement).
 - The inclined arrangement overcomes the drawbacks of vertical system such as stress on quartz sleeves and debris collecting on the lamp arc length.
 - The inclined lamp position has additional benefits (over vertical systems) in that modules are more stable, less prone to vibration and are easier to raise from the channel.
 - The lamp pattern was developed specifically to maximize the reactor performance with the high powered Solo Lamp™.
- The Solo Lamp™ that is used in the TrojanUVSigna™ is the most powerful high efficiency low pressure high output lamp in the world. This results in the **LOWEST** lamp count resulting in fewer lamps to maintain and replace.
- The Solo Lamp™ has been independently validated according to NWRI protocol to show a 14% degradation over its guaranteed lifetime of 15,000 hours.
- A fully automatic chemical/mechanical cleaning system (ActiClean™) is provided for the quartz sleeves. This fully automated sleeve cleaning system optimizes power consumption and eliminates operator involvement for system

cleaning. This will significantly reduce the plant's operating and maintenance costs (both labor and materials) as UV systems that do not include chemical/mechanical cleaning require a chemical dip tank or manual hand cleaning.


- The TrojanUVSigna™ system is uniquely modular as we can provide banks sized from 8 to 24 lamps in 2 lamp increments. This flexibility results in cost savings and the minimum number of lamps, sleeves, drivers, etc. to maintain.
- The Solo Lamp™ is powered by a Lamp Driver located in a separate electrical panel which can be located beside the channel or up to 100' away in a separate building. The lamp driver warranty matches the best in the industry with a 10 year warranty. Note that the ballast panels are unique compared to that of other UV systems in that one panel can power multiple banks in the same channel yet have electrical isolation between the banks. The value is when servicing a single bank, other banks powered from the same panel can remain ON.
- An integral module lifting device for each module/bank means there is no need for expensive overhead cranes. For channel cleaning the modules can simply be translated to their out of channel position to allow for channel access. The banks can also be completely removed from the channels off to the side which results in a channel completely free from obstructions.
- Unique in the industry is the bank submergence rating. Trojan has designed the in channel UV banks to be rated to a 6P standard and to tolerate temporary flood conditions of up to 24 hours.

The design and support of the proposed TrojanUVSigna™ system is provided by Trojan Technologies, a world leader in UV based disinfection technologies. Purchasing a UV system from Trojan Technologies offers the following advantages:

- The largest installed base of municipal systems in the world, including one hundred twelve (112) municipal wastewater/reuse systems operating in California alone.
- A simple disinfection performance guarantee is provided, at no extra cost, and is valid for the life of the System. This is significantly better than the three (3) year performance guarantee required in the specification.
- Trojan offers a toll-free number with qualified Technicians available 24-hours / 7 days a week for emergency support.
- Trojan UV Installations are supported by a network of over 60 factory trained certified technicians in North America including a local Trojan certified technician located in San Jose California.
- Service and Support for the system in excess of 25 years after the system has been commissioned.
- Experience from over 25 installations that have replaced the UV4000 system with the UVSigna

We would like to thank the City of Pacifica and Carollo Engineers for the invitation to submit our proposal for this project. If you have any questions please do not hesitate to contact me at (519) 619-7352 or through our local representative, Brad Leidecker with Coombs-Hopkins Company at (925) 947-6733.

Best regards,



Jordan Fournier
Regional Manager
Trojan Technologies

Order of Proposal

The contents of the proposal are in the order shown below. Please refer to the associated enclosures for the content.

DOCUMENT 00_41_63

- **BID FORM – PROCUREMENT**
 - BID SCHEDULE “A”: EQUIPMENT COSTS
 - BID SCHEDULE “B”: OPERATION AND MAINTENANCE EXPENSE

DOCUMENT 00_41_63 ARTICLE 4 - ATTACHMENTS TO THIS BID

- Bid Security
- Evidence of ability to conduct business in the State of California
- Evidence of authority to sign
- DOCUMENT 00_45_14.15
 - Additional 20 Project List
- Equipment Cut Sheets
 - Permanent UV System
 - Temporary UV System

DOCUMENT 00_21_14 ARTICLE 12 - BASIS OF BID; COMPARISON OF BIDS

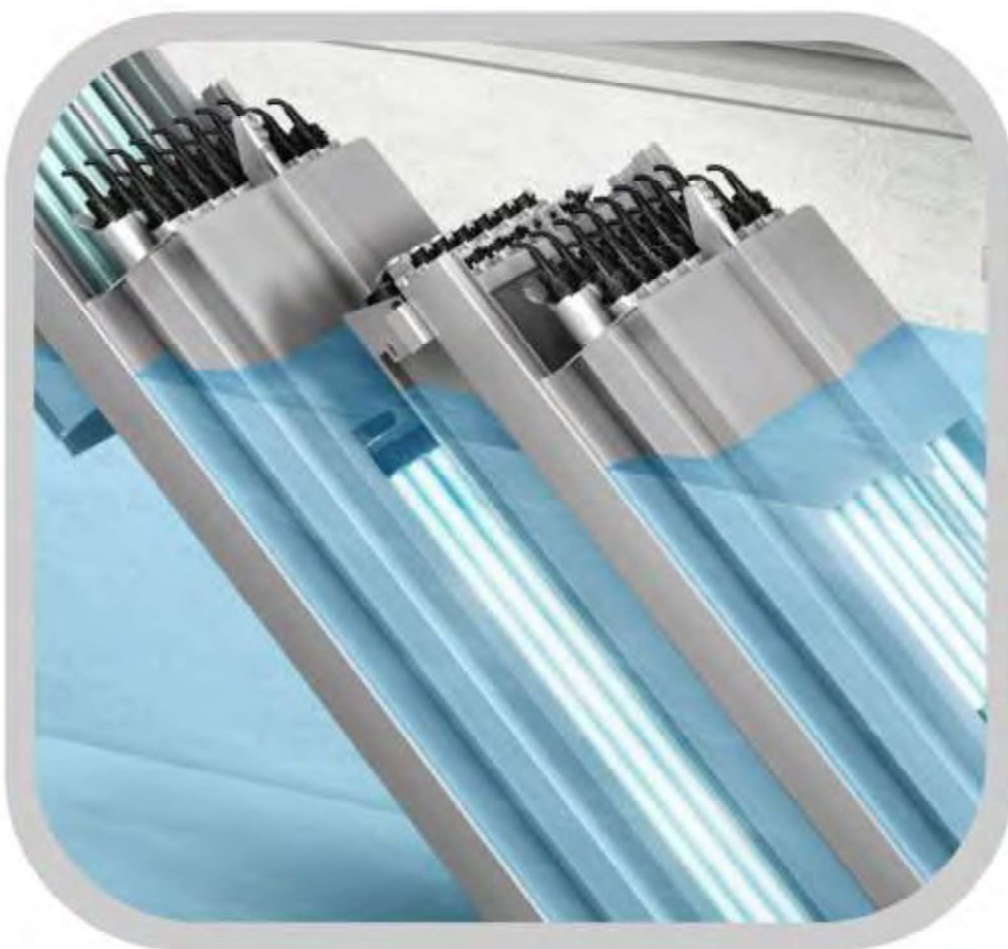
- 12.03 Maintenance and Cleaning
 - ActiClean Gel Refill Instructions
 - Reference List

APPENDIX

- Scope of Supply

BID FORM - PROCUREMENT

Bid Schedule "A" and Bid Schedule "B"



DOCUMENT 00_41_63

BID FORM - PROCUREMENT

The terms used in this Bid with initial capital letters have the meanings stated in Document 00_21_14 - Instructions to Bidders - Procurement, Document 00_72_01 - General Conditions - Procurement, and Document 00_73_01 - Supplementary Conditions - Procurement.

ARTICLE 1 - BUYER AND BIDDER

1.01 This Bid is submitted to:

CITY OF PACIFICA
700 Coast Highway
Pacifica, CA 94044

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Procurement Contract with Buyer in the form included in the Procurement Bidding Documents, and to furnish the Goods and Special Services as specified or indicated in the Procurement Bidding Documents, for the prices and within the times indicated in this Bid, and in accordance with the other terms and conditions of the Procurement Bidding Documents.

ARTICLE 2 - BASIS OF BID

The undersigned Bidder proposes and agrees to contract with the Owner, including subsidiary obligations as defined in the Contract Documents for the prices indicated in the BID SCHEDULES below.

Bidder is required to submit Bid Schedule "A".

Bidder is required to submit Bid Schedule "B".

The undersigned Bidder understands and agrees that the Total Bid Price is determined by the sum total of all respective bid item amounts in the applicable Bid Schedules A. In the event the addition of the bid item extended amounts does not equal the Total Bid Price the corrected addition of all bid item extended amounts will govern and the Owner will correct the respective total(s) accordingly.

Bid prices shall include everything necessary for the completion of the work stipulated in the Contract Documents, including but not limited to providing the materials, equipment, tools, plant and other facilities, and management, labor and services. Bid prices shall include a 9.875% sales tax and all other applicable federal, state, and local taxes and tariffs.

BID SCHEDULES

BID SCHEDULE "A": EQUIPMENT COSTS

Equipment Costs		
Item No.	Description	Write Price in Figures
A-1.	Design Assistance (Shop drawings, design workshops, and design support, as specified in the Technical Specifications) for the Lump Sum:	\$ <u>75,000</u>
A-2.	UV Disinfection System, as specified in the Technical Specifications for the Lump Sum: (includes Tax)	\$ <u>879,736.16</u>
A-3.	Spare parts and special tools, as specified in the Technical Specifications for the Lump Sum: (includes Tax)	\$ <u>39,917.59</u>
A-4.	Freight, as specified in the Technical Specifications for the Lump Sum:	\$ <u>35,000.00</u>
A-5.	Supervision of installation, testing, training, commissioning, warranty, and follow-up support services (Technical Specifications Sections 46_66_85, 40_61_05 and 40_05_59.20 and associate equipment) for the Lump Sum:	\$ <u>63,000.00</u>
A-6.	Temporary UV Disinfection System: including design assistance shop drawings, spare parts and special tools, freight, installation, startup, testing, training, and follow-up support services while system is on site (Technical Specifications Section 46_66_75 and associate equipment) for the Lump Sum: (includes Tax)	\$ <u>43,950.00</u>
A-7 Total Equipment Price Schedule "A" (Sum of Items # A-1 - A-6) for the Lump-Sum price of (WRITTEN IN WORDS): (includes Tax)		\$ <u>1,136,603.75</u>

END OF BID SCHEDULE "A"

BID SCHEDULE "B": OPERATION AND MAINTENANCE EXPENSE

Item	Description	Price (\$)
Operation and Maintenance Costs		
B-1.	Annual cost for electricity: Item #B-1a multiplied by the unit power cost (\$0.22/kWh) and then multiplied by 365 days per year.	\$ 17,152.08
a	Average Power Consumption (APC) for all equipment supplied by Bidder, expressed in kilowatt-hours/day, for the average discharge flow and average UV transmittance conditions. ^{(1) (2)}	213.6 kWh/day
B-2.	Annual lamp replacement costs: Item #B-2c multiplied by Item #B-2d.	\$ 5,600
a	Number of Lamps in Service at average discharge flow rate of 4 mgd and average UV transmittance of 62 percent. Include a 25 percent safety factor. (Calculated number of lamps multiplied by 1.25)	13
b	Guaranteed Lamp Life, expressed in hours, for the conditions in Item #B-2.	15,000 Hours
c	Number of Lamps Replaced Per Year: Item #B-2a divided by Item #B-2b and multiplied by 8,760 hours in a year. Round up to the next whole number.	8
d	Lamp Material Cost: Guaranteed not-to-exceed replacement cost for one (1) UV lamp, expressed in dollars.	\$ 700
B-3.	Annual ballast replacement costs: Item #B-3a divided by Item #B-3c and then multiplied by Item #B-3b.	\$ 2,700
a	Total number of installed ballasts/lamp drivers.	30
b	Ballast/Lamp Driver Replacement Cost: Guaranteed not-to-exceed replacement cost for one (1) ballast/lamp driver, expressed in dollars.	\$ 900
c	Guaranteed Ballast/Lamp Driver Life, expressed in years.	10 Years
B-4.	Annual sleeve replacement costs: Item #B-4a divided by Item #B-4c and then multiplied by Item #B-4b.	\$ 1,200
a	Total number of installed quartz sleeves.	60
b	Quartz Sleeve Replacement Cost: Guaranteed not-to-exceed replacement cost of one (1) quartz sleeve, expressed in dollars.	\$ 200
c	Guaranteed Quartz Sleeve Life, expressed in years.	10 Years
B-5.	Annual UV sensor replacement costs: Item #B-5a divided by Item #B-5c and then multiplied by Item #B-5b.	\$ 1,320
a	Total number of installed UV intensity sensors.	6
b	UV Intensity Sensor Replacement Cost: Guaranteed not-to- exceed replacement cost of one (1) UV intensity sensor, expressed in dollars.	\$ 1,100
c	Guaranteed UV Sensor Life, expressed in years.	5 Years
B-6.	Cost for duty/reference UV sensor calibration: Item #B-6b multiplied by Item #B-6c.	\$ 750
a	Total number of duty/reference UV sensors that require calibration.	6
b	Average number of calibrations required per year.	1
c	Cost of calibration per UV sensor, expressed in dollars.	\$ 750
B-7.	Annual cost for cleaning system consumables (Cleaning Solution, etc.).	\$ 200

Item	Description	Price (\$)
B-8.	Annual wiper replacement cost: Item #B-8a divided by Item #B-8c and then multiplied by Item #B-8b.	\$ 1,500
	a Total number of installed cleaning wipers.	120
	b Wiper Replacement Cost: Guaranteed not-to-exceed replacement cost of one (1) wiper, expressed in dollars.	\$ 25
	c Guaranteed wiper life, expressed in years.	2 Years
B-9.	Total Annual Operational and Maintenance Cost (Sum of Items #B-1 to #B-8).	\$ 30,422.08

Notes:

- (1) The Average Power Consumption (APC) calculation shall assume that the system will operate at conditions specified in Section 46_66_85 of the Technical Specifications.
- (2) Value entered in Item #B-1a shall be equivalent to the expected value determined by validation testing using an attenuated lamp conditions factor of 0.80 for the APC calculation. This factor will be used for all manufacturers for the life cycle cost analysis and is independent of the validated quartz sleeve fouling and lamp aging factors. Specific quartz sleeve fouling and lamp aging factors listed in Attachment 1 of Section 46_66_85 in the Technical Specifications shall be used for sizing equipment.

END OF BID SCHEDULE "B"

ARTICLE 3 - TIME OF COMPLETION

- 3.01 Bidder agrees that the furnishing of Goods and Special Services will conform to the schedule of Procurement Contract Times set forth in the Procurement Agreement.
- 3.02 Bidder accepts the provisions of the Procurement Agreement as to liquidated damages.

ARTICLE 4 - ATTACHMENTS TO THIS BID

- 4.01 The following documents are attached to and made a condition of this Bid:
 - A. Required Bid security in the form prescribed in Document 00_21_14 - Instructions to Bidders - Procurement.
 - B. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids.
 - C. Completed information in Document 00_45_14.15 - UV Qualifications Form with additional project list attached.
 - D. Equipment cut sheets.
 - 1. Permanent UV disinfection modules.
 - 2. Temporary UV disinfection unit.
 - 3. Gates.
 - E. Detailed maintenance and cleaning instructions and schedule for proposed UV disinfection equipment.

ARTICLE 5 - BIDDER'S ACKNOWLEDGMENTS

- 5.01 Bidder accepts all terms and conditions of Document 00_21_14 - Instructions to Bidders - Procurement. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period that Bidder may agree to in writing upon request of Buyer.
- 5.02 Bidder has examined and carefully studied the Procurement Bidding Documents, the related data identified in the Procurement Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged:

Addendum No.	Addendum Date
#1	March 10,2023

ARTICLE 6 - BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 Bidder's Representations

- A. In submitting this Bid, Bidder represents that:
1. Bidder has examined and carefully studied the Procurement Contract Documents.
 2. If required by Document 00_21_14 - Instructions to Bidders - Procurement to visit the Point of Destination and the site where the Goods are to be installed or Special Services will be provided, or if, in Bidder's judgment, any observable local or site conditions may affect the delivery, cost, progress, or furnishing of the Goods and Special Services, then Bidder has visited the Point of Destination and site where the Goods are to be installed or Special Services will be provided (as applicable) and become familiar with and is satisfied as to the observable local and site conditions that may affect delivery, cost, progress, and furnishing of the Goods and Special Services.
 3. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect the cost, progress, and performance of Seller's obligations under the Procurement Contract.
 4. Bidder has carefully studied, considered, and correlated the information known to Bidder with respect to the effect of such information on the cost, progress, and performance of Seller's obligations under the Procurement Contract.
 5. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Procurement Contract Documents, and the written resolution (if any) thereof by Engineer is acceptable to Bidder.
 6. The Procurement Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance of Seller's obligations under the Procurement Contract.
 7. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of the Bidding Requirements, that without exception the Bid (including all Bid prices) is premised upon furnishing the Goods and Special Services as required by the Procurement Contract Documents.

6.02 Bidder's Certifications

- A. Bidder certifies that:
1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
 2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
 3. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
 4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Procurement Contract. For the purposes of this Document:
 - a. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

- b. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Buyer, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Buyer of the benefits of free and open competition;
- c. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Buyer, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
- d. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process.

This Bid is offered by:

Bidder:

Trojan Technologies Group ULC

(typed or printed name of organization)

By:

(individual's signature)

Date:

March 14, 2023

(date signed)

Name:

Kevin Spehr

(typed or printed)

Title:

VP Global Sales

(typed or printed)

(If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

Lee Cassey

Lee Cassey

(individual's signature)

Title:

Corporate Secretary

(typed or printed)

Address for giving notices:

3020 Gore Road, London Ontario Canada, N5V 4T7

Designated Representative:

Name:

Jordan Fournier

(typed or printed)

Title:

Regional Sales Manager

(typed or printed)

Address:

3020 Gore Road, London Ontario Canada, N5V 4T7

Phone:

519-619-7352

Email:

jfournier@trojantechnologies.com

License No.:

N/A

Classification:

N/A

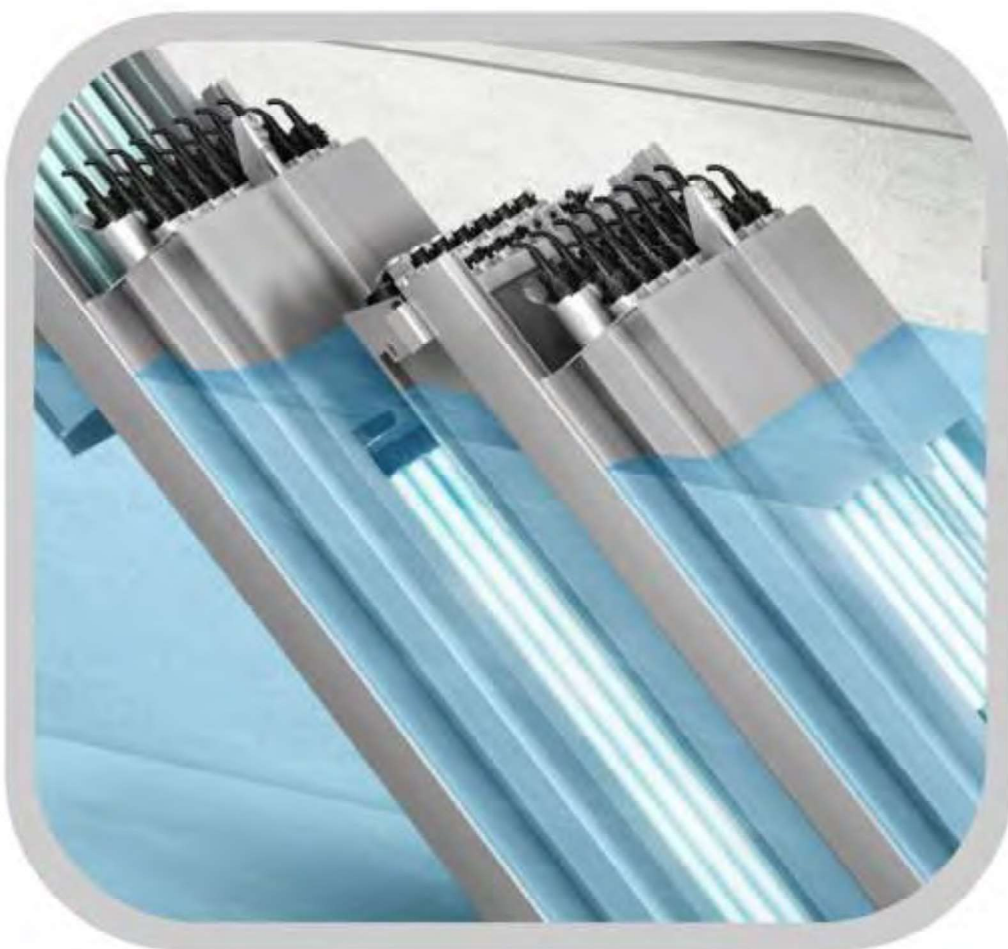
Limitation:

N/A

END OF DOCUMENT

ARTICLE 4

Attachments to the Bid

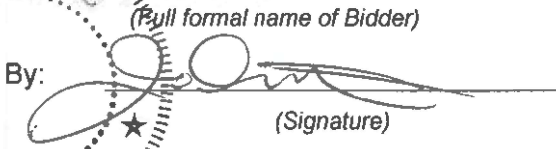
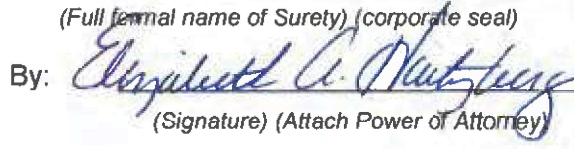
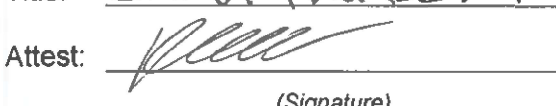
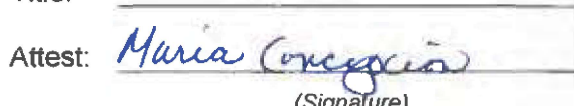


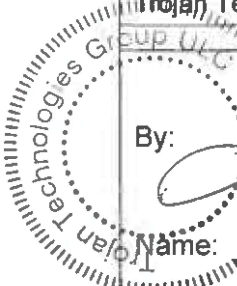
ARTICLE 4

Bid Security



**DOCUMENT 00_43_30
BID BOND (PENAL SUM FORM)**

Bidder Name: Trojan Technologies Address (principal place of business): 3020 Gore Road London, ON N5V 4T7	Surety Name: Travelers Casualty and Surety Company of America Address (principal place of business): One Tower Square Hartford, CT 06183
Owner Name: City of Pacifica Address (principal place of business): 700 Coast Highway Pacifica, CA 94044	Bid Project (name and location): City of Pacifica UV Disinfection Replacement Project Project #P034 Bid Due Date: March 15, 2023
Bond Penal Sum: Five Percent (5%) of Total Amount Bid ----(\$ 5%) Date of Bond: March 15, 2023	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder Trojan Technologies <hr/> (Full formal name of Bidder)	Surety Travelers Casualty and Surety Company of America <hr/> (Full formal name of Surety) (Corporate seal)
By:  (Signature)	By:  (Signature) (Attach Power of Attorney)
Name: <u>JoAnne Van der Kolk</u> (Printed or typed)	Name: <u>Elizabeth A. Hartzberg</u> (Printed or typed)
Title: <u>CFO VP Finance & IT</u>	Title: <u>Attorney-in-Fact</u>
Attest:  (Signature)	Attest:  (Signature)
Name: <u>Daniel Vivas</u> (Printed or typed)	Name: <u>Maria Concepcion</u> (Printed or typed)
Title: <u>Sr. Manager - HR, Cost & Treasury</u>	Title: <u>Asst. Vice President</u>



Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as, newly appointed, or otherwise. Daniel M. Vivas, Notary Public, is limited to the attestation of instruments and the taking of affidavits for Trojan Technologies Group ULC, and its subsidiaries (Social Companies) and affiliates.
 Bid Bond (Social Companies) and affiliates.
 EQ 401a30-20, 2025. Project# P034 February 2023
 pw://Carroll/Documents/CA/Pacifica/201447-100000/04 Design/04 Specs/UV Pre-Purchase/00_43_30 (Final)

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation will be null and void if:
 - 3.1. Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2. All Bids are rejected by Owner.
 - 3.3. Or Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
5. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
6. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than 1 year after the Bid due date.
7. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

END OF DOCUMENT



**Travelers Casualty and Surety Company of America
Travelers Casualty and Surety Company
St. Paul Fire and Marine Insurance Company**

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS: That Travelers Casualty and Surety Company of America, Travelers Casualty and Surety Company, and St. Paul Fire and Marine Insurance Company are corporations duly organized under the laws of the State of Connecticut (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint Elizabeth A. Hartzberg of Pittsburgh, Pennsylvania, their true and lawful Attorney(s)-in-Fact to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed, and their corporate seals to be hereto affixed, this **21st** day of **April**, **2021**.



State of Connecticut

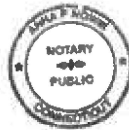
By: 
Robert L. Raney, Senior Vice President

City of Hartford ss.

On this the **21st** day of **April**, **2021**, before me personally appeared **Robert L. Raney**, who acknowledged himself to be the Senior Vice President of each of the Companies, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of said Companies by himself as a duly authorized officer.

IN WITNESS WHEREOF, I hereunto set my hand and official seal.

My Commission expires the **30th** day of **June**, **2026**




Anna P. Nowik, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of each of the Companies, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, **Kevin E. Hughes**, the undersigned, Assistant Secretary of each of the Companies, do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which remains in full force and effect.

Dated this 15th day of March, 2023




Kevin E. Hughes, Assistant Secretary

To verify the authenticity of this Power of Attorney, please call us at 1-800-421-3880.
Please refer to the above-named Attorney(s)-in-Fact and the details of the bond to which this Power of Attorney is attached.

ARTICLE 4

Evidence of Ability to Conduct Business in California



TROJAN TECHNOLOGIES GROUP ULC

California Secretary of State

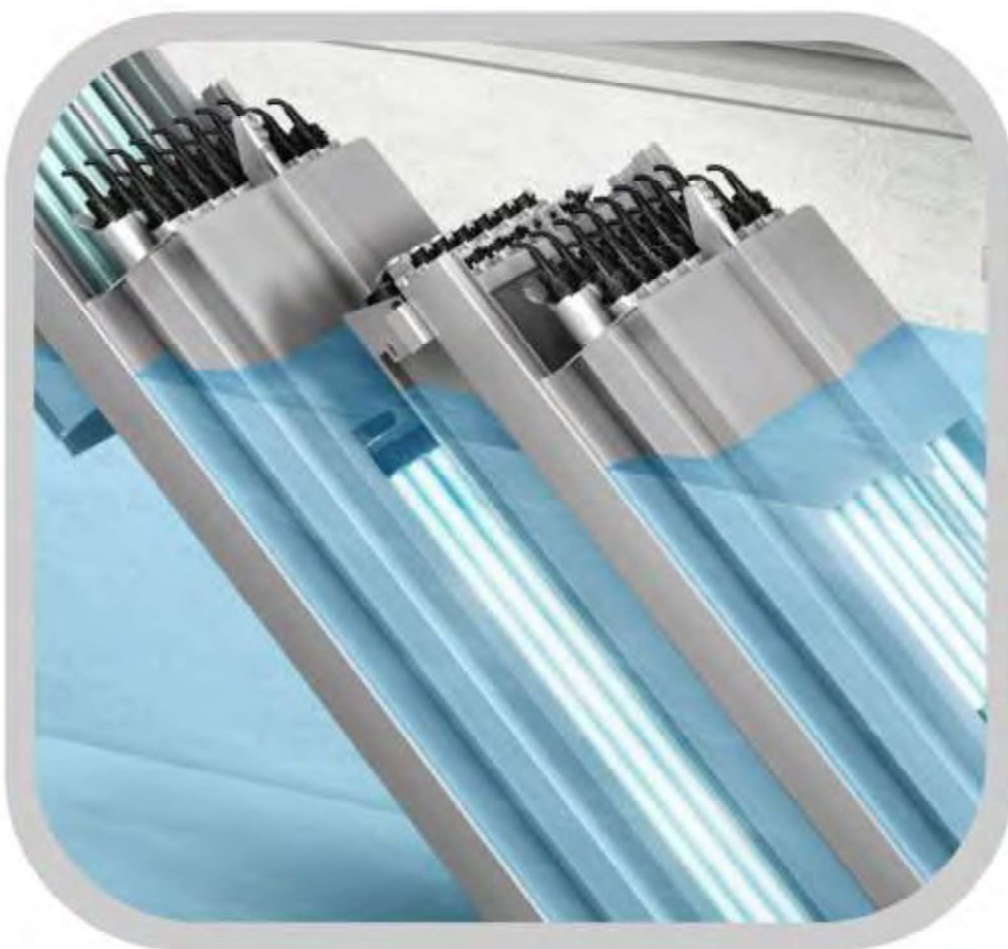
Request Certificate

<i>Initial Filing Date</i>	07/27/2017
<i>Status</i>	Active
<i>Standing - SOS</i>	Good
<i>Standing - FTB</i>	Good
<i>Standing - Agent</i>	Good
<i>Standing - VCFCF</i>	Good
<i>Formed In</i>	BRITISH COLUMBIA
<i>Entity Type</i>	Stock Corporation - Out of State - Stock
<i>Principal Address</i>	Canada 3020 GORE ROAD LONDON ON, N5V 4T7
<i>Mailing Address</i>	Canada 3020 GORE ROAD LONDON ON, N5V 4T7
<i>Statement of Info Due Date</i>	07/31/2023
<i>Agent</i>	1505 Corporation 112 C T CORPORATION SYSTEM 330 N BRAND BLVD STE 700 GLENDALE, CA 91203

View History
Request Access

ARTICLE 4

Evidence of Authority to Sign



CERTIFICATE

Execution of Routine Documentation

The undersigned, being the Secretary of Trojan Technologies Group Unlimited Liability Corporation (the "Corporation") hereby certifies that Kevin Spehr, VP Global Sales of the Corporation and as such is authorized to execute on this date the Bid Form prepared by the Corporation and submitted to the City of Pacifica California respecting the proposed purchase thereby of ultraviolet disinfection equipment to be supplied by the Corporation for the City of Pacifica UV Replacement Project, in accordance with the applicable Trojan Technologies Group ULC policies in force as of the date hereof.

DATED the 14th day of March, 2023

Lee Cassey

Lee Cassey
Corporate Secretary
Trojan Technologies Group ULC

DOCUMENT 00_45_14.15

UV Disinfection Qualifications Form



DOCUMENT 00_45_14.15

ULTRAVIOLET DISINFECTION QUALIFICATIONS FORM

ARTICLE 1 — ULTRAVIOLET DISINFECTION SYSTEM

1.01 Qualification requirements are based on experience with UV systems and the information provided below.

ARTICLE 2 — CONTACT INFORMATION

2.01 Provide the following contact information:

UV Manufacturer Name:	Trojan Technologies Group ULC
Address:	3020 Gore Road, London Ontario Canada, N5V 4T7
Phone:	519-457-3400
Assigned Project Manager Name & Contact:	Helen McMillan, hmcmillan@trojantechnologies.com 519-457-3400 x 2166 Office 519-661-9639 Cell

ARTICLE 3 — MANUFACTURER EXPERIENCE REQUIREMENTS

3.01 Provide the following detailed information for three projects containing the UV manufacturer's project experience with similar UV installations using the same equipment proposed for CA Title 22 reuse disinfection.

Project 1 Name/ Operational Start Year:	Paso Robles, CA 2017
Owner Name:	City of Paso Roble, CA
Owner Address:	3200 Sulphur Springs Road Paso Robles, CA 93446
Contact Person:	Matt Thompson
Contact Phone No.:	805-227-7200 x7716
Regulatory Discharge Water Quality Design Criteria (Design UVT and UV dose (mJ/cm²), peak flow capacity):	55% UVT, 100mJ/cm ² Dose, 3.66 MGD

Project 2 Name/ Operational Start Year:	Jackson CA 2017
Owner Name:	City of Jackson
Owner Address:	39 North Highway 49-88 Jackson, CA 95642
Contact Person:	Joel Lindsey
Contact Phone No.:	209.602.9889
Regulatory Discharge Water Quality Design Criteria (Design UVT and UV dose (mJ/cm²), peak flow capacity):	55% UVT, 100mJ/cm ² dose, 4 MGD

Project 3 Name/ Operational Start Year:	Central Kitsap, WA 2018
Owner Name:	Kitsap County, WA
Owner Address:	12350 Brownsville Hwy. NE Poulsbo, WA 98370
Contact Person:	Floyd Bayless
Contact Phone No.:	360-337-5631
Regulatory Discharge Water Quality Design Criteria (Design UVT and UV dose (mJ/cm²), peak flow capacity):	55% UVT, 25mJ MS2 Dose, 31.1 MGD

- 3.02 Provide an additional list of 20 wastewater installations using the same equipment proposed. Provide this list as an attachment including the following for each:
- A. Project name, location, and start year.
 - B. Design flow.
 - C. Reuse application (Y/N)

ARTICLE 4 — PASS/FAIL REQUIREMENTS

4.01 Provide responses to the following questions. An answer of “NO” to any of the following questions may disqualify the bid:

- A. Has the Supplier included the required project/owner references?
YES NO
- B. Has the Supplier proposed a Temporary UV Disinfection system that meets the technical and schedule requirements?
YES NO
- C. Does the proposed Permanent UV Disinfection system have DDW Conditional Approval for Title 22 reuse?
YES NO
- D. Does the proposed permanent UV equipment fit within the existing channel dimensions shown on the preliminary drawings with a minimum 12-inch thick center wall without increasing any dimensions of the existing channel? (Note: As shown, decreasing dimensions using concrete or other means is permitted.)
YES NO
- E. Can the proposed equipment be maintained and operated without a permanent external lifting device (e.g., overhead crane)?
YES NO
- F. Will the proposed equipment fit though the opening dimensions shown on the UV Pre-Purchase Drawings (Section 44_66_65, Attachment B)?
YES NO

END OF DOCUMENT

ARTICLE 4

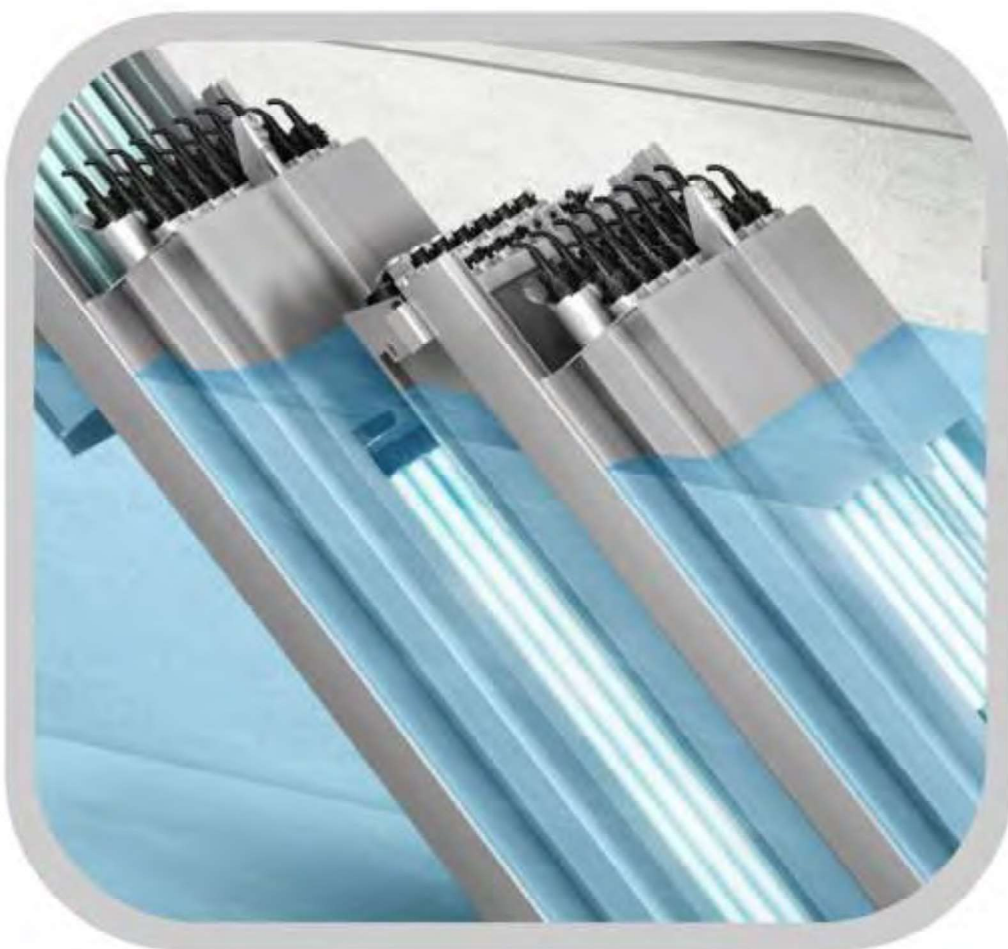
Equipment Cut Sheets



**SUPERCEDED - SEE CURRENT SUBMITTAL IN SECTION
46_66_85 - ULTRAVIOLET DISINFECTION SYSTEM**

ARTICLE 12

12.03 Maintenance and Cleaning



12.03 Maintenance and Cleaning

A. Bidder shall include detailed maintenance and cleaning instructions and schedule for the UV equipment proposed. At minimum including:

Ease of maintenance

The Trojan UVSigna™ has the following features which result in ease of maintenance:

- Least number of lamps when compared to all other LPHO vendors.
- Automatic Raising Mechanism (ARM) Can be stopped at different heights to provide the best access to different components for different operators
- ARM is integrated into the controls and activated by a simple toggle switch
- Easily replace lamps, cleaning solution without raising the bank out of the channel
- Easily replace lamp drivers without affecting operation of adjacent banks
- Perform reference sensor checks, and/or replace a sensor without the need to raise a bank or remove lamps and sleeves.
- UV intensity sensor is cleaned the same way as the lamps (vs. a “brush” used on other UVM’s system).
- Only reference sensors require yearly calibration.
- UV bank can easily slide out of channel and be removed allowing for easy and full channel access.
- ARM lowers the bank back into the channel without complication and is not affected by any debris on the channel floor.

Safety

The features outlined below result in a system that is safe to operate and maintain:

- Safety switch that ensures an operator cannot raise a bank with UV lamps energized.
- Ground fault protection is integral to ballast.
- Lamp plug contains safety interlock so an energized lamp cannot be removed from the bank
- PDC has multiple doors with safety interlock(s) to allow an operator safe access to replace a lamp driver without affecting the other banks.

Ease of Operation

Trojan’s ActiClean™ chemical and mechanical cleaning system is able to handle challenging effluents due to several unique features:

- Submerged pieces are cylindrical (no screws, hard edges to catch debris)
- Wipers are parked out of the effluent when not in use
- Automatic chemical/cleaning with additional debris scraper to push off any debris, algae, latex etc. so the cleaning system can do its job and not get hung up on debris

Warranties

Trojan components will meet and, in most cases, exceed minimum requirements specified on this project.

Below is a chart comparing Trojan’s warranties and the specified warranties.

Item	Specified Warranty	Trojan Warranty
System	2 years	2 years
Lamp	15,000 hours	15,000 hours
Ballast (Driver)	5 years	10 years
Quartz Sleeve	5 years	10 years
UV Sensor	3 years	10 years
Performance	3 years	Lifetime

- 1. Lamp-bank cleaning descriptions, the estimated labor hours per lamp-bank cleaning, and the recommended lamp-bank cleaning frequency based on the conditions described in the technical specifications.**

TROJAN RESPONSE:

The UVSIGNA Lamp-Bank cleaning is not a common requirement due to Trojan’s ActiClean Cleaning System (ACS). On the following page we have included a typical maintenance schedule for the UVSigna. It is recommended that banks be cleaned as needed which is site dependent. Most sites will visually inspect a bank monthly and if needed clean the bank. The process to clean a UV bank is as follows:

- Lift the UV Bank out of the channel using the automatic removal mechanism.
- Remove large debris as required.
- Use hose and water to remove smaller debris, algae etc.
- When cleaning is complete, lower the bank back into the channel and bring it into service.

It is expected that the entire process will take no longer than 5 minutes per bank and based on the technical specifications the site should plan to clean the lamp-banks every 6 months.

Table 5 Maintenance Schedule

System component	Task	Monthly	Semi-Annually	Annually	Every 2 years	On removal	As necessary
UV Channel	Clean the UV channel around the UV system. Perform semi-annually for poor water quality conditions. Lift the UV Banks (Section 8.1.2). From the grating level, use a garden hose or pressure washer to clean the UV Channel.		X				
Water Level Sensor	Inspect the water level sensor(s) rods for debris, algae or damage. Clean the sensor rods as necessary. Note: Do once every two weeks for poor water quality conditions.	X					
HSC	Inspect the Hydraulic System Center (Section 9.8.1).	X					
	Replace the hydraulic fluid in the reservoir (Section 9.8.4).				X		
	Replace the hydraulic fluid filter element (Section 9.8.3).			X ¹			
	Replace hydraulic hose (Section 9.8.5).						X
Power Distribution Center	Air filters to be flushed with warm running water with clean side up. If the accumulated dirt is oily, washing in a detergent bath is recommended followed by a warm water wash (Section 9.10.2).						X
	Replace a lamp driver (Section 9.10.1).						X
Lamp Sleeve Wiper	Add grease to the wiping cylinder(s) (Section 9.9.1). Note: Grease the wiping cylinders when shutting down for extended periods of time and when starting up after extended periods of time (Section 5).			X			
	Fill Wiping System (Section 9.7.2).		X				
	Flush Wiping System for seasonal winterization (Section 9.7.3).						X
	Replace the Wiper Seals, O-rings and Bushings (Section 9.7.4.1).				X		X
	Inspect all the wiper components that can be seen. Remove any debris and clean components as necessary.					X	
UV Bank	Inspect the UV Bank seal when the UV Bank is lifted into the service position. Ensure the seal is clean from debris. Inspect for cracks and ensure it is not damaged or worn.					X ²	
	Clean UV Bank (Section 9.6.1).						X
	Inspect Floor Support Seals. Replace if damaged or worn (Section 9.6.2).					X	
UV Lamp	Replace a UV lamp. Reset lamp hours (Section 9.3.2).						X ³
Lamp Sleeve	Replace a lamp sleeve (Section 9.4.1).						X
	Clean lamp sleeves manually (Section 9.4.2).						X

Trojan’s ACS will ensure the lamp sleeves and sensor sleeves always remain clean so that disinfection performance is never compromised.

This Automatic chemical and mechanical cleaning system use a robust wiper system to clean the UV lamp sleeves while they remain submerged and operating in the channel.

ACTICLEAN CLEANING SYSTEM (ACS) AND HYDRAULIC SYSTEMS CENTER (HSC)

The ActiClean system utilizes wiper seals for mechanical cleaning. Wiper seals are housed in a collar that contains a chemical cleaning solution. The dual chem/mech cleaning system operates automatically, while lamps are submerged and operating, removing fouling and maintaining the design quartz sleeve transmittance.

All lamp sleeves within the bank are cleaned simultaneously. The frequency of cleaning is adjustable at the Operator Interface on the SCC. The ACS is hydraulically actuated by the HSC, located adjacent the UV channel. The HSC contains the pump, valves, and reservoir for the ACS.

Operators can refill the cleaning solution from the top of the UV bank. This task is completed while banks are in their operating position in the channel. The wiper fill system also acts as a wiper indicator to provide a visual indication that the wiping system is functioning. The instructions for filling the ActiClean Gel is shown on the following pages. Note that for Pacifica an entire bank of Wipers is filled at one time as all the wiper canisters are daisy chained together. The link below also provides access to a video showing the ActiClean solution being refilled. Note that since that video we have improved the filling process by providing a drill pump rather than a manual pump.

Refilling ActiClean Gel (two-row): <https://vimeo.com/448987560/5f4f3ccef>

Visual Indicator
and Fill Port

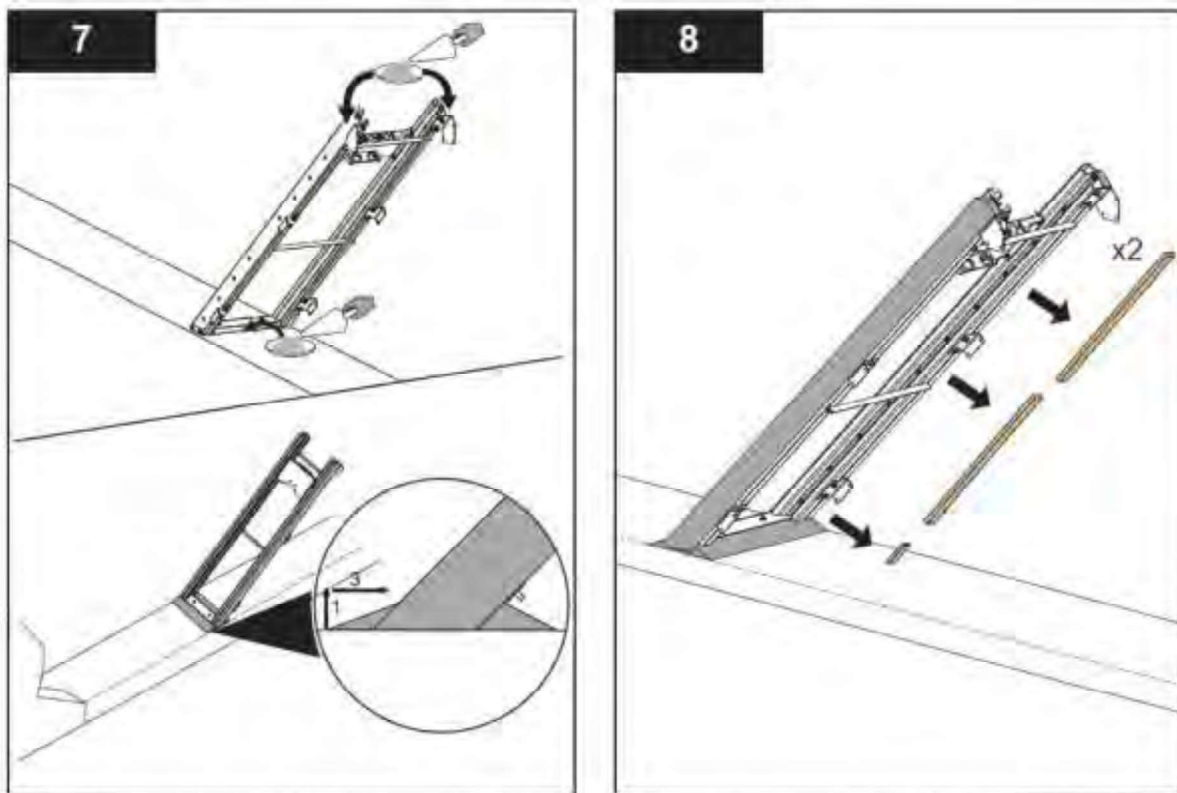


See Trojan Standard Cleaning Instructions

2. **Proposed equipment installation shop drawings identifying any obstructions near or on the bottom of the channel with a description of how to remove or address these obstructions during channel cleaning.**

TROJAN RESPONSE:

The UVSIGNA Lamp-Bank includes a bank frame that is bolted to the channel walls and rests on the channel floor. The bottom of the frame is grouted to ensure a smooth transition with the channel floor which eliminates any obstructions on the floor. Refer to the following rendering:



Note: Place grout in between bank frame and channel wall. DO NOT allow grout to fill the inside slots of the bank frame.

Note: Remove wood forms after grout has completely dried.

Since the transition is smoothed at a 3:1 slope the bottom of the channel floor can simply be washed out and any debris flushed downstream.

Although it is not necessary, or a typical operation and maintenance task, a UV Bank can be completely removed from the channel leaving the channel completely clear of UV equipment.

Steps to Remove and Install a UV Bank

A detailed procedure is also provided in the O&M manual. Remove hydraulic hoses carefully and tie off to HSC above the HSC pump tank assembly. Remove all lamp, UV intensity sensor and misc. control cables from each the bank and tie off. An appropriately sized crane (supplied by others) will be required for complete bank removal. The bank weighs ~410 lbs. Use a sling sufficient to support this weight to slide the bank frame from the channels supports as shown on the 3 steps below. Use additional precautions, as needed. Obey all site-specific safety protocols.

Complete Removal of the UV Bank

- Move the Wiper to its 1/2 way position through the HSC or operator interface.
- Lift the UV Bank Up as described in the previous steps.
- Lockout Tag Out - HSC and PDC for the associated UV Bank.

Section 01_21_14, Article 12

- Depressurize the Hydraulic Control System (HSC). Remove hydraulic hoses 1 through 4 as shown in Figure 4.
- Remove sleeves from the bank.

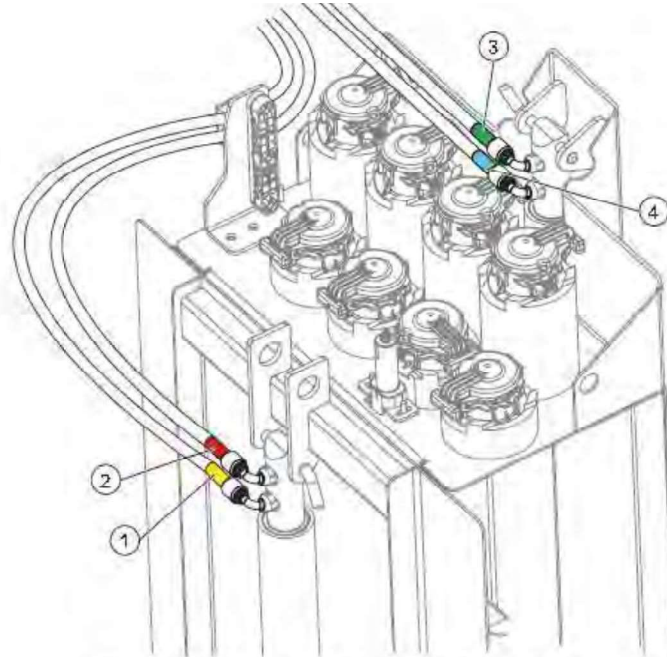
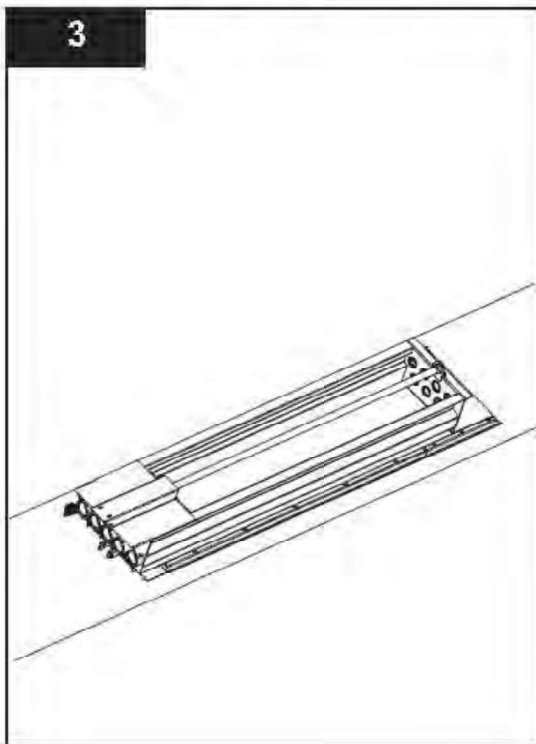
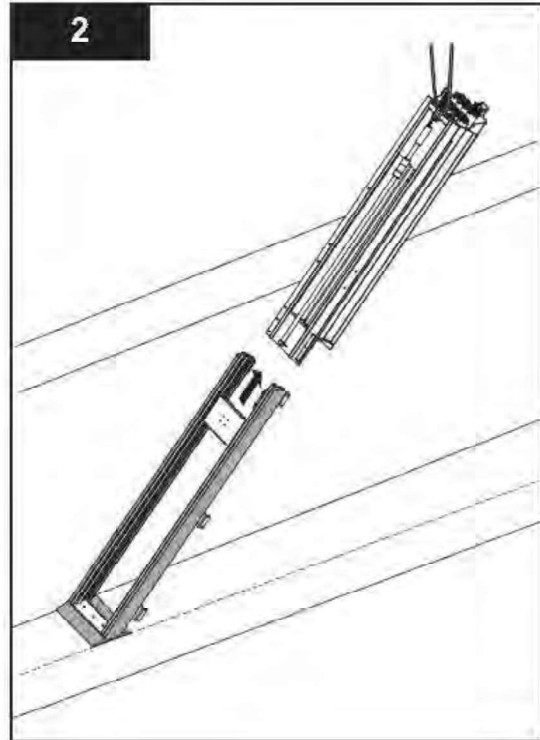
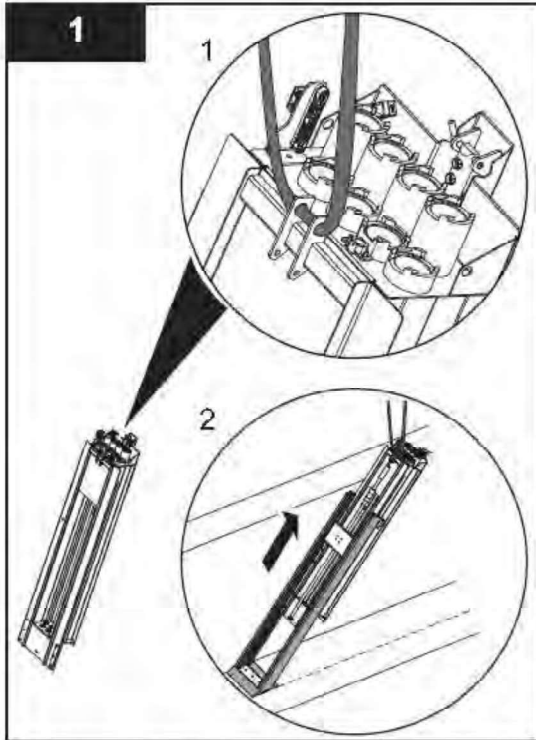


Figure 4 Hydraulic Line Connection Designations

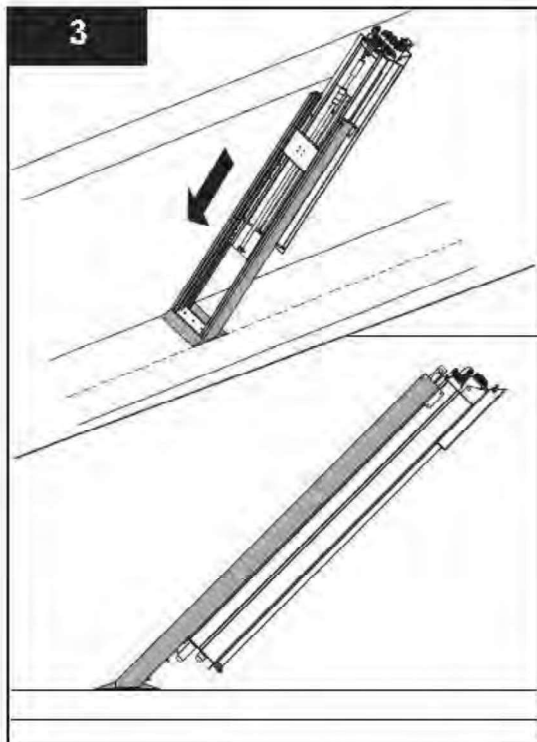
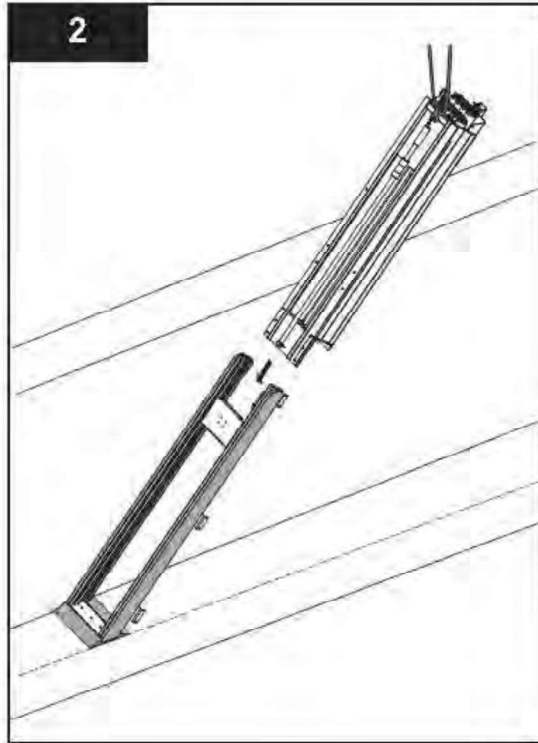
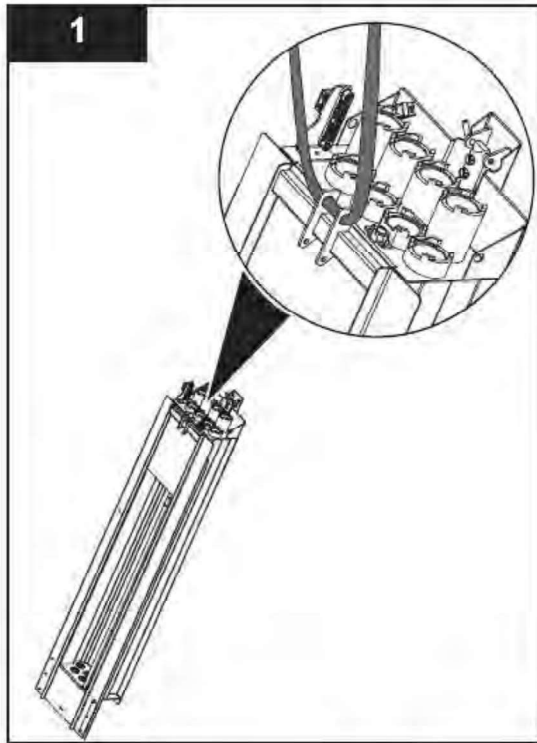
1	Lift Retract (Yellow)	3	Wiper Extend (Green)
2	Lift Extend (Red)	4	Wiper Retract (Blue)

- Remove Lamp Sleeves.
- Remove UVI Sensor Housing.
- Remove Lift Hydraulic Cylinder

Remove:



Install:



12.03 Maintenance and Cleaning

B. The Bidder may include references for owners with installations similar to the proposed equipment for the Owner and/or Engineer to contact during the evaluation.

TROJAN RESPONSE:

Please refer to the list below for similar installations that can be contacted. We have included two references where the UVSigna replaced the UV4000 which is the same design being considered for Pacifica.

References

The following letters and quotes were obtained directly from current TROJANUVSigna™ customers. These are provided to highlight the positive track record of the UVSigna™. Trojan regularly asks for feedback on how the Trojan system is performing and how Trojan as a company responds to customer's needs after the system is installed.



July 31, 2018

Re: Trojan UVSigna Reference Letter

To Whom It May Concern:

This letter is to certify that in the summer of 2012, the H.C. Morgan Water Pollution Control Facility located in Auburn, Alabama installed a TrojanUVSigna™ system manufactured by TrojanUV. The system has been designed to achieve disinfection levels of both a 30-day geometric mean of 126 colony forming units (cfu)/100 ml E.coli and a maximum of 487cfu/100 ml E.coli at a peak flowrate of 34.2 MGD, and has consistently met, or exceeded, our disinfection requirements.

Since the start-up of our TrojanUV system, we have found the system to require very little maintenance. The unique cleaning system has achieved outstanding results in maintaining sleeve cleanliness and is easy to operate.

We are pleased with the performance of the equipment and we've found the major system components to be high quality. Trojan's training is excellent and their technical support is first class.

Please feel free to contact me at 334-501-3077 or by email at mdunn@auburnalabama.org if you have any further questions regarding our TrojanUV system.

Sincerely,

A handwritten signature in black ink, appearing to read "Matt R. Dunn", with a long horizontal flourish extending to the right.

Matt R. Dunn, P.E.
Water Resource Management Assistant Director

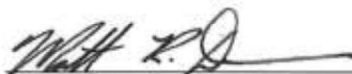
144 Tichenor Avenue • Auburn, Alabama 36830
(334) 501-7260 • FAX (334) 501-7299 • www.auburnalabama.org

TO: Trojan Technologies

Permission to Use Quote or Personal Statement

I, the undersigned, hereby irrevocably authorize Trojan Technologies and its successors and assigns to use, publish or reprint in whole or in part the attached statement, picture, endorsement and/or quotation and I hereby waive any and all intellectual property or other rights I may otherwise have in relation to the attached and agree to seek no payment for this use.

Dated: 10/22/13

Signed: 

Print Name: Matt R. Dunn

"From concept to design to construction to system operation, Trojan has worked tirelessly to ensure that we were given a UV system that meets our needs. The Trojan UVSigna system has exceeded our expectations in all aspects and the staff at Trojan have been a pleasure to work with throughout this entire process."

Matt R. Dunn, P.E.
Watershed Division Manager/Project Manager
City of Auburn, AL

Matt R. Dunn, P.E.
Water Resource Management/Watershed Division Manager
1501 West Samford Avenue
Auburn, Alabama 36832
334.501.3077
Fax 334.826.1083
mdunn@auburnalabama.org

TO: Trojan Technologies

Permission to Use Quote or Personal Statement

I, the undersigned, hereby irrevocably authorize Trojan Technologies and its successors and assigns to use, publish or reprint in whole or in part the attached statement, picture, endorsement and/or quotation and I hereby waive any and all intellectual property or other rights I may otherwise have in relation to the attached and agree to seek no payment for this use.

Dated: 10-4-2013

Signed: Scott Milner

Print Name: SCOTT MILNER

"TrojanUV has been a pleasure to work with as far as customer support and service. We have been in operation for a little over six months. The function of the TrojanUVSigna™ equipment has been outstanding and they have all been a pleasure to work with and we look forward to working with them in the future."

Scott Milner, Project Manager
Veolia Water North America, Auburn, AL

Scott Milner
Project Manager
Veolia Water North America
616 Sandhill Road
Auburn, AL 36830
Phone: 334-826-7340
Cell: 334-559-1880
Fax: 334-826-0572
terrell.milner@veoliawaterna.com



PUBLIC WORKS
WATER RECLAMATION
TEL: 801 852 6793 | 801 368 8759

July 23, 2018

To Whom It May Concern,

This letter is to certify that in the fall of 2015 the Provo Wastewater Treatment Plant located in Provo Utah installed a TrojanUVSigna™ system manufactured by TrojanUV. This system has been designed to achieve a disinfection level of 126 E.coli a 30-day geometric mean at a peak flowrate of 25 MGD, and has consistently met, or exceeded, our disinfection requirement.

Since the start-up of our TrojanUV system, we have found the system to require very little maintenance. The unique cleaning system has achieved outstanding results in maintaining sleeve cleanliness and is easy to operate.

We are pleased with the performance of the equipment and we've found the major system components to be high quality. Trojan's training is excellent and also their technical support is first class.

Please feel free to contact me if you should have any further questions regarding our TrojanUV system.

Sincerely,

A handwritten signature in black ink that reads "Mark Ogren". The signature is fluid and cursive.

Mark Ogren

Provo City Water Reclamation Manager

PROVO.ORG



8/3/2016

To Whom It May Concern,

This letter is to certify that in the fall of 2014 The Abington Regional Wastewater Authority located in Chinchilla Pennsylvania installed a TrojanUVSigna™ system manufactured by TrojanUV. The system has been designed to achieve a disinfection level of 200 Fecal Coliform on a 30-day geometric mean at a peak flowrate of 11 MGD, and has consistently met, or exceeded, our disinfection requirement.

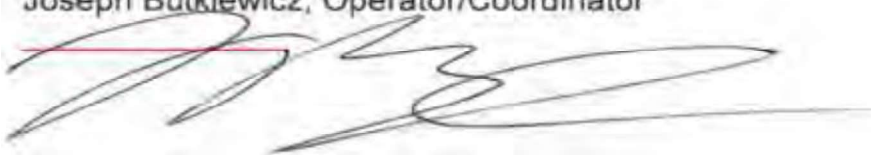
Since the start-up of our TrojanUV system, we have found the system to require very little maintenance. The unique cleaning system has achieved outstanding results in maintaining sleeve cleanliness and is easy to operate.

We are pleased with the performance of the equipment and we've found the major system components to be high quality. Trojan's training is excellent and also their technical support is first class.

Please feel free to contact me if you should have any further questions regarding our TrojanUV system.

Sincerely,

Joseph Butkiewicz, Operator/Coordinator





LITTLE BLUE VALLEY SEWER DISTRICT

Atherton Wastewater Treatment Plant
Administration & Employee Services Building
21208 East Old Atherton Road
Independence, MO 64058
PHONE: (816) 796-7660 or (816) 796-9191
FAX: (816) 796-3500

July 24, 2018

To Whom It May Concern,

This letter is to certify that in the summer of 2013 the Little Blue Valley Sewer District located in Independence, Missouri installed a TrojanUVSigna™ system manufactured by TrojanUV. This system has been designed to achieve a disinfection level of 206 E.coli a 30-day geometric mean at a peak flowrate of 150 MGD, and has consistently met, or exceeded, our disinfection requirement.

Since the start-up of our TrojanUV system, we have found the system to require little maintenance. The cleaning system has achieved sufficient results in maintaining sleeve cleanliness and is easy to operate.

We are pleased with the performance of the equipment and we've found the major system components to be high quality. Trojan's training is excellent and also their technical support is first class.

Please feel free to contact me if you should have any further questions regarding our TrojanUV system.

Sincerely,

Lisa O'Dell
Technical & Environmental Manager

LO/lt

MISSION:

"Our mission is to provide excellent wastewater services which protect the public health and improve the environment of our region."

VISION:

"The Little Blue Valley Sewer District will be a strong partner in regional planning and resource sharing, anticipating and responding to both environmental and economic needs."



East Richland County Public Service District

704 ROSS ROAD
POST OFFICE BOX 23069
COLUMBIA, S.C. 29224-3069
TELEPHONE 803-788-1570

FAX 803-736-5399

To Whom It May Concern,

This letter is to certify that in June 2013 the Gills Creek WWTP (East Richland County Public Sewer) in Columbia, South Carolina installed a TrojanUVSigna™ system manufactured by Trojan Technologies. This system has been designed to achieve a disinfection level of 200 FC on a 30-day geometric mean (400 FC maximum) at a peak flowrate of 32 MGD, and has consistently met, or exceeded, our disinfection requirement.

We have found the system to require very little maintenance. The unique cleaning system has achieved outstanding results in maintaining sleeve cleanliness and is easy to operate.

We are pleased with the performance of the equipment and we've found the major system components to be high quality. Trojan's training is excellent and also their technical support is first class.

Please feel free to contact me if you should have any further questions regarding our Trojan system.

Sincerely,

South Milwaukee Wastewater Treatment Facility

3003 - 5th Avenue • South Milwaukee, Wisconsin 53172

Andrew M. Bakalarski
Superintendent

(414) 768-8180
Fax (414) 768-8181

Ronald Johnson
Chief Operator

August 13, 2014

To Whom It May Concern,

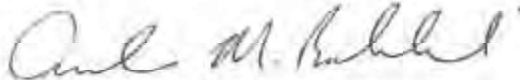
This letter is to certify that in 2013, the South Milwaukee Wastewater Treatment Facility installed a TrojanUVSigna™ system manufactured by Trojan Technologies. This system has been designed to achieve a disinfection level of 400 colonies /100ml_ at a peak flowrate of 30MGD and has consistently met, or exceeded, our disinfection requirement.

Since the start-up of our Trojan system, we have found the system to require very little maintenance. The unique cleaning system has achieved outstanding results in maintaining sleeve cleanliness and is easy to operate.

The TrojanUVSigna is the most energy efficient UV system currently available. We are pleased with the performance of the equipment and we've found the major system components to be high quality. Trojan's training is excellent and also their technical support is first class.

Please feel free to contact me if you should have any further questions regarding our Trojan system.

Sincerely,



Andrew M. Bakalarski, superintendent
South Milwaukee Wastewater Treatment Facility

Trojan UVSIGNA References

TROJANUV SIGNA References

Project Name	State/Prov	Country	Flow	Lamps	UVT	Delivery	Contact Name	Number	Email	Comments
Paso Robles	CA	US	3.7	96	55	11/17/2017	Matt Thompson	805-227-7200 x7716	MThompson@prcity.com	Chlorine Conversion / Title 22 Reuse
Jackson	CA	US	4	80	55	5/24/2018	Joel Lindsey	209.602.9889	jlindsey@ci.jackson.ca.us	Chlorine Conversion / Title 22 Reuse
Avon Lake	OH	US	15	64	65	12/28/2016	Steve Baytos	440-933-3185	sbaytos@avonlakewater.org	UV Competitor Replacement
Paragould	AR	US	6	24	65	12/21/2015	Lisa Ellington	870-239-7700	lellington@paragould.com	Conversion from Chlorine
Central Kitsap	WA	US	31.1	84	55	8/7/2018	Floyd Bayless	360-337-5631	fbayless@co.kitsap.wa.us	UV4000 Replacement
Abbotsford	BC	CAN	33.5	120	55	7/25/2018	Ron Bernier	604-864-5662	rbernier@abbotsford.ca	Conversion from Chlorine
Troutdale	OR	US	9.6	32	65	6/26/2019	Erika Aspenson	770-359-7105	erika.aspenson@troutdaleoregon.gov	UV4000 Replacement
Silver Creek	UT	US	4	32	65	2/15/2018	Cody Snyder	435-731-0649		
Springville	UT	US	6.6	32	65	9/13/2018	Juan Garrido	801-420-1272	jgarrido@springville.org	Compeitor replacement

APPENDIX



SCOPE OF SUPPLY





**SCOPE OF SUPPLY FOR PACIFICA REPLACEMENT WASTEWATER TREATMENT PLANT
ULTRAVIOLET DISINFECTION EQUIPMENT – TROJANUVSigna™**

Prepared for: City of Pacifica, CA
Specification Section: 46 66 85
Addendum: Addendum 1
Submitted by: Trojan Technologies
Trojan Quote: 238940
Design Criteria: Design UV Transmission: 56% minimum
Average UV Transmission: 62 % minimum
Total Suspended Solids: 5 **mg/l** (Maximum, grab sample)

Reuse Title 22

Maximum Daily Flow: 2.5 MGD
Average Daily Flow: 1.0 MGD

Permit limits:

- a. Total Coliform: 2.2 Most Probable Number (MPN)/100 milliliters (mL), based on a 7-day median.
- b. Total Coliform: 23 MPN/100 mL, more than once in any 30-day period.
- c. Total Coliform: 240 MPN/100 mL, maximum at any time.
- d. 5-log₁₀ poliovirus reduction.

Minimum Reuse MS2 RED: ≥ 102 mJ/cm²

Discharge NPDES

Peak Wet Weather Flow: 20 MGD
Average Daily Flow: 4.0 MGD

Permit limits:

- a. E. coli: 100 colony forming units (CFU)/100 mL, based on a six-week rolling geometric mean calculated weekly.
- b. E. coli: 320 CFU/100 mL, less than 10 percent of all samples collected in a calendar month shall exceed this limit.

Minimum Reuse T1 RED: ≥ 14 mJ/cm²

We are pleased to submit the following scope of equipment based on the above criteria.

The purchaser is responsible for reading all information contained in this Supply Contract. Trojan will not be held accountable for the supply of equipment not specifically detailed in this document. Detailed installation instructions are provided with the shop drawings and are available earlier upon request. Changes to this Scope of Supply that affect selling price will be handled through a change order.

Please refer inquiries to Trojan Manufacturer's Representative:

Representative: Brad Leidecker
The Coombs-Hopkins Company
Phone: 9259476733
Email: brad@coombshopkins.com

This proposal has been respectfully submitted by,
Trojan Technologies

Jordan Fournier
Regional Sales Manager

GENERAL CONFIGURATION

The TrojanUVSigna equipment described in this Scope of Supply consists of 2 channels with 2 duty and 1 redundant UV banks in each channel.

Unless otherwise indicated in this proposal all anchor bolts, conduit, conductors, local disconnects and transformers (if required) are the responsibility of the Installation Contractor and are not included in Trojan's Scope of Supply. Specific cable types listed below are for reference only. Selecting cables that are appropriate for the installation environmental conditions and in compliance with local code is the responsibility of the Installation Contractor.

Site to provide approved (engineered) anchor points for personnel to use as part of their fall restraint system around open channels. The anchor points must be positioned so that the preferred retractable lifeline of 8 ft (2.4 m) is of sufficient length to access the work at the channel. Refer to local safety regulation.

UV BANKS

Trojan's Responsibility:

Each bank supplied will consist of TrojanUV Solo Lamps™, quartz sleeves, supporting structures, ActiClean™ chemical/mechanical cleaning system and an automatic bank lifting mechanism. UV lamps are powered from an individual electric feed from a lamp driver located in a Power Distribution Center (PDC).

Model and Make:	TrojanUVSigna™
Quantity:	Three (3) UV Banks / Channel Each bank will be supplied with 10 UV lamps and quartz sleeves, one (1) UV intensity sensor, one (1) ActiClean chemical-mechanical wiping system and one (1) automatic bank lifting mechanism
Rating:	Type 6P / IP68 (lamp sleeve assemblies)
Approximate Weight:	10 Lamp - 410 lbs (186kg)

Installation Contractor's Responsibility:

The Installation Contractor shall install, align, secure, and seal (grout) each UV bank and lifting system in the channel per the instructions provided. The Installation Contractor shall provide solid grating downstream of the UV bank to block out UV light. Please refer to the supplied Trojan-supplied drawings for details.

SYSTEM CONTROL CENTER

Trojan's Responsibility:

A System Control Center (SCC) shall be supplied to monitor and control the UV disinfection System. Trojan will provide a PLC I/O and soft address map to aid the Installation Contractor with integration of the UV PLC and SCADA system. Note: if Trojan is required to provide a managed switch in the SCC, the Plant's IT department or System Integrator will be responsible for configuring the switch to meet the Plant's security and traffic routing requirements. The UV SCC shall consist of the following:

Quantity Supplied:	One (1) SCC will be supplied
Location:	PLC Floor
Controller Type:	Control Logix
Operator Interface:	SCC HMI AB PaneView Plus 7 - 15" (Indoor Rated)
Material / Rating:	304 Stainless Steel (Type 4X, IP 66)
SCADA:	Ethernet/IP
Surge Protection:	TVSS

Installation Contractor's Responsibility:

The Installation Contractor to be responsible for mounting the SCC as indicated on the drawings. Unless otherwise indicated, the Installation Contractor to be responsible for the supply, installation and connection of the following at the SCC:

1. One (1) 110-240V, 50/60 Hz, 1 Phase, 2 Wire + GND, 1.8kVA (maximum)
2. One (1) bond link to plant ground, in accordance with applicable codes and standards
3. One (1) Modbus communication link, Belden 3106A (or equivalent), to PDCs (daisy chained)
4. One (1) Modbus communication link, Belden 3106A (or equivalent), to HSCs (daisy chained)
5. One (1) Cat 5e Ethernet communication link to SCADA
6. One (1) 4-20 mA analog shielded twisted pair from plant flow meter
7. One (1) 4-20 mA analog shielded twisted pair from online UV Transmittance monitor
8. One (1) discrete, 2 conductor signal from level sensor control box for high water level signal
9. Control signal conductors (as required by actuator) for control of inlet gate
10. One (1) discrete, 2 conductors, 20 gauge minimum, open command to each weir gate
11. One (1) discrete, 2 conductors, 20 gauge minimum, close command to each weir gate
12. One (1) discrete, 2 conductors, 20 gauge minimum, remote mode indication from each weir gate
13. One (1) 4-20 mA analog shielded twisted pair, 20 gauge minimum, gate position indication from each weir gate
14. One (1) 24V DC, 2 conductors + GND, power to the Level Sensor Monitor
15. One (1) 4-20 mA analog shielded twisted pair from the Level Sensor Monitor

POWER DISTRIBUTION CENTERS

Trojan's Responsibility:

The Power Distribution Center (PDC) distributes power to the UV lamps and shall consist of the following:

Quantity Supplied:	Four (4) PDCs will be supplied
Method of Cooling:	Forced Air (Climate Controlled Room Required)
Material / Rating:	304 Stainless Steel
Approximate Weight:	1000lb

Installation Contractor's Responsibility:

The Installation Contractor to be responsible for setting in place and bolting the PDC in location. The Installation Contractor to be responsible for the supply, installation and connection of the following at each PDC:

1. One (1) 480 / 277V, 50/60 Hz, 3 phase, 4 wire + GND, 20.0 kVA power feed with local disconnect to each of PDC
2. One (1) bond link to plant ground, in accordance with applicable codes and standards (to underside of panel)
3. One (1) bond link from each UV bank to the corresponding PDC in accordance with the applicable drawings, specifications, codes, and standards
4. One (1) bank-in-place sensor cable (by Trojan) from each UV bank to corresponding PDC
5. One (1) UV intensity sensor cable (by Trojan) from each UV bank to corresponding PDC
6. One (1) Modbus communication link, Belden 3106A (or equivalent), from the SCC
7. One (1) discrete, 2 conductor, cable from level sensor control box for low water level signal
8. Installation and termination of lamp cables from the UV banks to each PDC. (Qty: 10 per UV Bank – supplied by Trojan)

HYDRAULIC SYSTEM CENTER

Trojan's Responsibility:

The Hydraulic System Center (HSC) houses the ancillary equipment required to operate the quartz sleeve cleaning system and automatic bank lifting mechanism.

Quantity Supplied:	Two (2) HSCs will be supplied
Materials / Rating:	304 Stainless Steel (Type 4X, IP 66)
Hydraulic Fluid:	Mineral Oil
Approximate Weight:	500lbs (228 kg)

Installation Contractor's Responsibility:

The Installation Contractor shall be responsible for setting in place and bolting the HSC's as shown on the Trojan drawings. The HSC's must be located within 50 ft (15 m) of the furthest PDC. The Installation Contractor shall be responsible for the supply, connection and installation of the following at each HSC:

1. One (1) 480V, 3 phase, 3 wire + ground, 60Hz, 2.5 kVA power feed with local disconnect
2. One (1) bond link to plant ground, in accordance with applicable codes and standards
3. One (1) Modbus communication link, Belden 3106A (or equivalent), from the SCC
4. Cut and crimp hydraulic hoses (coordination with Parker Store) (hoses and connections supplied by Trojan)
5. Connection of the hydraulic hoses, total of four (4) per UV bank

INLET ISOLATION GATES

Trojan's Responsibility

Upstream slide gates are required to isolate the channels depending on flow rates and requirements for maintenance.

Quantity Supplied:	Two (2) gates to be supplied
Description:	Slide Gate
Manufacturer:	RW Gate Company - Model RW750-S Slide Gate
Actuator:	AUMA SAR-10.1 Electric Actuator
Size:	52" wide x 82" tall
Material of Construction:	304 stainless steel frame and yoke
Approximate Weight:	TBD

Installation Contractor's Responsibility:

The Installation Contractor to be responsible for setting in place, grouting and sealing the slide gates as per the submittal drawings and the installation of the following connections to each isolation gate:

1. One (1) 480V, 50/60 Hz, 3 phase, 3 wire + GND, 15 AMP power feed with local disconnect.
2. One (1) discrete, 2 conductors, 20 gauge minimum, open command from the SCC
3. One (1) discrete, 2 conductors, 20 gauge minimum, close command from the SCC
4. One (1) discrete, 2 conductors, 20 gauge minimum, remote mode indication to the SCC

WATER LEVEL CONTROLLER (MWG)

Modulating Weir Gates (MWGs) shall be self-contained and shall be designed and manufactured by an experienced and reputable manufacturer, based on the AWWA C561 Standard for Fabricated Stainless Steel Slide Gates and AWWA C542 Standard for Electric Motor Actuators for Valves and Slide Gates in effect as of the date of this specification.

MWGs shall be designed for the following performance criteria:

- MWG actuation speeds shall be between 10" (255 mm) and 14" (356 mm) per minute
- MWG maximum design rate of change of flow shall be limited to 25% of the Peak Design Flow/Channel per minute, or alternatively, flow shall be ramped up (zero to peak) or down (peak to zero) in no less than 4 minutes
- MWG actuators shall employ AWWA compliant, S4-50% duty class motors with a rated minimum 900 starts per hour capability
- MWG actuators shall employ AWWA compliant, Class B, solid-state Thyristor based switchgear capable of at least 5,000,000 modulating steps before overhaul; electromechanical type actuators and controls are not permitted

It is the responsibility of the Plant designers to ensure the stated performance criteria are acceptable for the plant process or to modify the design accordingly.

Trojan's Responsibility

Level control devices are required to maintain and control the effluent level in the channel, regardless of flow rate.

Quantity Supplied:	Two (2) Motorized Weir Gates
Description:	RW Gate Company - Model RW750-S
Actuator:	AUMA SAR-10.1 Electric Actuator
Material of Construction:	304 SST
Dims	36.5" wide x 66" tall
Mounting Anchors:	Supplied with each Gate
Approximate Weight:	TBD

Installation Contractor's Responsibility:

The Installation Contractor to be responsible for setting in place, grouting and sealing the level control weir gate and the installation of the following connections at each weir gate:

5. One (1) 480V, 50/60 Hz, 3 phase, 3 wire + GND, 15 AMP power feed with local disconnect.
6. One (1) discrete, 2 conductors, 20 gauge minimum, open command from the SCC
7. One (1) discrete, 2 conductors, 20 gauge minimum, close command from the SCC
8. One (1) discrete, 2 conductors, 20 gauge minimum, remote mode indication to the SCC
9. One (1) 4-20 mA analog shielded twisted pair, 20 gauge minimum, gate position indication to the SCC

ULTRASONIC WATER LEVEL SENSOR (PER CHANNEL)

Trojan's Responsibility:

One ultrasonic level sensor and monitor panel will be supplied (per gate) to monitor channel effluent levels specifically for weir gate control. The transducer will be supplied with a sufficient length of cable to distribute to the monitor panel.

Quantity Supplied: One (1) Sensor with monitor panel to be supplied per weir gate

Installation Contractor's Responsibility:

The Installation Contractor shall be responsible for mounting the bracket and transducer in the UV channel and for mounting the monitor panel adjacent to the channel. Installation Contractor shall distribute the following cable/wiring between these two components and the SCC in appropriate conduit at each sensor:

1. One (1) 24V DC, 2 conductors + GND, power from the SCC to the Level Sensor Monitor
2. One (1) 4-20 mA analog shielded twisted pair from the Level Sensor Monitor to the SCC
3. One (1) communication link using 33 ft (10 m) of cable (supplied by Trojan) from the Level Sensing Transducer to the Level Sensor Monitor

HIGH ULTRASONIC WATER LEVEL SENSOR (INLET BASIN)

Trojan's Responsibility:

One ultrasonic level sensor and monitor panel will be supplied monitor channel effluent levels specifically at inlet basin. The transducer will be supplied with a sufficient length of cable to distribute to the monitor panel.

Quantity Supplied: One (1) Sensor with monitor panel to be supplied

Installation Contractor's Responsibility:

The Installation Contractor shall be responsible for mounting the bracket and transducer in the channel and for mounting the monitor panel adjacent to the channel. Installation Contractor shall distribute the following cable/wiring between these two components and the SCC in appropriate conduit at each sensor:

1. One (1) 24V DC, 2 conductors + GND, power from the SCC to the Level Sensor Monitor
2. One (1) 4-20 mA analog shielded twisted pair from the Level Sensor Monitor to the SCC
3. One (1) communication link using 33 ft (10 m) of cable (supplied by Trojan) from the Level Sensing Transducer to the Level Sensor Monitor

LOW WATER LEVEL SENSORS

Trojan's Responsibility:

A Low Water Level Sensor is required downstream of the UV System to generate a low water level signal that will shut down and protect the UV System if the water level in the channel drops too low.

Quantity Supplied: One (1) of each water level sensor to be supplied per channel
Approximate Weight: 10 lbs (22 kg) (panel)

Installation Contractor's Responsibility:

The Installation Contractor to be responsible for setting in place and bolting the water level sensor panel to the effluent channel wall as per Trojan's and Engineer's drawings.

LEVEL SENSOR CONTROL BOX

Trojan's Responsibility:

Trojan will provide a wall mounted Level Sensor Control Box 24 x 14 x 6 in (61 x 36 x 15 cm) to provide power and relays for low level sensors.

Quantity Supplied: One (1) Level Sensor Control Box per channel
Materials / Rating: 304 Stainless Steel (Type 4X)
Approximate Weight: 40 lbs (18 kg)

Installation Contractor's Responsibility:

The Installation Contractor to be responsible for mounting the Level Sensor Control Box as indicated on the drawings. The Installation Contractor shall also be responsible for supplying mounting hardware, watertight conduit and for the supply, installation and connection of the following at each Control Box:

1. One (1) 120 Volt, 1 phase, 2 wire + GND 72 VA power supply
2. One (1) discrete, 2 conductor cable from the Low Level Sensor to the level sensor control box
3. One (1) discrete, 2 conductor cable from the level sensor control box to each PDC

UV TRANSMISSION MONITOR

Trojan's Responsibility:

An on-line UV Transmission Monitor will be supplied to provide a UVT measurement of the source water.

Description:	One (1) Hach UVASsc UVT monitor including <ul style="list-style-type: none"> • One (1) submersible probe with mounting kit • One (1) sc4500 Controller • 25 ft (7.6 m) cable between the probe and the controller
Enclosure Rating:	Type 4X
Controller Dimensions:	12 x 12 x 4 in (30 x 30 x 10 cm)
Approximate Weight:	30 pounds (includes probe and Controller)
Probe Immersion Depth:	up to 6 ft (1.8 m)

Installation Contractor's Responsibility:

The Installation Contractor to be responsible for setting in place and mounting the Controller panel and the probe. The Installation Contractor shall also be responsible for the supply, installation and connection of the following at each Controller:

1. One (1) 120 Volt, 1 phase, 2 wire + GND, 14 VA power supply
2. One (1) 4-20mA analog shielded twisted pair to the SCC
3. Installation of sensor communication cable (by Trojan) between the probe and Controller
4. Anchor bolts as required for mounting Controller and probe to the channel edge

SPARE PARTS AND ADDITIONAL EQUIPMENT

Trojan's Responsibility:

The following equipment will be supplied with the UV system:

Description	Qty
Solo Lamp	6
Signa Lamp Plug	3
Lamp Driver	3
Solo Sleeve	6
UV Face Shield	3
Signa Hydraulic Pump Assembly	1
Signa UV Sensor	2
Wiper Seal Kit Assembly (2 seals, springs, cage, spacers)	12
TrojanUVSigna Operator Kit (with Wiping)	1
901507 Acticlean WW 4 x 4L (Case)	1
931107 Signa HCB Board	1

931120 Signa BCB Board	1
907384 Signa Hydraulic Filter	1
ActiClean Filler Drill Pump	1
316SST Channel Flow Conditioner	4
UV Photometer	1
Fan Rack	1
Fuses (one of each type if used)	1

NOTES AND CLARIFICATIONS TO SPECIFICATION

SECTION	PARAGRAPH	SPECIFICATION REQUIREMENT	COMMENT
Div 26		Related section not included for Review	After review note that pricing may be affected and/or adjusted.
BYPASS UNIT COMMENTS			
46 66 57	1.04 C. 1. c.	Collimated beam results	These are not available and cannot be provided
	2.06 F.	UV Intensity detection system	Not available with our bypass unit

MICROBIOLOGICAL PERFORMANCE TESTING

Trojan's Responsibility:

Trojan will supply a performance testing protocol to the Installation Contractor to be forwarded to the Engineer for approval. Trojan will produce the final test report (based on data supplied by the independent lab) and will forward the final report to the Installation Contractor.

Installation Contractor's Responsibility:

The Installation Contractor is to cover all associated on site costs for performance testing (independent lab services, bottles, shipment, etc.). The Installation Contractor to be responsible for completing the performance testing as per the testing protocol supplied by Trojan and approved by the Engineer.

DOCUMENTATION (SHOP DRAWINGS AND O&M MANUALS)

The following documentation will be supplied by Trojan per the following schedule:

- One (1) electronic copy of Trojan Shop Drawing Submittals 4 - 6 weeks after executed purchase order (hardcopies available upon request)
- One (1) electronic copy of Trojan Standard O&M manuals at time of equipment delivery (hardcopies available upon request)

DELIVERY, START-UP AND TRAINING

UV Equipment shipped **30-32** weeks after approval of Shop Drawings.

MWG & INLET GATES/ACTUATORS shipped **30-40** weeks after approval of Shop Drawings.

Installation Contractor's Responsibility:

The Contractor is responsible for:

- Un loading of the components supplied by Trojan, storage of all components, if required in a clean dry environment
- Installing the equipment outlined in the scope of Supply in accordance with contract drawings, Trojan's shop drawings, instructions and installation checklist.
- Supplying all conduits and conductors and components per the sites state regulations and components indicated as supplied by others,
- Completing the Checklist and returned at least two (2) weeks prior to date requested for commissioning.

The following start-up services will be provided by Trojan-certified technicians:

- Unloadin Assistance – **1 Day**
- Installation assistance as required by phone or fax. Technical Assistance Center 1-866-388-0488 or tac@trojanuv.com
- On-site Installation assistance prior to start-up – **5 Days**
- Start-up and testing of the installed UV equipment – **8 Days (2 Trips)**
 - If the Trojan's Certified Service Technician determines the Contractor work is not complete and the start-up cannot be completed in the allotted time a return visit will be scheduled at the Contractors expense.
- Classroom and/or jobsite training for operations staff – 2 Days
 - If trainees are not available a return visit will be scheduled at the Contractors expense.
- Performance Testing Assistance – **14 Days**
- Electrical Acceptance – **2 Days**
- Headloss Testing – **1 Day**
- Spot Check Bioassay Testing On-Site Support – **1 Day**
- End of Warranty Inspection – **1 Day**

WARRANTY

Trojan will warrant the equipment and parts for 12 months after from the date of Substantial Completion for the Project. Refer to attached Terms and Conditions for additional details.

- UV lamps shall be warranted for 15,000 hours prorated after 9,000 hours.
- Lamp drivers shall be warranted for 10 years (non- Prorated)
- Sleeves shall be warranted for 5 years (non-prorated)
- UV Sensor shall be warranted for 3 Years (non-Prorated)

Selling price does not include any duties or taxes that may be applicable.

Freight included if destination is within North America.

Incoterms 2002: Ex Works (EXW) or Cost, Insurance and Freight (CIF) to destination or port will apply for all other destinations.

PAYMENT TERMS

10% At time of Purchase Order
40% Upon release for fabrication
45% Upon shipment delivery
5% Upon start-up/acceptance

Net 30 Days

If UV System Start-up is required within 30 days of shipment, Trojan requires 95% payment unless agreed upon in writing before authorizing system Start-up.

CERTIFICATE OF INSURANCE

This is to certify that policies of insurance as herein described have been issued to the Insured named below and are in force at this date:

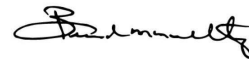
Certificate Holder: TROJAN TECHNOLOGIES 3020 Gore Road, Lond ON N5V 4T7	Name of Insured and Address: Beckman Coulter Canada LLP a/o Danaher Corporation 7075 Financial Drive, Mississauga ON L5N 6V8
--	---

Location and Operations to
 Which the Certificate applies:

Kind of Policy	Policy Number	Expiry Date			Limits of Liability or Sums Insured
		D	M	Y	
Commercial General Liability Products Included <input type="checkbox"/> And/or Completed Excluded <input type="checkbox"/> Operations					Bodily Injury and Property Damage Liability \$ Aggregate Limit Each Occurrence Limit \$ Personal Injury Limit \$ Tenants' Legal Liability Limit \$ Medical Expense Limit \$ Any One Premises Any One Person
Automobile- Fleet					\$ Inclusive Limit Bodily Injury and Property Damage Combined
Property – Describe					Sum(s) Insured
Other – Describe Marine Open Cargo Policy	CAM000074230	01	07	2024	US\$15,000,000 or as appropriately defined under the Marine Cargo Policy

Note:

This insurance afforded is subject to the terms, conditions and exclusions of the applicable policy. This Certificate is issued as a matter of information only and confers no rights on the holder and imposes no liability on the Insurer. The Insurer will endeavour to mail to the holder of this Certificate 30 days written notice of any material charge in or cancellation of these policies, but assumes no responsibility for failure to do so.



Date: August 31, 2023

 Authorized Representative










Agreement_Trojan Technologies_20230608_UV Disinfection Equipment_recvd 9.14.23 (without addendum) (2)

Final Audit Report

2023-09-15

Created:	2023-09-14
By:	Jennie Kenway (jkenway@pacifica.gov)
Status:	Signed
Transaction ID:	CBJCHBCAABAAPn-WMcC6areKcs-w1X_We6UkzvKlflrc

"Agreement_Trojan Technologies_20230608_UV Disinfection Equipment_recvd 9.14.23 (without addendum) (2)" History

-  Document created by Jennie Kenway (jkenway@pacifica.gov)
2023-09-14 - 7:22:04 PM GMT
-  Document emailed to kwoodhouse@pacifica.gov for signature
2023-09-14 - 7:24:53 PM GMT
-  Email viewed by kwoodhouse@pacifica.gov
2023-09-14 - 11:50:10 PM GMT
-  Signer kwoodhouse@pacifica.gov entered name at signing as Kevin Woodhouse
2023-09-14 - 11:50:43 PM GMT
-  Document e-signed by Kevin Woodhouse (kwoodhouse@pacifica.gov)
Signature Date: 2023-09-14 - 11:50:45 PM GMT - Time Source: server
-  Document emailed to Sarah Coffey (scoffey@pacifica.gov) for signature
2023-09-14 - 11:50:49 PM GMT
-  Email viewed by Sarah Coffey (scoffey@pacifica.gov)
2023-09-15 - 0:44:30 AM GMT
-  Document e-signed by Sarah Coffey (scoffey@pacifica.gov)
Signature Date: 2023-09-15 - 0:45:38 AM GMT - Time Source: server
-  Agreement completed.
2023-09-15 - 0:45:38 AM GMT

DOCUMENT 00_55_00

NOTICE TO PROCEED

Owner: City of Pacifica Owner's Project #: P034
Engineer: _____ Engineer's Project #: _____
Contractor: _____ Contractor's Project #: _____
Project: UV Disinfection System Replacement
Contract UV Disinfection System Replacement
Effective Date of _____

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on _____ pursuant to the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement:

The date to achieve Substantial Completion is **October 15, 2025**; and the number of days to achieve readiness for final payment is 90 days from Substantial Completion, resulting in a date no later than **January 13, 2026**.

Before starting any Work at the Site, Contractor must comply with the following:

City of Pacifica Business License, Certificate of Insurance, W-9.

Owner: City of Pacifica
By (*signature*): _____
Name (*printed*): _____
Title: _____
Date Issued: _____
Copy: Engineer

END OF DOCUMENT

DOCUMENT 00_60_09

SURETY'S AGREEMENT TO ASSIGNMENT

Surety hereby acknowledges, agrees, and consents that the Procurement Contract for furnishing Goods and Special Services entitled UV Equipment Procurement and Services by and between City of Pacifica ("Buyer") and Trojan Technologies ("Seller") may be assigned, transferred, and set over to _____ ("Contractor/Assignee"), in accordance with Article 5 and Exhibit A of the Agreement between Buyer and Seller for Procurement Contract.

Surety further agrees that, upon assignment of the Procurement Contract, the Contractor/Assignee shall have all the rights of the Buyer under the Procurement Performance Bond and Procurement Payment Bond.

Agreement to Assignment Acknowledged and Accepted by Surety

(typed or printed name of organization)

By: _____ Date: _____
(individual's signature) *(date signed)*

Name: _____ Title: _____
(typed or printed) *(typed or printed)*

Attach Power of Attorney.

END OF DOCUMENT

This document is a MODIFIED version of EJCDC® C-610, Copyright© 2018 by the National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers, or is based in part on excerpts from copyrighted EJCDC documents. All rights reserved. Those portions of the text that originated in copyrighted EJCDC documents remain subject to the copyright.

DOCUMENT 00_61_10

PERFORMANCE BOND

<p>Contractor Name: _____ Address (<i>principal place of business</i>): _____</p>	<p>Surety Name: _____ Address (<i>principal place of business</i>): _____</p>
<p>Owner Name: City of Pacifica Mailing address (<i>principal place of business</i>): 540 Crespi Drive Pacifica, CA 94044</p>	<p>Contract Description (<i>name and location</i>): UV Disinfection System Replacement Project – P034 700 Coast Hwy, Pacifica, CA 94044 Contract Price: _____ Effective Date of Contract: _____</p>
<p>Bond Bond Amount: _____ Date of Bond: _____ <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated in this Document by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
 - 3.1. Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within 5 business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within 10 business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
 - 3.2. Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - 3.3. Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
 - 5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
 - 5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

- 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
 - 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond 7 days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
 - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within 2 years after a declaration of Contractor Default or within 2 years after the Contractor ceased working or within 2 years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated in this Document. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
14. Now, therefore, the condition of this obligation is such, that if the Principal faithfully performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of the Agreement during the original term of the Agreement and any extension of the Agreement, with or without notice to the Surety, and during the life of any guaranty required under the Agreement, and also performs and fulfills all of the undertakings, covenants, terms, conditions and agreements of all duly authorized modifications of the Agreement that may hereafter be made, notice of which modifications to the Surety being hereby waived, the above obligation is void. Otherwise it remains in full force and effect.
15. Definitions:
 - 15.1. Balance of the Contract Price—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
 - 15.2. Construction Contract—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 15.3. Contractor Default—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
 - 15.4. Owner Default—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 15.5. Contract Documents—All the documents that comprise the agreement between the Owner and Contractor.
16. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
17. Modifications to this Bond are as follows: None.

END OF DOCUMENT

This document is a MODIFIED version of EJCDC® C-615, Copyright© 2018 by the National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers, or is based in part on excerpts from copyrighted EJCDC documents. All rights reserved. Those portions of the text that originated in copyrighted EJCDC documents remain subject to the copyright.

DOCUMENT 00_61_15

PAYMENT BOND

<p>Contractor Name: _____ Address (<i>principal place of business</i>): _____</p>	<p>Surety Name: _____ Address (<i>principal place of business</i>): _____</p>
<p>Owner Name: City of Pacifica Mailing address (<i>principal place of business</i>): <p style="text-align: center;">540 Crespi Drive Pacifica, CA 94044</p></p>	<p>Contract Description (<i>name and location</i>): <p style="text-align: center;">UV Disinfection System Replacement Project – P034 700 Coast Hwy, Pacifica, CA 94044</p> Contract Price: _____ Effective Date of Contract: _____</p>
<p>Bond Bond Amount: _____ Date of Bond: _____ (<i>Date of Bond cannot be earlier than Effective Date of Contract</i>) Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
_____ <i>(Full formal name of Contractor)</i>	_____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Contractor:
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions:
 - 16.1. *Claim*—A written statement by the Claimant including at a minimum:
 - 16.1.1. The name of the Claimant;
 - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;

- 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
- 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
18. Modifications to this Bond are as follows: None.

END OF DOCUMENT

DOCUMENT 00_72_00

GENERAL CONDITIONS

Prepared By



Endorsed By



Copyright© 2018

National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

The copyright for this EJCDC document is owned jointly by the three sponsoring organizations listed above. The National Society of Professional Engineers is the Copyright Administrator for the EJCDC documents; please direct all inquiries regarding EJCDC copyrights to NSPE.

NOTE: EJCDC publications may be purchased at www.ejcdc.org, or from any of the sponsoring organizations above.

TABLE OF CONTENTS

	Page
ARTICLE 1 — DEFINITIONS AND TERMINOLOGY.....	5
1.01 DEFINED TERMS	5
1.02 TERMINOLOGY	9
ARTICLE 2 — PRELIMINARY MATTERS	10
2.01 DELIVERY OF PERFORMANCE AND PAYMENT BONDS; EVIDENCE OF INSURANCE.....	10
2.02 COPIES OF DOCUMENTS	11
2.03 BEFORE STARTING CONSTRUCTION.....	11
2.04 PRECONSTRUCTION CONFERENCE; DESIGNATION OF AUTHORIZED REPRESENTATIVES	11
2.05 ACCEPTANCE OF SCHEDULES.....	12
2.06 ELECTRONIC TRANSMITTALS.....	12
ARTICLE 3 — CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE.....	12
3.01 INTENT.....	12
3.02 REFERENCE STANDARDS.....	13
3.03 REPORTING AND RESOLVING DISCREPANCIES.....	13
3.04 REQUIREMENTS OF THE CONTRACT DOCUMENTS.....	14
3.05 REUSE OF DOCUMENTS.....	14
ARTICLE 4 — COMMENCEMENT AND PROGRESS OF THE WORK	15
4.01 COMMENCEMENT OF CONTRACT TIMES; NOTICE TO PROCEED.....	15
4.02 STARTING THE WORK	15
4.03 REFERENCE POINTS	15
4.04 PROGRESS SCHEDULE	15
4.05 DELAYS IN CONTRACTOR'S PROGRESS.....	16
ARTICLE 5 — SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS.....	17
5.01 AVAILABILITY OF LANDS.....	17
5.02 USE OF SITE AND OTHER AREAS.....	17
5.03 SUBSURFACE AND PHYSICAL CONDITIONS	18
5.04 DIFFERING SUBSURFACE OR PHYSICAL CONDITIONS	19
5.05 UNDERGROUND FACILITIES	21
5.06 HAZARDOUS ENVIRONMENTAL CONDITIONS AT SITE	22
ARTICLE 6 — BONDS AND INSURANCE	24
6.01 PERFORMANCE, PAYMENT, AND OTHER BONDS.....	24
6.02 INSURANCE—GENERAL PROVISIONS	25
6.03 CONTRACTOR'S INSURANCE.....	27
6.04 BUILDER'S RISK AND OTHER PROPERTY INSURANCE.....	28
6.05 PROPERTY LOSSES; SUBROGATION.....	29
6.06 RECEIPT AND APPLICATION OF PROPERTY INSURANCE PROCEEDS.....	30

ARTICLE 7 — CONTRACTOR’S RESPONSIBILITIES.....	30
7.01 CONTRACTOR’S MEANS AND METHODS OF CONSTRUCTION	30
7.02 SUPERVISION AND SUPERINTENDENCE.....	30
7.03 LABOR; WORKING HOURS	31
7.04 SERVICES, MATERIALS, AND EQUIPMENT	31
7.05 “OR EQUALS”	31
7.06 SUBSTITUTES	32
7.07 CONCERNING SUBCONTRACTORS AND SUPPLIERS.....	34
7.08 PATENT FEES AND ROYALTIES	35
7.09 PERMITS.....	36
7.10 TAXES.....	36
7.11 LAWS AND REGULATIONS.....	36
7.12 RECORD DOCUMENTS	37
7.13 SAFETY AND PROTECTION	37
7.14 HAZARD COMMUNICATION PROGRAMS.....	38
7.15 EMERGENCIES	38
7.16 SUBMITTALS	38
7.17 CONTRACTOR’S GENERAL WARRANTY AND GUARANTEE	41
7.18 INDEMNIFICATION.....	42
7.19 DELEGATION OF PROFESSIONAL DESIGN SERVICES	42
ARTICLE 8 — OTHER WORK AT THE SITE.....	43
8.01 OTHER WORK.....	43
8.02 COORDINATION.....	44
8.03 LEGAL RELATIONSHIPS.....	44
ARTICLE 9 — OWNER’S RESPONSIBILITIES	45
9.01 COMMUNICATIONS TO CONTRACTOR.....	45
9.02 REPLACEMENT OF ENGINEER.....	45
9.03 FURNISH DATA	45
9.04 PAY WHEN DUE	45
9.05 LANDS AND EASEMENTS; REPORTS, TESTS, AND DRAWINGS	45
9.06 INSURANCE.....	46
9.07 CHANGE ORDERS	46
9.08 INSPECTIONS, TESTS, AND APPROVALS	46
9.09 LIMITATIONS ON OWNER’S RESPONSIBILITIES.....	46
9.10 UNDISCLOSED HAZARDOUS ENVIRONMENTAL CONDITION.....	46
9.11 EVIDENCE OF FINANCIAL ARRANGEMENTS	46
9.12 SAFETY PROGRAMS	46
ARTICLE 10 — ENGINEER’S STATUS DURING CONSTRUCTION.....	46
10.01 OWNER’S REPRESENTATIVE	46
10.02 VISITS TO SITE	46
10.03 RESIDENT PROJECT REPRESENTATIVE	47
10.04 ENGINEER’S AUTHORITY	47
10.05 DETERMINATIONS FOR UNIT PRICE WORK	47
10.06 DECISIONS ON REQUIREMENTS OF CONTRACT DOCUMENTS AND ACCEPTABILITY OF WORK	47
10.07 LIMITATIONS ON ENGINEER’S AUTHORITY AND RESPONSIBILITIES	48
10.08 COMPLIANCE WITH SAFETY PROGRAM.....	48

ARTICLE 11 — CHANGES TO THE CONTRACT	48
11.01 AMENDING AND SUPPLEMENTING THE CONTRACT	48
11.02 CHANGE ORDERS	49
11.03 WORK CHANGE DIRECTIVES	49
11.04 FIELD ORDERS	49
11.05 OWNER-AUTHORIZED CHANGES IN THE WORK.....	50
11.06 UNAUTHORIZED CHANGES IN THE WORK	50
11.07 CHANGE OF CONTRACT PRICE.....	50
11.08 CHANGE OF CONTRACT TIMES	51
11.09 CHANGE PROPOSALS	51
11.10 NOTIFICATION TO SURETY	53
ARTICLE 12 — CLAIMS	53
12.01 CLAIMS	53
ARTICLE 13 — COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK	54
13.01 COST OF THE WORK.....	54
13.02 ALLOWANCES.....	57
13.03 UNIT PRICE WORK	58
ARTICLE 14 — TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK	59
14.01 ACCESS TO WORK.....	59
14.02 TESTS, INSPECTIONS, AND APPROVALS	59
14.03 DEFECTIVE WORK.....	60
14.04 ACCEPTANCE OF DEFECTIVE WORK.....	60
14.05 UNCOVERING WORK	61
14.06 OWNER MAY STOP THE WORK.....	61
14.07 OWNER MAY CORRECT DEFECTIVE WORK	61
ARTICLE 15 — PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD	62
15.01 PROGRESS PAYMENTS	62
15.02 CONTRACTOR'S WARRANTY OF TITLE.....	65
15.03 SUBSTANTIAL COMPLETION.....	65
15.04 PARTIAL USE OR OCCUPANCY.....	66
15.05 FINAL INSPECTION.....	66
15.06 FINAL PAYMENT	66
15.07 WAIVER OF CLAIMS	68
15.08 CORRECTION PERIOD	68
ARTICLE 16 — SUSPENSION OF WORK AND TERMINATION.....	69
16.01 OWNER MAY SUSPEND WORK	69
16.02 OWNER MAY TERMINATE FOR CAUSE	69
16.03 OWNER MAY TERMINATE FOR CONVENIENCE.....	70
16.04 CONTRACTOR MAY STOP WORK OR TERMINATE.....	70
ARTICLE 17 — FINAL RESOLUTION OF DISPUTES.....	71
17.01 METHODS AND PROCEDURES	71

ARTICLE 18 — MISCELLANEOUS	71
18.01 GIVING NOTICE.....	71
18.02 COMPUTATION OF TIMES.....	71
18.03 CUMULATIVE REMEDIES	72
18.04 LIMITATION OF DAMAGES	72
18.05 NO WAIVER	72
18.06 SURVIVAL OF OBLIGATIONS	72
18.07 CONTROLLING LAW	72
18.08 ASSIGNMENT OF CONTRACT.....	72
18.09 SUCCESSORS AND ASSIGNS.....	72
18.10 HEADINGS.....	73

DOCUMENT 00_72_00

GENERAL CONDITIONS

ARTICLE 1 — DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
 13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
 14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 15. *Contract Times*—The number of days or the dates by which Contractor shall:
 - (a) achieve Milestones, if any;
 - (b) achieve Substantial Completion; and
 - (c) complete the Work.
 16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
 17. *Cost of the Work*—See Paragraph 13.01 for definition.
 18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
 20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow:
 - (a) the transmission or communication of Electronic Documents;
 - (b) the documentation of transmissions, including sending and receipt;
 - (c) printing of the transmitted Electronic Document by the recipient;
 - (d) the storage and archiving of the Electronic Document by sender and recipient; and
 - (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.
 22. *Engineer*—The individual or entity named as such in the Agreement.
 23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.
43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
 - a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

- b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or

any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

- C. *Day*: The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective*: The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 - 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 - 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 - 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 — PRELIMINARY MATTERS

2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by

Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

- C. *Evidence of Owner's Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 Copies of Documents

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed *counterpart* of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 Before Starting Construction

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 Preconstruction Conference; Designation of Authorized Representatives

- A. Before any *Work* at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 Acceptance of Schedules

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 Electronic Transmittals

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3 — CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 Intent

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 Reference Standards

A. *Standards Specifications, Codes, Laws and Regulations*

- 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
- 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 Reporting and Resolving Discrepancies

A. *Reporting Discrepancies*

- 1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
- 2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code,

or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 Requirements of the Contract Documents

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 Reuse of Documents

- A. Contractor and its Subcontractors and Suppliers shall not:
 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or

- copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 — COMMENCEMENT AND PROGRESS OF THE WORK

4.01 Commencement of Contract Times; Notice to Proceed

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 Starting the Work

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 Reference Points

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 Progress Schedule

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 Delays in Contractor's Progress

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.
- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
 - 1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 - 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 - 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
 - 1. The circumstances that form the basis for the requested adjustment;
 - 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 - 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5 — SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 Availability of Lands

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 Use of Site and Other Areas

- A. *Limitation on Use of Site and Other Areas*
 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries

result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 Subsurface and Physical Conditions

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
 2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
 3. Technical Data contained in such reports and drawings.
- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of

Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.
- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 Differing Subsurface or Physical Conditions

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in

question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
 - 1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
 - 2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
 - 3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 - 4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding

Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 Underground Facilities

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;
 3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

- E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
 2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 Hazardous Environmental Conditions at Site

- A. *Reports and Drawings*: The Supplementary Conditions identify:
1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
 2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers,

directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or

Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 — BONDS AND INSURANCE

6.01 Performance, Payment, and Other Bonds

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a

prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 Insurance—General Provisions

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.
- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may

impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.
- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 Contractor's Insurance

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
 - 5. include all necessary endorsements to support the stated requirements.

- C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);
 4. not seek contribution from insurance maintained by the additional insured; and
 5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 Builder's Risk and Other Property Insurance

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible

for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 Property Losses; Subrogation

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.
 - 1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 - 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
 - 1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the

Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 Receipt and Application of Property Insurance Proceeds

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7 — CONTRACTOR'S RESPONSIBILITIES

7.01 Contractor's Means And Methods Of Construction

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 Supervision and Superintendence

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 Labor; Working Hours

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.
- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 Services, Materials, and Equipment

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 "Or Equals"

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below:

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an “or equal” item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
 - b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor’s Expense:* Contractor shall provide all data in support of any proposed “or equal” item at Contractor’s expense.
- C. *Engineer’s Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each “or-equal” request. Engineer may require Contractor to furnish additional data about the proposed “or-equal” item. Engineer will be the sole judge of acceptability. No “or-equal” item will be ordered, furnished, installed, or utilized until Engineer’s review is complete and Engineer determines that the proposed item is an “or-equal,” which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer’s Determination:* Neither approval nor denial of an “or-equal” request will result in any change in Contract Price. The Engineer’s denial of an “or-equal” request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an “or-equal” item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. *Contractor’s Request; Governing Criteria:* Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

- D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 Concerning Subcontractors and Suppliers

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement;

and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 Patent Fees and Royalties

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not

limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 Permits

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 Taxes

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 Laws and Regulations

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 Record Documents

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 Safety and Protection

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 Hazard Communication Programs

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 Emergencies

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 Submittals

- A. *Shop Drawing and Sample Requirements*
 - 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

- c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.
 3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
 1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
 1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such

variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
 - 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
 - F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.
- 7.17 Contractor's General Warranty and Guarantee
- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
 - B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 - 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 - 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
 - C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
 - D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
 - 1. Observations by Engineer;
 - 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. Use or occupancy of the Work or any part thereof by Owner;
 - 5. Any review and approval of a Shop Drawing or Sample submittal;
 - 6. The issuance of a notice of acceptability by Engineer;
 - 7. The end of the correction period established in Paragraph 15.08;
 - 8. Any inspection, test, or approval by others; or
 - 9. Any correction of defective Work by Owner.

- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 Indemnification

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 Delegation of Professional Design Services

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8 — OTHER WORK AT THE SITE

8.01 Other Work

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of

Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 Coordination

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 Legal Relationships

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner,

then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 — OWNER'S RESPONSIBILITIES

9.01 Communications to Contractor

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 Replacement of Engineer

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 Furnish Data

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 Pay When Due

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 Lands and Easements; Reports, Tests, and Drawings

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
 - C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 9.06 Insurance
- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.
- 9.07 Change Orderspg
- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.
- 9.08 Inspections, Tests, and Approvals
- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.
- 9.09 Limitations on Owner's Responsibilities
- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- 9.10 Undisclosed Hazardous Environmental Condition
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.
- 9.11 Evidence of Financial Arrangements
- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).
- 9.12 Safety Programs
- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
 - B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 — ENGINEER'S STATUS DURING CONSTRUCTION

10.01 Owner's Representative

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 Visits to Site

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced

and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 Resident Project Representative

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 Engineer's Authority

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.
- E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 Determinations for Unit Price Work

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 Decisions on Requirements of Contract Documents and Acceptability of Work

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will

not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 Limitations on Engineer's Authority and Responsibilities

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.
- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 Compliance with Safety Program

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11 — CHANGES TO THE CONTRACT

11.01 Amending and Supplementing the Contract

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's

recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 Work Change Directives

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.
- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 Field Orders

- A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will

be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 Owner-Authorized Changes in the Work

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 Unauthorized Changes in the Work

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 Change of Contract Price

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
 - 1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 - 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 - 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
 2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 Change of Contract Times

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 Change Proposals

- A. *Purpose and Content*: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or

relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. Change Proposal Procedures

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

- C. Resolution of Certain Change Proposals**: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice

will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 Notification to Surety

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 — CLAIMS

12.01 Claims

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 — COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 Cost of the Work

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees

include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.
 - c. *Construction Equipment Rental*
 - 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and

removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.

- 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.
 - g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:
1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by

Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.
3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
6. Expenses incurred in preparing and advancing Claims.
7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. Contractor's Fee

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. Documentation and Audit:** Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

- A.** It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be

performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

- B. *Cash Allowances*: Contractor agrees that:
 - 1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.
- E. *Adjustments in Unit Price*
 - 1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
 - 2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to

perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14 — TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 Access to Work

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 Tests, Inspections, and Approvals

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 Defective Work

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 Acceptance of Defective Work

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 Uncovering Work

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 Owner May Stop the Work

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 — PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 - 3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 - 4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications*
 - 1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend

- payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
 3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
 4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
 5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
 6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

- e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

- 1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
- 2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies

- the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 Contractor's Warranty of Title

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 Substantial Completion

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases

Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 Partial Use or Occupancy

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
 2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 Final Inspection

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 Final Payment

- A. *Application for Payment*
 1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided

- in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
 3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is

entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 Waiver of Claims

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 Correction Period

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 — SUSPENSION OF WORK AND TERMINATION

16.01 Owner May Suspend Work

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 Owner May Terminate for Cause

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment

stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 Owner May Terminate for Convenience

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 Contractor May Stop Work or Terminate

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally

determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 — FINAL RESOLUTION OF DISPUTES

17.01 Methods and Procedures

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 2. agree with the other party to submit the dispute to another dispute resolution process; or
 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 — MISCELLANEOUS

18.01 Giving Notice

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 Computation of Times

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 Cumulative Remedies

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 Limitation of Damages

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 No Waiver

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 Survival of Obligations

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 Controlling Law

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 Assignment of Contract

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 Successors and Assigns

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 Headings

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

END OF DOCUMENT

This document is a MODIFIED version of EJCDC® C-800, Copyright© 2018 by the National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers, or is based in part on excerpts from copyrighted EJCDC documents. All rights reserved. Those portions of the text that originated in copyrighted EJCDC documents remain subject to the copyright.

DOCUMENT 00_73_00
SUPPLEMENTARY CONDITIONS
TABLE OF CONTENTS

	PAGE
ARTICLE 1 — DEFINITIONS AND TERMINOLOGY.....	2
ARTICLE 2 — PRELIMINARY MATTERS	2
ARTICLE 3 — CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE	8
ARTICLE 4 — COMMENCEMENT AND PROGRESS OF THE WORK	8
ARTICLE 5 — SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS.....	8
ARTICLE 6 — BONDS AND INSURANCE	9
ARTICLE 7 — CONTRACTOR’S RESPONSIBILITIES.....	14
ARTICLE 8 — OTHER WORK AT THE SITE (NOT USED)	17
ARTICLE 9 — OWNER’S RESPONSIBILITIES	17
ARTICLE 10 — ENGINEER’S STATUS DURING CONSTRUCTION.....	17
ARTICLE 11 — CHANGES TO THE CONTRACT	19
ARTICLE 12 — CLAIMS	20
ARTICLE 13 — COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK	24
ARTICLE 14 — TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK (NOT USED).....	25
ARTICLE 15 — PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD	25
ARTICLE 16 — SUSPENSION OF WORK AND TERMINATION (NOT USED).....	27
ARTICLE 17 — FINAL RESOLUTION OF DISPUTES.....	27
ARTICLE 18 — MISCELLANEOUS	29

These Supplementary Conditions amend or supplement Document 00_72_00 - General Conditions. The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, "Paragraph SC-4.05."

ARTICLE 1 — DEFINITIONS AND TERMINOLOGY

1.01 Defined Terms

SC-1.01 Add to Paragraph 1.01.A by inserting the following as new numbered items in their proper alphabetical positions:

Construction Manager—Person or entity designated by the Owner to provide construction management services for the Project with duties, responsibilities, and limitations of the Engineer, unless stipulated otherwise. The authorized representative of Owner who may be assigned to the Site or any part thereof. The individual or entity will be responsible for administration of the Contract as a representative of the Owner. Owner will designate a Construction Manager to provide construction management services with duties, responsibilities, and limitations therein as required by Contract.

Final Completion—The Work is complete when it is ready for final payment as established by the Engineer's written recommendation of final payment as set forth in Paragraph 15.06.

Installation Contractor—Same as Contractor. Responsible for installation of Owner Furnished and/or Assigned equipment. Responsible for the scope of supply not provided by the equipment supplier.

"Or Equal"—Alternate product that does not affect Contract Time, Contract Price, or Contract Scope.

Procurement Vendor—The corporation, company, partnership, firm, or individual who has entered into a contract with Owner outside the scope of these Contract Documents, to furnish materials and equipment for this Project.

Substitution—Alternate product that requires a Change Order to adjust the Contract Time, Contract Price, or Contract Scope.

Technical Sections—Project specifications in CSI MasterFormat® Division 02 and higher.

ARTICLE 2 — PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

SC-2.01 Delete Paragraphs 2.01.B. and C. in their entirety and insert the following in their place:

- B. Evidence of Contractor's Insurance: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies (including all endorsements, and identification of applicable self-insured retentions and deductibles) of insurance required to be provided by

Contractor in this Contract. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

- C. Evidence of Owner's Insurance: After receipt from Contractor of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor copies of the policies of insurance to be provided by Owner in this Contract (if any). Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

2.01 Copies of Documents

SC-2.02 Delete Paragraph 2.02.A in its entirety and insert the following in its place:

- A. Owner shall furnish to Contractor two printed copies of conformed documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract (including 1 fully signed counterpart of the Agreement), and 1 copy in electronic portable document format (PDF). Additional printed copies of the conformed documents will be furnished upon request at the cost of reproduction.

2.06 Electronic Transmittals

SC-2.06 Delete Paragraphs 2.06.B and 2.06.C in their entirety and insert the following in their place:

- B. Electronic Documents Protocol: The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol ("EDP" or "Protocol") for exchange of electronic transmittals.
 - 1. Basic Requirements:
 - a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.
 - b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.
 - c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.
 - d. Except as otherwise explicitly stated in this Document, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.

- e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party's use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.
 - f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of General Conditions, Paragraph 18.01.
2. System Infrastructure for Electronic Document Exchange:
- a. Each party will provide hardware, operating system(s) software, internet, email, and large file transfer functions ("System Infrastructure") at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.
 - 1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is 15 MB. Attachments larger than that may be exchanged using large file transfer functions or physical media.
 - 2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.
 - b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for maintaining operations of its System Infrastructure during the Project, including coordination with the party's individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.
 - c. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, Trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.
 - d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent. If the changes cause additional cost or

time to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in price or time under the appropriate process in the Contract.

- e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, unless this EDP establishes a Project document archive, either as part of a mandatory Project website or other communications protocol, upon which the parties may rely for document archiving during the specified term of operation of such Project document archive. Further, each party remains solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract, or after termination of the Project document archive, if one is established, for as long as required by the Contract and as each party deems necessary for its own purposes.
 - f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.
 - g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.
 - h. The Owner will operate a Project information management system (also referred to in this EDP as "Project Website") for use of Owner, Engineer and Contractor during the Project for exchange and storage of Project-related communications and information. Except as otherwise provided in this EDP or the General Conditions, use of the Project Website by the parties as described in this Paragraph will be mandatory for exchange of Project documents, communications, submittals, and other Project-related information. The following conditions and standards will govern use of the Project Website:
 - 1) Describe the period of time during which the Project Website will be operated and be available for reliance by the parties;
 - 2) Provide any minimum system infrastructure, software licensing and security standards for access to and use of the Project Website;
 - 3) Describe the types and extent of services to be provided at the Project Website (such as large file transfer, email, communication, and document archives, etc.); and
 - 4) Include any other Project Website attributes that may be pertinent to Contractor's use of the facility and pricing of such use.
- C. Software Requirements for Electronic Document Exchange; Limitations:
- 1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the software formats required in this Section of the EDP.
 - a. Prior to using any updated version of the software required in this Section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.

2. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.
3. Software and data formats for exchange of Electronic Documents will conform to the requirements set forth in Table 1, including software versions, if listed.

Table 1. Software Requirements for Electronic Document Exchange

Item	Electronic Documents	Transmittal Means	Data Format	Note ⁽¹⁾
a.1	General communications, transmittal covers, meeting notices and responses to general information requests for which there is no specific prescribed form.	CM platform to be determined	CM platform to be determined	
a.2	Meeting agendas, meeting minutes, RFI's and responses to RFI's, and Contract forms.	CM platform to be determined	PDF	(2)
a.3	Contactors Submittals (Shop Drawings, "or equal" requests, substitution requests, documentation accompanying Sample submittals and other submittals) to Owner and Engineer, and Owner's and Engineer's responses to Contractor's Submittals, Shop Drawings, correspondence, and Applications for Payment.	CM platform to be determined	PDF	
a.4	Correspondence; milestone and final version Submittals of reports, layouts, Drawings, maps, calculations and spreadsheets, Specifications, Drawings and other Submittals from Contractor to Owner or Engineer and for responses from Engineer and Owner to Contractor regarding Submittals.	CM platform to be determined	PDF	
a.5	Layouts and drawings to be submitted to Owner for future use and modification.	CM platform to be determined	DWG	
a.6	Correspondence, reports, and Specifications to be submitted to Owner for future word processing use and modification.	CM platform to be determined	DOC	
a.7	Spreadsheets and data to be submitted to Owner for future data processing use and modification.	CM platform to be determined	EXC	
a.8	Database files and data to be submitted to Owner for future data processing use and modification.	CM platform to be determined	DB	

Notes:

(1) All exchanges and uses of transmitted data are subject to the appropriate provisions of Contract Documents.

(2) Transmittal of written notices is governed by General Conditions, Paragraph 18.01.

Item	Electronic Documents	Transmittal Means	Data Format	Note ⁽¹⁾
<p><u>Key:</u></p> <p>DB Microsoft® Access .mdb format, Version 2019 or later</p> <p>DOC Microsoft® Word .docx format, Version 2019 or later</p> <p>DWG Autodesk® AutoCAD .dwg format, AutoCAD 2023 or later</p> <p>Email Standard Email formats (.htm, .rtf, or .txt). Do not use stationery formatting or other features that impair legibility of content on screen or in printed copies</p> <p>EXC Microsoft® Excel .xls or .xml format, Version 2019 or later</p> <p>LFE Agreed upon Large File Exchange method (FTP, CD, DVD, hard drive)</p> <p>PDF Portable Document Format readable by Adobe® Acrobat Reader</p>				

SC-2.06 Add the following new paragraph immediately after Paragraph 2.06.C:

- D. Requests by Contractor for Electronic Documents in Other Formats:
1. Release of any Electronic Document versions of the Project documents in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be at the sole discretion of the Owner.
 2. To extent determined by Owner, in its sole discretion, to be prudent and necessary, release of Electronic Documents versions of Project documents and other Project information requested by Contractor (“Request”) in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be subject to the provisions of the Owner’s response to the Request, and to the following conditions to which Contractor agrees:
 - a. The content included in the Electronic Documents created by Engineer and covered by the Request was prepared by Engineer as an internal working document for Engineer’s purposes solely and is being provided to Contractor on an “AS IS” basis without any warranties of any kind, including, but not limited to any implied warranties of fitness for any purpose. As such, Contractor is advised and acknowledges that the content may not be suitable for Contractor’s application or may require substantial modification and independent verification by Contractor. The content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other devices that may affect subsequent reuse.
 - b. Electronic Documents containing text, graphics, metadata, or other types of data that are provided by Engineer to Contractor under the request are only for convenience of Contractor. Any conclusion or information obtained or derived from such data will be at the Contractor’s sole risk and the Contractor waives any claims against Engineer or Owner arising from use of data in Electronic Documents covered by the Request.
 - c. Contractor shall indemnify and hold harmless Owner and Engineer and their subconsultants from all claims, damages, losses, and expenses, including attorneys’ fees and defense costs arising out of or resulting from Contractor’s use, adaptation, or distribution of any Electronic Documents provided under the Request.
 - d. Contractor agrees not to sell, copy, transfer, forward, give away or otherwise distribute this information (in source or modified file format) to any third party without the direct written authorization of Engineer, unless such distribution is specifically identified in the Request and is limited to

Contractor's subcontractors. Contractor warrants that subsequent use by Contractor's subcontractors complies with all terms of the Contract Documents and Owner's response to Request.

ARTICLE 3 — CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 Intent

SC-3.01 Add the following new subparagraph after Paragraph 3.01.A:

1. Requirements stated in the following CSI MasterFormat® divisions apply to the Technical Sections.
 - a. Division 00 - Procurement and Contracting Requirements, from Document 00_50_00 and higher.
 - b. Division 01 - General Requirements.

ARTICLE 4 — COMMENCEMENT AND PROGRESS OF THE WORK

4.05 Delays in Contractor's Progress

SC-4.05 Add the following new subparagraph after Paragraph 4.05.C.4:

5. Weather-Related Delays:
 - a. Determination of actual bad weather days during performance of the Work will be based on the weather records measured and recorded by KSFO weather monitoring station at San Francisco International Airport.
 - b. The existence of abnormal weather conditions will not relieve Contractor of the obligation to demonstrate and document that delays caused by abnormal weather are specific to the planned work activities or that such activities thus delayed were on Contractor's then-current Progress Schedule's critical path for the Project.

ARTICLE 5 — SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 Availability of Lands

SC-5.01 Add the following language at the end of the last sentence of Paragraph 5.01.A:

Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may request an amendment to the Contract Documents as provided in Article 11.

SC-5.01 Add the following new paragraph immediately after Paragraph 5.01.C:

- D. Any Work performed in public rights-of-way, in addition to conforming to the Contract Documents, shall be done in accordance with the requirements of the permit issued by the public agency in whose right-of-way the Work is located.

5.05 Underground Facilities

SC-5.05 Delete Paragraph 5.05.F.4 in its entirety and insert the following in its place:

4. The information and data shown or indicated on the Drawings listed in the following table with respect to existing Underground Facilities at the Site is

based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with industry best practices. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph.

Drawings Title	Date of Drawings
C01 – Yard Piping Plan	March 2024

5.06 Hazardous Environmental Conditions at Site

SC-5.06 Add the following new paragraphs immediately after Paragraph 5.06.A.3:

- The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site and are provided as supplemental information and contain no Technical Data. These are not Contract Documents:

Report Title	Date of Report
None	

- The following table lists the drawings known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, are provided as supplemental information and contain no Technical Data. These are not Contract Documents:

Drawings Title	Date of Drawings
None	

ARTICLE 6 — BONDS AND INSURANCE

6.01 Performance, Payment, and Other Bonds

SC-6.01 Add the following new paragraphs immediately after Paragraph 6.01.A:

- Required Performance Bond Form: The performance bond that Contractor furnishes will be in the form of Document 00_61_10 - Performance Bond.
- Required Payment Bond Form: The payment bond that Contractor furnishes will be in the form of Document 00_61_15 - Payment Bond.

6.02 Insurance—General Provisions

SC-6.02 Add the following new paragraph immediately after Paragraph 6.02.B:

- Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the Project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.

SC-6.02 Add the following new paragraph immediately after Paragraph 6.02.B:

6.03 Contractor's Insurance

SC-6.03 Add the following new paragraphs immediately after Paragraph 6.03.C.5:

- D. Other Additional Insureds: As a supplement to the provisions of General Conditions, Paragraph 6.03.C, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds (in addition to Owner and Engineer) the following: Construction Manager.
- E. Workers' Compensation and Employer's Liability: Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions). Contractor shall maintain Workers' Compensation Insurance and Employer's Liability Insurance with limits of at least one million dollars (\$1,000,000). Contractor shall submit to City, along with the certificate of insurance, a waiver of subrogation endorsement in favor of City, its officers, agents, employees, and volunteers.

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory

- F. Commercial General Liability—Claims Covered: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:
1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
 2. damages insured by reasonably available personal injury liability coverage, and
 3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- G. Commercial General Liability—Form and Content: Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage.
 - a. Such insurance must be maintained for 3 years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and 3 years thereafter.
 2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
 4. Underground, explosion, and collapse coverage.
 5. Personal injury coverage.
 6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to

Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.

7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 “Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured” or its equivalent.

H. Commercial General Liability—Excluded Content: The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of “insured contract” (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured’s vicarious liability, strict liability, or statutory liability (other than worker’s compensation).
6. Any limitation or exclusion based on the nature of Contractor’s work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. Commercial General Liability—Minimum Policy Limits:

Commercial General Liability	Policy limits of not less than:
General Aggregate	\$10,000,000
Products—Completed Operations Aggregate	\$5,000,000
Personal and Advertising Injury	\$5,000,000
Bodily Injury and Property Damage—Each Occurrence	\$5,000,000

J. Automobile Liability: Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Bodily Injury	
Each Person	\$2,000,000
Each Accident	\$5,000,000
Property Damage	
Each Accident	\$5,000,000

- K. Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements: Contractor may meet the policy limits specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified in this Document. L. Contractor's Pollution Liability Insurance: Contractor shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance must be maintained for no less than 3 years after final completion.

Contractor's Pollution Liability	Policy limits of not less than:
Each Occurrence/Claim	\$1,000,000
General Aggregate	\$2,000,000

- M. Contractor's Professional Liability Insurance: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of 2 years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

Contractor's Professional Liability	Policy limits of not less than:
Each Claim	\$2,000,000
Annual Aggregate	\$2,000,000

6.04 Builder's Risk and Other Property Insurance

SC-6.04 Delete Paragraph 6.04.A in its entirety and insert the following in its place:

- A. Installation Floater:
1. Contractor shall provide and maintain installation floater insurance on a broad form or "all risk" policy providing coverage for materials, supplies, machinery, fixtures, and equipment that will be incorporated into the Work ("Covered Property"). Coverage under the Contractor's installation floater will include loss from covered "all risk" causes (perils) to Covered Property:
 - a. of the Contractor, and Covered Property of others that is in Contractor's care, custody, and control;
 - b. while in transit to the Site, including while at temporary storage sites;
 - c. while at the Site awaiting and during installation, erection, and testing;
 - d. continuing at least until the installation or erection of the Covered Property is completed, and the Work into which it is incorporated is accepted by Owner.
 2. The installation floater coverage cannot be contingent on an external cause or risk, or limited to property for which the Contractor is legally liable.

3. The installation floater coverage will be in an amount sufficient to protect Contractor's interest in the Covered Property. The Contractor will be solely responsible for any deductible carried under this coverage.
4. This policy will include a waiver of subrogation applicable to Owner, Contractor, Engineer, all Subcontractors, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them.

SC-6.04 Add the following new paragraphs immediately after Paragraph 6.04.E:

- F. Builder's Risk Requirements: The builder's risk insurance must:
1. be written on a builder's risk "all risk" policy form that at a minimum includes insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment stored and in transit, and must not exclude the coverage of the following risks: fire; windstorm; hail; flood; earthquake, volcanic activity, and other earth movement; lightning; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; and water damage (other than that caused by flood).
 - a. Such policy will include an exception that results in coverage for ensuing losses from physical damage or loss with respect to any defective workmanship, methods, design, or materials exclusions.
 - b. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake, volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance will be provided through other insurance policies acceptable to Owner and Contractor.
 2. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
 3. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of contractors, engineers, and architects).
 4. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier). If this coverage is subject to a sublimit, such sublimit will be a minimum of \$750,000.
 5. extend to cover damage or loss to insured property while in transit. If this coverage is subject to a sublimit, such sublimit will be a minimum of \$750,000.
 6. allow for the waiver of the insurer's subrogation rights, as set forth in this Contract.
 7. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.

8. include performance/hot testing and start-up, if applicable.
 9. be maintained in effect until the Work is complete, as set forth in Paragraph 15.06.D of the General Conditions, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first.
 10. include as named insureds the Owner, Contractor, Subcontractors (of every tier), and any other individuals or entities required by this Contract to be insured under such builder's risk policy. For purposes of Paragraphs 6.04, 6.05, and 6.06 of the General Conditions, and this and all other corresponding Supplementary Conditions, the parties required to be insured will be referred to collectively as "insureds." In addition to Owner, Contractor, and Subcontractors of every tier, include as insureds the following:
 - a. None.
 11. include, in addition to the Contract Price amount, the value of the following equipment and materials to be installed by the Contractor but furnished by the Owner or third parties:
 - a. None.
 12. If debris removal in connection with repair or replacement of insured property is subject to a coverage sublimit, such sublimit will be a minimum of \$250,000.
- G. Builder's Risk and Other Property Insurance Deductibles: The purchaser of any required builder's risk, installation floater, or other property insurance will be responsible for costs not covered because of the application of a policy deductible.

ARTICLE 7 — CONTRACTOR'S RESPONSIBILITIES

7.03 Labor; Working Hours

SC-7.03 Amend the first and second sentences of Paragraph 7.03.C to read as follows:

- C. "...all Work at the Site must be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday."

SC-7.03 Add the following new subparagraphs immediately after Paragraph 7.03.C:

1. Regular working hours will be 7 am to 5 pm.
2. Owner's legal holidays are:
New Years Day, Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Day After Thanksgiving, Christmas Eve, Christmas Day .

SC-7.03 Add the following new paragraph immediately after Paragraph 7.03.C:

- D. Owner shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for overtime Work directed by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day.
- E. Contractor shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for overtime Work caused by the Contractor's actions for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any

regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-7.03 Add the following new paragraphs immediately after Paragraph 7.03.C:

- D. In accordance with California Labor Code Section 1770, et seq., Contractor and subcontractor must submit certified payroll records (CPRs) to the Labor Commissioner.

7.05 "Or-Equals"

SC-7.05 Add the following new language at the end of 7.05.A:

In accordance with California Public Contract Code, Section 3400, the successful Bidder is permitted a period of 60 days after the award of contract for submission of data substantiating a request for a substitution of an "or equal" item.

7.07 Concerning Subcontractors, Suppliers, and Others

SC-7.07 Add the following new subparagraph immediately after 7.07.B:

- 1. Subcontracting: Contractor shall perform with Contractor's own organization work amounting to not less than 51 percent of the combined value of all items of the Work covered by the Contract.

7.09 Permits

SC-7.09 Add the following new paragraphs immediately after paragraph 7.09.A:

- B. Owner will provide the following permits:
 - 1. None.

SC-7.09 Add the following new paragraphs immediately after paragraph 7.09.A:

- B. Storm Water Pollution Prevention Plan (SWPPP).
 - 1. Contractor will provide the following information for the construction project site specific activity related to storm water:
 - a. Procedures, schedule, and area.
 - b. Drawings.
 - 2. Contractor responsibilities:
 - a. Compliance with the SWPPP.
 - b. Costs associated with complying with the SWPPP.

7.11 Laws and Regulations

SC-7.11 Add the following new paragraph immediately after Paragraph 7.11.C:

- D. Contractor's Continuing Obligation: Contractor's obligation to perform services in connection herewith will be in accordance with California Commercial Code, Section 1101 et seq.

7.14 Hazard Communication Programs

SC-7.14.B Add the following new paragraphs immediately after 7.14.A:

- B. Contractor shall promptly, and before the following conditions are disturbed, notify Owner and Engineer, in writing, of any:
 - 1. Material that Contractor believes may be material that is hazardous waste, in accordance with California Health & Safety Code, Section 25117, that is

- required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.
2. Subsurface or latent physical conditions at the site differing from those indicated in the Contract Documents.
 3. Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.
- C. Owner will promptly investigate the conditions, and where Owner finds the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contract Price, or in the Contract Time, or both, a Change Order will be issued in accordance with Document 00_72_00 - General Conditions.
- D. In the event a dispute arises as to whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contract Price, Contract Time, or both, Contractor shall not be excused from any scheduled completion date provided in the Contract Documents but shall proceed with the Work.

7.17 Contractor's General Warranty and Guarantee

SC-7.17 Delete paragraph 7.17.B. and subparagraphs in their entirety and insert the following in its place:

- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08.

7.18 Indemnification

SC-7.18 Delete Paragraph 7.18.A and 7.18.B in their entirety and insert the following in their place:

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner, Engineer, and Construction Manager and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner, Engineer, or Construction Manager or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any

such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 Delegation of Professional Design Services

SC-7.19 Add the following new subparagraph immediately after 7.19.A.

1. Where the technical specs require the Contractor to provide professional design services and to submit signed and sealed documents from a registered professional engineer, such Work is "Delegated Design".

7.20 Assignment of Procurement Vendor Contracts

SC-7.20 Add the following new paragraphs immediately after Paragraph 7.19.G:

7.20 Assignment of Procurement Vendor Contracts

- A. Following award of the general construction contract, Owner will assign all or part of the procurement vendor contract(s) to the general construction contractor as stipulated in the Agreement.
- B. Contractor's Continuing Obligation: Contractor's obligation to perform services in connection herewith will be in accordance with Contract Documents and free from defects.

ARTICLE 8 — OTHER WORK AT THE SITE (NOT USED)

ARTICLE 9 — OWNER'S RESPONSIBILITIES

9.01 Communications to Contractor

SC-9.01 Delete Paragraph 9.01.A in its entirety and insert the following in its place:

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Construction Manager.
- B. Construction Manager will establish and implement procedures including testing, reviewing and processing requests for clarifications and interpretations of the Contract Documents; Shop Drawings, samples, and other submittals; schedule adjustments; Change Order proposals; written proposals for substitutions; payment applications; and maintenance of logs.

ARTICLE 10 — ENGINEER'S STATUS DURING CONSTRUCTION

10.03 Resident Project Representative

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.B:

- C. The Resident Project Representative (RPR) will be Engineer's representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:
 1. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of minutes thereof.
 2. Safety Compliance: Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site.

3. Liaison:
 - a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's onsite operations.
 - c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.
 4. Review of Work; Defective Work:
 - a. Conduct onsite observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is, in general, proceeding in accordance with the Contract Documents.
 - b. Observe whether any Work in place appears to be defective.
 - c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection, or approval.
 5. Inspections and Tests:
 - a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.
 - b. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.
 6. Payment Requests: Review Applications for Payment with Contractor.
 7. Completion:
 - a. Participate in Engineer's visits regarding Substantial Completion.
 - b. Assist in the preparation of a punch list of items to be completed or corrected.
 - c. Participate in Engineer's visit to the Site in the company of Owner and Contractor regarding completion of the Work and prepare a final punch list of items to be completed or corrected by Contractor.
 - d. Observe whether items on the final punch list have been completed or corrected.
- D. The RPR will not:
1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
 2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
 3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.
 5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
 6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
 7. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11 — CHANGES TO THE CONTRACT

11.02 Change Orders

SC-11.02 Insert the following new subparagraphs immediately following Paragraph 11.02.A.4:

5. In signing a Change Order, the Owner and Contractor acknowledge and agree that:
 - a. the stipulated compensation (Contract Price or Contract Times, or both) set forth in the Change Order includes not only all direct costs of Contractor such as labor, material, job overhead, and profit markup, but also includes any costs for modifications or changes in sequence of work to be performed, delays, rescheduling, disruptions, extended direct overhead or general overhead, acceleration, material or other escalation which includes wages and other impact costs. This Document will become a supplement to the Contract and all Contract provisions will apply hereto. It is understood that this Change Order shall be effective on the date approved by the Owner's Representative.
 - b. the Change Order constitutes full mutual accord and satisfaction for the change to the Work;
 - c. no reservation of rights to pursue subsequent claims on the Change Order will be made by either party; and
 - d. no subsequent claim or amendment of the Contract Documents will arise out of or as a result of the Change Order.

11.08 Change of Contract Times

SC-11.08 Add the following new paragraphs immediately after Paragraph 11.08.B:

C. Use of Float:

1. A request for adjustment of Contract Times (or Milestones), otherwise allowable under the Contract Documents, shall be granted only when the time lost or gained exceeds the float for the activity at the time of the event giving rise to the claim. Float, the amount of time between the early start date and the late start date, or the early finish date and the late finish date, is jointly owned by both Owner and Contractor whether expressly disclosed or implied in any manner.
2. Contractor shall not use float suppression techniques (including, but not limited to, preferential sequencing caused by late starts of follow-up trades, unreasonably small crews, extended durations, or imposed dates) in information provided to Engineer.

D. Weather Days:

1. The Contract Time includes a weather day allowance of 10 working days. No extension in Contract Time will be allowed for the first 10 working days lost due to weather conditions.

ARTICLE 12 — CLAIMS

12.01 Claims Process

SC-12.01 Delete Paragraph 12.01 in its entirety and insert the following in its place:

12.01 Claims Process

Claims between the Owner and Contractor shall be addressed as provided by California Public Contract Code Section 9204, which is set forth in its entirety:

Legislative findings and declarations regarding timely and complete payment of contractors for public works projects; claims process:

1. The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.
2. Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this Section shall apply to any claim by a contractor in connection with a public works project.
3. For purposes of this Section:
 - a. "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:
 - i. A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.
 - ii. Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.
 - iii. Payment of an amount that is disputed by the public entity.
 - b. "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.
 - c. Public entity definition:
 - i. "Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.
 - ii. "Public entity" shall not include the following:
 - 1) The Department of Water Resources as to any project under the jurisdiction of that department.
 - 2) The Department of Transportation as to any project under the jurisdiction of that department.

- 3) The Department of Parks and Recreation as to any project under the jurisdiction of that department.
 - 4) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.
 - 5) The Military Department as to any project under the jurisdiction of that department.
 - 6) The Department of General Services as to all other projects.
 - 7) The High-Speed Rail Authority.
- d. "Public works project" means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.
 - e. "Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.
4. Claims process:
 - a. Claims review and response:
 - i. Upon receipt of a claim pursuant to this Section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.
 - ii. The claimant shall furnish reasonable documentation to support the claim.
 - iii. If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to 3 days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.
 - iv. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (iii) shall apply.
 - b. Claims dispute:
 - i. If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this Section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

- ii. Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this Section.
- iii. For purposes of this Section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this Section.
- iv. Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this Section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.
- v. This Section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this Section does not resolve the parties' dispute.
- c. Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this Section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this Section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.
- d. Amounts not paid in a timely manner as required by this Section shall bear interest at 7 percent per annum.
- e. If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on their own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to

the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

5. The text of this Section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this Section.
6. A waiver of the rights granted by this Section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this Section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this Section.
7. This Section applies to contracts entered into on or after January 1, 2017.
8. Nothing in this Section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.
9. This Section shall remain in effect only until January 1, 2027, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2027, deletes or extends that date.
10. Claims Process additional requirements:
 - a. Claims asserted by the Owner against the Contractor shall be submitted according to the procedures set forth above.
 - b. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled. Such a claim shall be submitted promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal.
 - c. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
 - d. Contractor's eligibility for time and/or extended overhead shall be determined by the Engineer in accordance with the following table:

CONTRACTOR'S ELIGIBILITY FOR TIME AND/OR EXTENDED OVERHEAD				
DELAY TYPE	NONCONCURRENT DELAY	DELAY CONCURRENT WITH		
		Nonexcusable Delay	Compensable Delay	Noncompensable
Nonexcusable	X	X	T	T
Compensable	TEO	T	TEO	T
Noncompensable	T	T	T	T
ELIGIBILITY X: No Time and No Extended Overhead T: Time EO: Extended Overhead				

e. Mediation:

- i. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision.

11. Claims of \$375,000 or less shall be resolved in accordance with California Public Contract Code Section 20104 et seq., unless Owner elects to resolve the dispute in accordance with California Public Contract Code Section 10240 et seq.

ARTICLE 13 — COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 Cost of the Work

SC-13.01 Adding the following new language at the end of Paragraph 13.01.B.5.c.2):

The equipment rental rate book that governs the included costs for the rental of machinery and equipment owned by Contractor (or a related entity) under the Cost of the Work provisions of this Contract is the most current edition of Rental Rate Blue Book for Construction Equipment.

SC-13.01 Adding the following new language at the end of Paragraph 13.01.C.2:

- a. Costs will include the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, shall cease to accrue when the use thereof is no longer necessary for the changed Work. For purposes of this paragraph, "small tools and hand tools" means any tool or equipment whose current price if it were purchased new at retail would be less than \$500.

13.03 Unit Price Work

SC-13.03 Delete Paragraph 13.03.E in its entirety and insert the following in its place:

E. Adjustments in Unit Price:

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

- a. the extended price of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than 20 percent from the estimated quantity of such item indicated in the Agreement; and
- b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
- c. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
- d. Adjusted unit prices will apply to all units of that item.

ARTICLE 14 — TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK (NOT USED)

ARTICLE 15 — PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

15.01 Progress Payments

SC-15.01 Delete Paragraph 15.01.B.1 in its entirety and insert the following in its place:

1. At least 30 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - a. Payments for stored materials and equipment shall be based only upon the actual cost of the materials and equipment to Contractor and shall not include any overhead or profit to Contractor. Partial payments will not be made for undelivered materials or equipment, except for payments associated with prepurchase vendor contracts initiated by Owner and assigned to Contractor.

SC-15.01 Delete Paragraph 15.01.C.1 in its entirety and insert the following in its place:

1. Engineer will, within 7 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. In accordance with California Public Contract Code, Section 20104.50, Owner will make progress payments on the basis of Contractor's Applications for Payment within 30 days after receipt, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract.

SC-15.01 Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:

1. 30 days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

SC-15.01 Add the following new paragraph immediately after Paragraph 15.01.D.1:

2. Contractor shall pay any subcontractor their prorated share of the payment for all undisputed services within 7 days after receipt of each progress payment, in accordance with California Business and Professions Code, Section 7108.5.

15.03 Substantial Completion

SC-15.03 Add the following new subparagraphs immediately after Paragraph 15.03.A:

1. The Work shall be Substantially Complete when the Work can treat wastewater to required quality and transmit water in the quantity in accordance with the Contract Documents. All process and transmission equipment shall be installed and operational, or temporary arrangements satisfactory to Owner shall have been made. Operational testing must be completed prior to the date of Substantial Completion.
2. To be considered substantially complete, the following portions of the Work must be operational and ready for Owner's continuous use as intended:
 - a. UV disinfection system.
3. Portions of the Work not essential to plant operation, which can be completed without interruption of plant operation, may be completed after the Work is accepted as Substantially Complete, and may include the following items:
 - a. Exterior coatings.
 - b. Pipe labeling.
 - c. Equipment tagging.

SC-15.03 Add the following new subparagraph immediately after Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

15.05 Final Inspection

SC-15.05 Add the following new paragraph immediately after Paragraph 15.05.A:

1. If some or all of the Work has been determined not to be at a point of Final Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

15.08 Correction Period

SC-15.08 Delete Paragraph 15.08.B. in its entirety.

SC-15.08 Delete Paragraph 15.08.C. in its entirety and insert the following in its place:

- B. If, after receipt of a notice of defect Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

15.08 SUSPENSION OF WORK AND TERMINATION (NOT USED)

ARTICLE 16 — SUSPENSION OF WORK AND TERMINATION (NOT USED)

ARTICLE 17 — FINAL RESOLUTION OF DISPUTES

SC-17.01 Methods and Procedures

SC-17.01 Add the following new subparagraph immediately after Paragraph 17.01.B.3:

4. Resolve claims of \$375,000 or less in accordance with California Public Contract Code, Section 20104 et seq., unless Owner elects to resolve the dispute in accordance with California Public Contract Code Section 10240 et seq.

17.02 Arbitration

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

17.02 Arbitration

- A. All matters subject to final resolution under this Article will be settled by arbitration administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules (subject to the conditions and limitations of this Paragraph SC-17.02). Any controversy or claim in the amount of \$100,000 or less will be settled in accordance with the American Arbitration Association's supplemental rules for Fixed Time and Cost Construction Arbitration. This agreement to arbitrate will be specifically enforceable under the prevailing law of any court having jurisdiction.
- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitration administrator, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in Article 17, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event will any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations.
- C. The arbitrator(s) must be licensed engineers, contractors, attorneys, or construction managers. Hearings will take place pursuant to the standard procedures of the Construction Arbitration Rules that contemplate in-person hearings. The arbitrators will have no authority to award punitive or other damages not measured by the prevailing party's actual damages, except as may be required by statute or the

Contract. Any award in an arbitration initiated under this clause will be limited to monetary damages and include no injunction or direction to any party other than the direction to pay a monetary amount.

- D. The Arbitrators will have the authority to allocate the costs of the arbitration process among the parties but will only have the authority to allocate attorneys' fees if a specific Law or Regulation or this Contract permits them to do so.
- E. The award of the arbitrators must be accompanied by a reasoned written opinion and a concise breakdown of the award. The written opinion will cite the Contract provisions deemed applicable and relied on in making the award.
- F. The parties agree that failure or refusal of a party to pay its required share of the deposits for arbitrator compensation or administrative charges will constitute a waiver by that party to present evidence or cross-examine witnesses. In such event, the other party shall be required to present evidence and legal argument as the arbitrator(s) may require for the making of an award. Such waiver will not allow for a default judgment against the non-paying party in the absence of evidence presented as provided for above.
- G. No arbitration arising out of or relating to the Contract will include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
 - 1. the inclusion of such other individual or entity will allow complete relief to be afforded among those who are already parties to the arbitration; such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration and which will arise in such proceedings; such other individual or entity is subject to arbitration under a contract with either Owner or Contractor, or consents to being joined in the arbitration; and the consolidation or joinder is in compliance with the arbitration administrator's procedural rules.
 - 2. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
 - 3. Except as may be required by Laws or Regulations, neither party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both parties, with the exception of any disclosure required by Laws and Regulations or the Contract. To the extent any disclosure is allowed pursuant to the exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

17.02 Attorneys' Fees

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

17.02 Attorneys' Fees

- A. For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys' fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties' initial demand or defense positions in comparison with the final result.

ARTICLE 18 — MISCELLANEOUS

18.08 Assignment of Contract

SC-18.11 Add the following new paragraphs immediately after Paragraph 18.10:

18.11 California Registration

- A. The Contractor and subcontractors must provide proof of registration with California Department of Industrial Relations (Cal. DIR) in the form of a PDF extract from Cal. DIR Public Works Registration website.
- B. In accordance with California Labor Code Section 1771.4, the project is subject to compliance monitoring and enforcement by the Cal. DIR.

SC-18.11 Add the following new paragraphs immediately after Paragraph 18.10:

18.11 Wages and Labor

- B. The Contractor shall submit copies of any or all payrolls not more than 14 days after the end of each pay period.

END OF DOCUMENT

DOCUMENT 00_94_20
WORK CHANGE DIRECTIVE

Owner: _____ Owner's Project No.: _____
Engineer: _____ Engineer's Project No.: _____
Contractor: _____ Contractor's Project No.: _____
Project: _____
Contract Name: _____

Date Issued: _____ Effective Date of Work Change Directive: _____

Contractor is directed to proceed promptly with the following change(s):

Description:

Attachments:

Purpose for the Work Change Directive:

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to:

Notes to User—(Check one or both of the following)

Non-agreement on pricing of proposed change. Necessity to proceed for schedule or other reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price: \$ _____ increase / decrease / not yet estimated

Contract Time: _____ days Increase / decrease / not yet estimated

Basis of estimated change in Contract Price:

Lump Sum Unit Price Cost of the Work Other

Recommended by Engineer	Authorized by Owner
By: _____	_____
Title: _____	_____
Date: _____	_____

END OF DOCUMENT

This document is a MODIFIED version of EJCDC® C-941, Copyright© 2018 by the National Society of Professional Engineers, American Council of Engineering Companies, and American Society of Civil Engineers, or is based in part on excerpts from copyrighted EJCDC documents. All rights reserved. Those portions of the text that originated in copyrighted EJCDC documents remain subject to the copyright.

DOCUMENT 00_94_21

CHANGE ORDER

Owner: _____ Owner's Project #: _____
 Engineer: _____ Engineer's Project #: _____
 Contractor: _____ Contractor's Project #: _____
 Project: _____
 Contract Name: _____

Date Issued: _____ Effective Date of Change Order: _____

The Contract is modified as follows upon execution of this Change Order:

Description:

Attachments:

In signing a Change Order, the Owner and Contractor acknowledge and agree that:

1. The Change Order constitutes full mutual accord and satisfaction for the change to the Work. The stipulated compensation (Contract Price or Contract Times, or both) set forth in the Change Order includes not only all direct costs of Contractor such as labor, material, job overhead, and profit markup, but also includes any costs for modifications or changes in sequence of work to be performed, delays rescheduling, disruptions, extended direct overhead or general overhead, acceleration, material, or other escalation which includes wages and other impact costs.
2. This Change Order will become a supplement to the Contract and all Contract provisions will apply hereto.
3. It is understood that this Change Order shall be effective on the date the Owner authorizes the Change Order by their signature.
4. No reservation of rights to pursue subsequent claims on the Change Order will be made by either party.
5. No subsequent claim or amendment of the Contract Documents will arise out of or as a result of the Change Order.

Change in Contract Price	Change in Contract Times (State Contract Times as either a specific date or a number of days)
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: Ready for final payment: _____

Increase / Decrease from previously approved Change Orders No. 1 to No. ____: \$ _____	Increase / Decrease from previously approved Change Orders No. 1 to No. ____: Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
Increase / Decrease this Change Order: \$ _____	Increase / Decrease this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

Recommended by Engineer
(if required)

Authorized by Owner

By: _____
Title: _____
Date: _____

Authorized by Contractor

Approved by Funding Agency
(if applicable)

By: _____
Title: _____
Date: _____

END OF DOCUMENT

DOCUMENT 00_94_22

FIELD ORDER

Owner: _____ Owner's Project #: _____
Engineer: _____ Engineer's Project #: _____
Contractor: _____ Contractor's Project #: _____
Project: _____
Contract Name: _____
Date Issued: _____ Effective Date of Field Order: _____

Contractor is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with the General Conditions, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

Specification Section(s): _____
Drawing(s) / Details (s): _____

Description:

Attachments:

Issued by Engineer

By: _____
Title: _____
Date: _____

END OF DOCUMENT

SECTION 01_11_00
SUMMARY OF WORK

PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Detailed description of the Work.

1.02 THE WORK

- A. The Work consists of:
1. Demolish existing UV equipment and associated appurtenances and concrete to accommodate the installation of the replacement UV Equipment.
 2. Construct a concrete splitter wall, raise the existing UV channel floor, make repairs and coat the channels, replace the channel covers and supports, construct a concrete cantilever deck for new electrical equipment.
 3. Administer, receive, and install the pre-procured and assigned replacement UV Disinfection System and all associated work to create complete operable facilities in the Plans and Specifications.
 4. Installation and operation of a temporary bypass pumping and disinfection system during the Work.
 5. Install new ductbank and conduit and all associated work to create complete operable facilities in the Plans and Specifications.
 6. Commission the Work.

1.03 LOCATION OF PROJECT

A. The Work is located at 700 Pacific Coast Hwy, Pacifica, CA 94044.

1.04 OWNER ASSIGNED SUBCONTRACTORS

- A. Employ Owner-assigned subcontractors and suppliers:
1. Trojan Technologies for replacement UV Disinfection Equipment and slide gates. Assigned according to Section 00_54_34 - Assignment of Procurement Contract and Appendix D.
 2. GLASCO UV - Temporary UV equipment. Refer to Fee Proposal Form and Scope dated 3/21/2024 included as Attachment A of Section 00_41_00 - Bid Form.
 3. Telstar Instruments for programming services. Refer to Fee Proposal Form and Scope dated 2/23/2024 included as Attachment B of Section 00_41_00 - Bid Form.
- B. Contractor's responsibility for Owner-assigned products once assigned:
1. Submitting notification of discrepancies or anticipated problems.
 2. Receiving and unloading products at site.
 3. Promptly inspecting products jointly with Owner and recording shortages, and damaged or defective items.

4. Handling products at site, including uncrating and storage.
5. Protecting products from damage.
6. Installing, including assembly, connections, adjustments, and commissioning in accordance with Contract Documents.
7. Providing operating oils, lubricants, and incidental materials required for complete installation.
8. Repairing or replacing items damaged after receipt until date of Substantial Completion of the Work by Owner.

1.05 OWNER FURNISHED EQUIPMENT

- A. Owner will furnish:
 1. Temporary Irrigation UV Disinfection Unit, UV Pure by Hallett. See Volume 5, Appendix C for reference information for the unit.
- B. For Owner-furnished equipment, Owner will:
 1. Arrange for and deliver necessary shop drawings, product data, and samples to Contractor.
 2. Arrange and pay for product delivery to site in accordance with construction schedule.
 3. Deliver supplier's bill of materials to Contractor.
 4. Inspect deliveries jointly with Contractor.
 5. Submit claims for transportation damage.
 6. Arrange for replacement of damaged, defective, or missing items.
 7. Arrange for manufacturer's warranties, bonds, service, and inspections.
- C. Contractor's responsibility for Owner-furnished products:
 1. Submitting notification of discrepancies or anticipated problems.
 2. Receiving and unloading products at site.
 3. Promptly inspecting products jointly with Owner and recording shortages, and damaged or defective items.
 4. Handling products at site, including uncrating and storage.
 5. Protecting products from damage.
 6. Installing, including assembly, connections, adjustments, and commissioning in accordance with Contract Documents.
 7. Providing operating oils, lubricants, and incidental materials required for complete installation.
 8. Repairing or replacing items damaged after receipt until date of Substantial Completion of the Work by Owner.
 9. Coordinate with manufacturer for Startup, Testing and Inspection activities.
- D. When Owner fails to deliver products in accordance with accepted Construction Schedule, when properly scheduled and coordinated by the Contractor, adjustments will be made to Contract Times and Contract Price as stipulated in General Conditions.
- E. Testing and acceptance of the permanent UV system must be complete before demobilization of temporary systems.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_11_02

CONTRACT DOCUMENT LANGUAGE

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Explanation of arrangement, language, reference standards, and format.

1.02 REFERENCES

- A. Construction Specifications Institute (CSI):
 1. MasterFormat™.
 2. SectionFormat™.
 3. PageFormat™.

1.03 PROJECT MANUAL ARRANGEMENT

- A. Document and Section numbers used in Project Manual, and Project Manual arrangement are in accordance with CSI MasterFormat™, except where departures have been deemed necessary.
- B. Sections are written in CSI SectionFormat™, Three-Part Section Format, except where departures have been deemed necessary.
- C. Page format for Sections in the Project Manual is in PageFormat™, except where departures have been deemed necessary.

1.04 CONTRACT DOCUMENT LANGUAGE

- A. Specification Section Paragraphs entitled "Section Includes" summarize briefly what is generally included in the section.
 1. Requirements of Contract Documents are not limited by "Section Includes" paragraphs.
- B. Specifications have been partially streamlined by intentionally omitting words and phrases, such as "the Contractor shall," "in conformity therewith," "shall be" following "as indicated," "a," "an," "the" and "all."
 1. Assume missing portions by inference.
- C. Phrase "by Engineer" modifies words such as "accepted," "directed," "selected," "inspected," and "permitted," when they are unmodified.
- D. Phrase "to Engineer" modifies words such as "submit," "report," and "satisfactory," when they are unmodified.

- E. Colons (:) are used to introduce a list of particulars, an appositive, an amplification, or an illustrative quotation:
 - 1. When used as an appositive after designation of product, colons are used in place of words "shall be."
- F. Word "provide" means to manufacture, fabricate, deliver, furnish, install, complete, assemble, erect in place, test, or render ready for use or operation, including necessary related material, labor, appurtenances, services, and incidentals.
- G. Words "Contractor shall" are implied when direction is stated in imperative mood.
- H. Term "products" includes materials and equipment as specified in Section 01_60_00 - Product Requirements.
- I. "Engineer", "Construction Manager", and "Owner's Representative" within the Contract Documents refer to the designated Construction Manager in Section 00_52_00 – Agreement Between Owner and Contractor unless otherwise defined.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_14_00
WORK RESTRICTIONS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements for sequencing and scheduling the Work affected by existing site and facility, work restrictions, and coordination between construction operations and plant operations.
- B. Includes Bypass Contingency Plan (Attachment A) for reference.

1.02 SUBMITTALS

- A. Baseline Schedule with MOP tasks.
- B. Method of Procedure (MOP) Form.
- C. Method of Procedure (MOP) Log.
- D. Progress Schedule with MOP tasks.

1.03 METHOD OF PROCEDURE (MOP)

- A. Comply with MOP Instructions as specified in Attachment B - Method of Procedure (MOP).
- B. Prepare MOP for the following conditions:
 - 1. Shutdowns, diversions, and tie-ins to the existing facility.
 - 2. Process start-up activities.
 - 3. Power interruption and tie-ins.
 - 4. Switch over between temporary and permanent facilities, equipment, piping, and electrical and instrumentation systems.
 - 5. Process constraints requiring interruption of operating processes or utilities.
- C. Other Work not specifically listed may require MOPs as determined necessary by the Contractor, Owner, or Engineer.
- D. Submit Baseline Schedule, as specified in Section 01_32_21 - Schedules and Reports with proposed MOPs.
- E. Submit MOP Log at construction progress meetings.

- F. No consideration will be given to claims of additional time and cost associated to preparing MOPs required by the Owner and Engineer to complete this work in a manner that facilitates proper operation of the facility and compliance with effluent discharge criteria.
- G. Where required to minimize treatment process interruptions while complying with specified constraints, provide temporary pumping, power, lighting, controls, instrumentation, and safety devices.

1.04 GENERAL CONSTRAINTS ON WORK AND SCHEDULING OF WORK

- A. Plant access for Contractor will be provided at the gate.
- B. Wastewater projects:
 - 1. The Calera Creek Water Recycling Plant is the City of Pacifica's only means of treating domestic and industrial wastewater prior to discharging to Calera Creek. Impairing the operational capabilities of this treatment plant will result in serious environmental damage and monetary fines.
 - 2. Conduct Work in a manner that will not impair the operational capabilities of essential elements of the treatment process or reduce the capacity of the entire treatment plant below levels sufficient to treat the quality of raw wastewater to the water quality limitations specified in the discharge permit.
 - 3. Conduct commissioning activities as specified in Section 01_75_17 - Commissioning in a manner that will not impair the operational capabilities of essential elements of the treatment process or reduce the capacity of the entire treatment plant below levels sufficient to treat the quality of raw wastewater to the water quality limitations specified in the discharge permit.
 - a. Conduct PCIS Optimization and Fine-Tuning as specified in Section 01_75_17 - Commissioning.
 - 4. The status of the treatment plant shall be defined as "operational" when it is capable of treating the entire quantity of wastewater received to the water quality limits specified in the discharge permit.

1.05 COMPLIANCE WITH NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

- A. The existing facility is operating under the terms of a National Pollutant Discharge Elimination System permit issued by the California Regional Water Quality Control Board San Francisco Bay Region.
 - 1. This permit specifies the water quality limits that the plant must meet prior to discharge of effluent.
 - 2. A copy of the existing permit is on file for review at the Calera Creek Water Recycling Plant.
- B. Perform work in a manner that will not prevent the existing facility from achieving the finished water quality requirements established by regulations.
- C. Bear the cost of penalties imposed on the Owner for discharge violations caused by actions of the Contractor.

- D. Conduct the Work and provide temporary facilities required to keep the existing plant continuously operational.
- E. Do not remove or demolish existing facilities required to keep the existing plant operational at the capacities specified until the existing facilities are replaced by temporary, new, or upgraded facilities or equipment.
 - 1. Test temporary facilities to demonstrate operational success prior to removing or demolishing existing facilities.
 - 2. Complete commissioning and operational testing of new facilities to demonstrate operational success prior to removing or demolishing existing facilities.

1.06 UTILITIES

- A. Provide advance notice to and utilize services of Underground Services Alert (U.S.A.) for location and marking of underground utilities operated by utility agencies other than the Owner.
- B. Maintain electrical, telephone, water, gas, sanitary facilities, and other utilities within existing facilities in service. Provide temporary utilities when necessary.

1.07 WORK BY OTHERS

- A. Where proper execution of the Work depends upon work by others, inspect and promptly report discrepancies and defects.

1.08 SHUTDOWN CONSTRAINTS

- A. General shutdown constraints:
 - 1. Execute the Work while the existing facility is in operation.
 - 2. Some activities may be accomplished without a shutdown.
 - 3. Apply to activities of construction regardless of process or work area.
 - 4. Activities that disrupt plant or utilities operations must comply with these shutdown constraints.
 - 5. Organize work to be completed in a minimum number of shutdowns.
 - 6. Provide thorough advanced planning, including having required equipment, materials, and labor on hand at time of shutdown.
 - 7. Shutdown MOPs:
 - a. Advise the Engineer a minimum of 4 weeks prior to need for any complete or partial plant shutdown for tie-ins.
 - b. Prepare and submit MOP to Engineer for any complete or partial plant shutdown required a minimum of 4 weeks prior to the shutdown.
 - c. Owner's written approval of MOP is required prior to beginning Work.
 - d. Receive approval of MOP minimum 2 weeks ahead of scheduled shutdown.
 - 8. Where required to minimize treatment process interruptions while complying with specified constraints, provide temporary pumping, power, lighting, controls, instrumentation, and safety devices.
 - 9. Final determination of the permitting of shutdowns will be the sole judgment of the Owner.
 - 10. Owner maintains the ability to abort on the day of the scheduled shutdown.

11. Unplanned shutdowns due to emergencies are not specified in this Section.
 12. Plant shutdowns are limited to a maximum of 6 hours, including draining structures and access setup, Monday thru Thursday. Approval will be given on case-by-case basis, after which the plant will need 48 hours to return to normal operation. Lowest flows in the plant are overnight, and the shutdowns identified in the suggested Work Sequence in Part 1.10 assume overnight shutdowns. Contractor will not be responsible for plant staff costs for shutdowns identified in the Work Sequence. Additional shutdowns may incur cost from the Contractor based on Contract Document requirements.
- B. Unit process availability work limitations:
1. Shutdowns and tie-ins or other activities that disrupt plant operations are prohibited unless the following unit process availability conditions exist and unless otherwise approved in writing by the Owner and Engineer.
 2. At a minimum, the following facilities must be operational with adequate capacity for restart upon completion of shutdown in order to proceed with a scheduled shutdown. Plant staff will confirm status prior to shutdown.
 - a. Headworks including grit removal and pumping.
 - b. Sequencing Batch Reactors.
 - c. Filters.
 - d. UV disinfection.
- C. Plant treatment operation/flow shutdowns.
1. Maximum shutdown duration: 6 hours.
- D. Process, electrical and instrumentation - tie-in shutdowns:
1. Schedule no more than 1 tie-in shutdown per day.

1.09 WORK RESTRICTIONS

- A. Maximum plant flow work limitation:
1. Any construction activities or shutdowns that disrupt City's plant operation included in the NPDES Permit CA0038776 and Order R2-2022-0029 plant operations are prohibited during the following flow conditions, unless otherwise approved in writing by the Owner and Engineer.
 - a. Flow condition: Plant inflow or expected inflow above 4.0 million gallons per day (mgd) during requested shutdown or interruption.
 - b. Dry Weather Flows:
 - 1) Average: Approximately 4.0 mgd.
 - 2) Peak: Approximately 6.0 mgd.
 - 3) See Drawing G02 for Design Criteria.
- B. New UV System Operational Start Date:
1. The new UV Disinfection System shall be fully operational before October 15, 2025. This is the approximate start of the wet season when the plant transitions to batch flow.
- C. Temporary plant effluent sampling.
1. The Plant will continue to sample the effluent per their Discharge Permit. The existing autosamplers and instrumentation will be temporarily moved to the temporary clearwell at the upstream end of the 42-inch FEF.

- D. Existing plant water pumps and piping:
 - 1. Maintain operation of the backwash, utility water (UW), and irrigation water (IRR) pumps during construction. The UV recirculation pump will also need to remain in operation until the temporary bypass and UV disinfection system is operational. Refer to Attachment A for suggested sequence to maintain operations.

- E. Existing plant UV disinfection:
 - 1. Maintain operation of the UV disinfection system until the temporary bypass pumping and UV disinfection system are operational.
 - 2. Decommission of the existing UV disinfection system will require construction of a smaller temporary clearwell that will reside within the existing clearwell. At this point in time, except for the smaller temporary clearwell, the remainder of the existing clearwell will store filtered effluent.
 - a. Provide temporary bypass pumping and temporary UV disinfection to treat filtered water, and discharge to the 42-inch FEF.
 - b. Provide a temporary clearwell within the existing clearwell at the 42-inch FEF, through bulkheads or other means of isolation. See Drawings and Section 01_35_73 - Delegated Design Procedures for submittal requirements.
 - c. Provide temporary disinfection of the irrigation water. The City will provide a packaged UV disinfection unit. Contractor to install the unit per contract documents. The City will maintain and operate the system, and the Contractor must maintain access to the unit.
 - d. Provide temporary utility water disinfection. Contractor to provide a self-contained sodium hypochlorite pump skid with one duty and one standby pump. All materials and components must be compatible with 12.5% concentration sodium hypochlorite solution. The Plant will connect to existing Hypo piping and connect to injection point on UW indicated on the drawings. The Plant will operate the chemical system, and handle chemicals. Contractor to provide a portable eyewash station for use at the UW connection point.

- F. Provide safe, continuous access to process control equipment for plant operations and maintenance personnel.

- G. Maintain truck access to the existing facilities.

- H. Piping:
 - 1. Provide temporary piping during construction for existing, new, and temporary equipment to maintain plant operation in service during construction.

- I. When draining the facilities, all process fluid shall be pumped to the Filter Mudwell unless noted otherwise.
 - 1. The UV channel may be drained to the Filter Gallery sump as originally designed. The drain discharge shall be throttled to the rate the sump pumps can operate.

- J. Ductbank work:
 - 1. Contractor to provide a means of access to the parking lot for vehicles during ductbank work. City vehicles will need uninterrupted access to the parking lot and fueling station on the north side of the duct bank trench.

1.10 WORK SEQUENCE

- A. General:
 - 1. Utilize the description of critical events in the Work Sequence in this Section as a guideline for scheduling and completing the Work. The Work Sequence provided herein is only one possible approach to conducting the Work and shall not be construed as the only method or a prescriptive requirement. The Contractor shall be responsible for developing a work sequence and schedule for the project within the constraints provided herein per Section 01_32_21 - Schedules and Reports.
 - a. The Work Sequence and Restrictions presented herein do not include all items affecting the completion of the Work but are intended to describe the critical events necessary to minimize disruptions of the existing facilities, minimize risks of overflows, and to ensure compliance with NPDES permit requirements.
 - b. Completion of an item of Work shall include, but not be limited to, all civil, structural, mechanical, and instrumentation Work and Commissioning necessary to render that item of Work complete and operational.
- B. Notice to Proceed through October 2024:
 - 1. Constraints in Effect: The following constraints shall be in effect during this period:
 - a. Maximum plant flow work limitation.
 - 2. Facility Shutdowns:
 - a. Plant shutdown.
 - 1) Drain clearwell and UV channel for temporary isolation structure(s) and bulkhead(s) pre-design inspection and measurement (Two shutdowns).
 - 3. Major Work Elements: The following major work elements are anticipated to be performed during this period include:
 - a. Relevant Milestones from Section 00_52_00 – Agreement Between Owner and Contractor:
 - 1) Milestone 1 - Long-lead submittals.
 - 2) Milestone 2 - Completion of the new conduit and ductbank routing.
 - b. Contractor mobilization.
 - c. Establishment of construction power.
 - d. Submittals and procurement of critical items including but not limited to the following:
 - 1) Health and Safety documents.
 - 2) Structural concrete mix design.
 - 3) Bypass pumping.
 - 4) Temporary bypass power equipment.
 - 5) Temporary disinfection equipment.
 - 6) Temporary bulkhead plan.
 - 7) Demolition plans.

- e. Shutdown plant and drain clearwell and UV channel for the following activities:
 - 1) Field verification measurements:
 - a) Temporary bulkhead clearwell installation.
 - b) Bypass pump deployment.
 - c) UV channel isolation structures installation.
 - 2) Preliminary cleaning, concrete inspection, rebar scanning for temporary bulkhead installation.
- C. October 2024 through March 2025:
1. Constraints in Effect: The following constraints shall be in effect during this period:
 - a. Maximum plant flow work limitation.
 - b. No interruption of plant process or shutdowns from October 15, 2024 through March 1, 2025. Depending on wet weather conditions, these dates may require adjustment, but these dates should be used for initial planning and scheduling.
 2. Facility Shutdowns:
 - a. Plant shutdown.
 - 1) Drain UV channel for installation of temporary pumps in UV inlet box (One shutdown).
 - 2) Drain clearwell and UV channel to complete installation of temporary pumps in UV inlet box and to install backup bypass pump in the clearwell (One shutdown).
 3. Major Work Elements: The following major work elements are anticipated to be performed during this period include:
 - a. Deploy primary and secondary temporary UV disinfection units.
 - 1) Operation of the temporary units is designed to be duty + standby. The units are not designed to be compatible to be operated simultaneously.
 - b. Install bypass pumps in the UV influent box and Filter Gallery Deck.
 - c. Install piping from pumps to temporary UV units and from the UV units to the clearwell and UV channel. Flow will be routed to the UV channel until the bypass pumps, piping and disinfection systems pass testing.
 - d. Install temporary level sensors in the UV influent box and clearwell.
 - e. Establish communication connections from temporary level sensors and filter influent flow meter (30-FE-104) within the bypass systems and to plant SCADA.
 - f. Install temporary panel boards.
 4. Connections to Existing Facilities:
 - a. None.
- D. March 2025 through April 2025:
1. Constraints in Effect: The following constraints shall be in effect during this period:
 - a. Maximum plant flow work limitation.
 2. Facility Shutdowns:
 - a. Partial shutdowns, less than 2 hours, for power work if required.

3. Major Work Elements: The following major work elements are anticipated to be performed during this period include:
 - a. Relevant Milestones from Section 00_52_00 – Agreement Between Owner and Contractor:
 - 1) Milestone 3 - Successfully complete bypass startup and testing.
 - b. Disconnect existing electrical feeders from existing UV Banks No. 1 and No. 2.
 - c. Connect feeders to temporary panels to power temporary bypass systems according to plans.
 - d. Establish instrument and control communication to bypass pumps.
 - e. Test UV bypass treatment and pumping system according to plans and specifications. Recommended operational levels in the UV influent box are as follows:
 - 1) High-high alarm: 64.50 feet.
 - 2) Pump 2 On/High Alarm: 60.50.
 - 3) Pump 2 Off: 60.00.
 - 4) Pump 1 On/Level Control Set Pt.: 59.25.
 - 5) Jockey Pump off: 59.00.
 - 6) Jockey Pump on: 58.00.
 - 7) Pumps Off: 57.50.
 - 8) Low-low Alarm: 56.00 (to be set according to pump minimum submergence).
 - f. Connect UW bypass chlorination system. Test for satisfactory operation.
 - g. Connect IRR water temporary UV disinfection. Test for satisfactory operation.
 4. Connections to Existing Facilities:
 - a. Connect temporary panel boards.
 - b. Connect temporary signals to plant SCADA.
 - c. Connect temporary sodium hypochlorite system to UW injection point at UV deck.
 - d. Connect temporary Irrigation UV disinfection system to IRR water piping.
- E. April 2025 through September 2025:
1. Constraints in Effect: The following constraints shall be in effect during this period:
 - a. Maximum plant flow work limitation.
 - b. Temporary plant effluent sampling.
 2. Facility Shutdowns:
 - a. Plant shutdown:
 - 1) Drain clearwell and UV channel for temporary bulkhead installation (Two shutdowns).
 - 2) Drain clearwell and UV channel for temporary bulkhead adjustments, UV channel isolation, and UV bypass gate removal (One shutdown).
 - 3) UV weir demolition assumes no shutdown is required after UV channel isolation structures are installed.
 - b. Partial shutdown of filter flow:
 - 1) Stop flow from filters to UV to test temporary bulkhead and isolation structures, two hour maximum (Two shutdowns).

3. Major Work Elements: The following major work elements are anticipated to be performed during this period include:
 - a. Shutdown and drain clearwell and UV channel for temporary bulkhead installation.
 - b. Run flow through existing UV system to observe temporary bulkhead for leakage and overflow.
 - c. Modify pump levels for clearwell bypass operation and adjust operational programming as necessary. Recommended levels are as follows:
 - 1) High-high alarm: EL 62.25 feet (assumes temporary bulkhead overflow at EL 62.50 per Plans).
 - 2) Pump 2 On/High Alarm: 60.75.
 - 3) Pump 2 Off: 60.00.
 - 4) Pump 1 On/Level Control Set Pt.: 59.25.
 - 5) Jockey Pump Off: 59.00.
 - 6) Jockey Pump On: 58.00.
 - 7) Pumps Off: 57.50.
 - 8) Low-low Alarm: 56.00 (to be set according to pump minimum submergence).
 - d. Demolish existing UV disinfection system.
 - e. Install new permanent replacement UV disinfection channels, equipment and all associated Work.
 4. Connections to Existing Facilities:
 - a. Begin connection of new permanent UV system to plant facilities.
- F. September 2025 through October 2025:
1. Constraints in Effect: The following constraints shall be in effect during this period:
 - a. New UV System Operational Start Date.
 - b. Maximum plant flow work limitation.
 - c. Temporary Plant effluent sampling.
 2. Facility Shutdowns:
 - a. Plant Shutdown:
 - 1) Temporary bulkhead and isolation structure removal (One shutdown).
 - 2) Install plate of UV Bypass Gate wall opening (One shutdown).
 3. Major Work Elements: The following major work elements are anticipated to be performed during this period include:
 - a. Relevant Milestones from Section 00_52_00 – Agreement Between Owner and Contractor:
 - 1) Milestone 4 - Begin permanent system startup testing.
 - b. Shutdown and drain clearwell and UV channel for following activities:
 - 1) Temporary bulkhead removal.
 - 2) Install plate where UV Bypass Gate was.
 - c. Modify pump levels for UV inlet bypass operation and adjust operational programming as necessary. Recommended levels are as follows:
 - 1) High-high alarm: 64.50 feet.
 - 2) Pump 2 On/High Alarm: 60.50.
 - 3) Pump 2 Off: 60.00.
 - 4) Pump 1 On/Level Control Set Pt.: 59.25.
 - 5) Jockey Pump off: 59.00.
 - 6) Jockey Pump on: 58.00.

- 7) Pumps Off: 57.50.
 - 8) Low-low Alarm: 56.00 (to be set according to pump minimum submergence).
 - d. Test and commission new UV system.
 - e. Decommission temporary treatment systems for IRR and UW.
 - 4. Connections to Existing Facilities:
 - a. Disconnect temporary disinfection to UW.
 - b. Disconnect temporary UV disinfection to IRR.
- G. October 2025 through Project Closeout:
 - 1. Constraints in Effect: The following constraints shall be in effect during this period:
 - a. None.
 - 2. Facility Shutdowns:
 - a. Remove bypass pumps (One shutdown). Weather and facility flow conditions can change rapidly between October and January (Final Completion); the Contractor should plan removal of equipment requiring a shutdown as early as practical after successful system startup.
 - 3. Major Work Elements: The following major work elements are anticipated to be performed during this period include:
 - a. Substantial Completion.
 - b. Decommission and remove bypass systems.
 - 4. Connections to Existing Facilities:
 - a. None.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

ATTACHMENT A - BYPASS PUMPING PLAN



City of Pacifica, California
UV Disinfection System Replacement Project
(P034)

BYPASS CONTINGENCY PLAN

FINAL | March 2024

NOTE: This Bypass Contingency Plan provides a potential bypass sequence for the Contractor's reference. It is provided for guidance only and is not a part of the contract documents.





City of Pacifica, California
UV Disinfection System Replacement Project (P034)

BYPASS CONTINGENCY PLAN

FINAL | March 2024



Contents

Section 1 - Project Overview	1
1.1 Project Description	1
1.2 Existing Facilities and Equipment	1
1.2.1 Structures	1
1.2.2 Valves	2
1.2.3 Gates	2
1.2.4 Pumps	2
1.2.5 Instrumentation and Control	3
1.3 Temporary Bypass Equipment	3
1.3.1 Plant Process Disinfection	3
1.3.2 UW Chlorination	4
1.3.3 IRR Water Reuse Disinfection	4
1.4 General and Site-Specific Safety	5
1.5 Drainage	5
Section 2 - Bypass Phases	5
2.1 Phase 1: Normal Operation (NTP - 3/2025)	5
2.1.1 Activity Sequence	9
2.1.2 Safety Considerations	9
2.1.3 Contingency Response	9
2.2 Phase 2: Bypass Testing (3/2025 – 4/2025)	10
2.2.1 Activity Sequence	10
2.2.2 Safety Considerations	10
2.2.3 Contingency Response	10
2.3 Phase 3: Bypassing (4/2025 – 9/2025)	15
2.3.1 Activity Sequence	19
2.3.2 Safety Considerations	19
2.3.3 Contingency Response	20
2.4 Phase 4: UV Startup (9/2025 – 10/2025)	20
2.4.1 Activity Sequence	21
2.4.2 Safety Considerations	21

2.4.3 Contingency Response	21
2.5 Phase 5: Normal Operation (10/2025 - Project Closeout)	25
2.5.1 Activity Sequence	25
2.5.2 Safety Considerations	25
2.5.3 Contingency Response	25

Attachments

Attachment A1	Calera Creek Water Reclamation Plant 1996 Record Drawings – Filter/UV Facility Excerpts
Attachment A2	Temporary Bypass Pump System-Pump Curves
Attachment A3	2021 & 2022 Plant Flow Data
Attachment A4	Bypass Response Times

Figures

Figure 1	CCWRP – Normal Operation Schematic Sequence	7
Figure 2	CCWRP – Phase 2 – Bypass Testing Schematic Sequence	13
Figure 3	CCWRP – Phase 3 – Bypassing Schematic Sequence	17
Figure 4	CCWRP – Phase 4 – UV Startup Schematic Sequence	23
Figure 5	CCWRP – Phase 5 – Normal Operation Schematic Sequence	27

Abbreviations

BWW	backwash
CCWRP	Calera Creek Water Reclamation Plant
City	City of Pacifica
FE	final effluent
gpm	gallons per minute
IRR	irrigation
mgd	million gallons per day
mg/L	milligrams per liter
Project	Pacifica Ultraviolet Disinfection System Replacement Project P034
SBR	sequencing batch reactor
SCADA	supervisory control and data acquisition
UV	ultraviolet
UW	utility water
VFD	variable frequency drive

Section 1

PROJECT OVERVIEW

1.1 Project Description

The Pacifica Ultraviolet (UV) Disinfection System Replacement Project P034 (Project) includes the replacement of the existing UV system downstream of the tertiary filters. During the Project, the filter effluent must continue to be disinfected to discharge permit requirements and conveyed to the outlet structure, but North Coast County WD reuse water will not be produced. This document outlines the bypass pumping sequence and describes the operational setup and contingency plan.

All existing equipment and facilities will be operated by or under the direct supervision of Calera Creek Water Reclamation Plant (CCWRP) personnel during the Project. Final sequences will be confirmed and coordinated with CCWRP personnel prior to execution. Compliance sampling will continue during all phases of the Project. CCWRP will coordinate the locations and frequency for sampling based on the phase and the configurations of the disinfection system(s).

Please refer to the Project documents (drawings and specifications) for detailed descriptions of the work and specified pumping and isolation equipment.

The following attachments contain reference information that can be used to understand the bypass pumping and contingency plans:

- Attachment A1: Calera Creek Water Reclamation Plant 1996 Record Drawings – Filter/UV Facility Excerpts.
- Attachment A2: Temporary Bypass Pump System Pump Curves.
- Attachment A3: 2021 & 2022 Plant Effluent Flow Data (Flow at 30-FE-104 upstream of the tertiary filters).
- Attachment A4: Bypass Response Times.

1.2 Existing Facilities and Equipment

This section defines the relevant facilities and equipment that will be affected during the Project. Please refer to Attachment A1 for select record drawings of the facilities and equipment and figures in Section 2 below for schematic layout of equipment and facilities.

1.2.1 Structures

- **Tertiary Filter and UV Building:** The tertiary filter and UV building is downstream of the sequencing batch reactor (SBR) effluent pipes. The entire structure is at or below grade (i.e., there are no buildings above grade). The structure consists of five tertiary filters and the mudwell; the filter pipe gallery; the UV influent/bypass box; the UV channel; the clear well with backwash (BWW), utility water (UW), and irrigation (IRR) submersible pumps; and the plant drain pump station.
 - **Filter Pipe Gallery:** The filter pipe gallery is located approximately 26 feet below grade, near the middle of the Filter-UV Building, with the grating deck approximately 20 feet below grade. The filter effluent and corresponding valves are located below the deck. The room is accessible from either the southern stairs or an access ladder from the UV channel deck.

- **UV Influent Box:** The UV influent box is upstream of the UV channel and accepts flow from the 36-inch filter effluent pipe. The box directs flow to the UV channel by a weir. The influent box contains a 36-inch by 36-inch square bypass slide gate that can be used to bypass the UV Channel and direct flow to the clear well. The structure is accessible at the mid-level of the Filter-UV Building.
- **UV Channel:** The existing UV channel houses four UV modules (two per "A-frame"), receives flow from the UV influent box by a weir, and overflows a weir into the clear well. Two overflow openings are also present at the upstream end to allow water to bypass to the clear well if the channel surcharges. The channel is covered by plates at the mid-level of the structure. A pipe penetrating the wall at the invert of the UV Channel drains the channel onto the Filter Gallery floor, isolated by a 4-inch ball valve in the filter gallery.
- **Clear well and BWW/UW/IRR Pumps:** The clear well and associated pumps are located at the southern end of the structure. The mid-level concrete deck covers the structure with hatches over the various pumps. The BWW, UW, IRR pumps, and UV recirculation pump are all located within the clear well with their valves and instrumentation accessible on the mid-level deck. The Recycled Water Pump Station intake pipe is located near the 42-inch FEF.
- **Plant Drain Pump Station:** The plant drain pump station is situated at the southwest end of the structure. The station is only accessible through a hatch on the ground level. The station collects drain flows from the filter pipe gallery, exhaust fan pit, the facility sewer, and from site storm drain pipes. Flows are pumped back upstream of the Sequencing Batch Reactors.

1.2.2 Valves

- **Tertiary Filter Effluent Control Valves (40-V-01-FEF, 40-V-03-FEF, 40-V-05-FEF, 40-V-07-FEF, 40-V-09-FEF):** These valves modulate to control water level in each filter, and isolate each filter effluent from the effluent header that feeds into the UV Influent/Bypass Box. Located within the Filter Pipe Gallery, under the grate deck. Modulating actuators will be used to always maintain a minimum level in the filters. These valves will also close in the case that UV pumping or disinfection loses operational capacity.
- **Tertiary Filter Effluent Isolation Gate Valves(40-V-02-FEF, 40-V-04-FEF, 40-V-06-FEF, 40-V-08-FEF, 40-V-10-FEF):** These manual valves are used to isolate each filter effluent from the effluent header during maintenance, as a redundant valve to the control valves.
- **UV Channel Drain Isolation Valve (Untagged):** This valve is used to drain the UV Channel to the Filter Gallery Floor.
- **IRR Strainer Isolation and Bypass Valves (50-V-06-IRR, 50-V-07-IRR, 50-V-08-IRR):** This valve and pipe assembly used to isolate and bypass the strainer to the IRR water distribution system.
- **UW Strainer Isolation and Bypass Valves (50-V-08-UW, 50-V-09-UW, 50-V-10-UW):** This valve and pipe assembly used to isolate and bypass the strainer to the UW distribution system.

1.2.3 Gates

- **UV Bypass Gate (50-G-01-FEF):** The 36-inch by 36-inch square gate which is normally closed, controls flow from the UV influent box to the clear well.

1.2.4 Pumps

- **BW Pumps (40-P-01-BW, 40-P-02-BW):** The pumps used to supply BWW water from the clear well to the tertiary filters.
- **UW Pumps (50-P-01-UW, 50-P-02-UW, 50-P-03-UW):** The pumps used to supply UW for CCWRP.

- **IRR Pumps (50-P-01-IRR, 50-P-02-IRR):** The pumps used to supply IRR water in and around CCWRP.
- **UV Recirculation Pump (50-P-01-REC):** This pump recirculates flow from the clear well to the UV channel during low flows between batch flows to increase flow for cooling the UV reactors.

1.2.5 Instrumentation and Control

- **Secondary Effluent Flow Meter (30-FE-104):** This meter provides the primary flow signal to the existing UV disinfection process for dosing. The signal from this meter may be used for the temporary bypass system in a feed-forward fashion.
- **Clear well Level Sensor (40-LE-043):** This level element is located in the clear well. Level feedback is available in supervisory control and data acquisition (SCADA) and relates to BWW pump operation.
- **UW Meter (50-FE-118):** This meter is downstream of the utility return water and strainer and provides flow readings for the UW going to distribution.
- **IRR Water Meter (50-FE-318):** This meter is downstream of the IRR return water and strainer and provides flow readings for the IRR water going to distribution.

1.3 Temporary Bypass Equipment

This section defines the relevant temporary equipment that will be used during the Project for treatment. Please refer to the figures in Section 2 for schematics layout of equipment and facilities.

1.3.1 Plant Process Disinfection

During demolition and reconstruction of the UV channel, CCWRP will continue to treat and disinfect wastewater. The UV channel will be incrementally isolated for phased construction, and the process flows will be treated by multiple temporary UV disinfection systems.

Bypass pumping capacity of 12 million gallons per day (mgd) was requested by the City of Pacifica (City) for the preliminary design based on historic seasonal flows and risk. The final temporary bypass pumping capacities and performance requirements are included in the specifications, and reference system-pump curves are included in Attachment A2.

Based on CCWRP effluent flow data, dry weather flows will average approximately 2.5 mgd with diurnal low and high flows of approximately 0.25 mgd and 6.0 mgd respectively. Additional capacity has been requested to provide buffer for construction schedule delays that may lead into the wet weather seasons and provide additional capacity to address CCWRP process upsets. This additional capacity further reduces the risk of discharge of water that does not meet the permit disinfection limits.

The following temporary equipment will be deployed for use in the bypass disinfection. Configurations of the bypass are shown schematically and described in detail in Section 2.

- **Temporary Bypass Pumps:** Pumps to be used during construction to pump flows from the UV influent box and clear well to the temporary UV disinfection systems. The temporary UV systems will be located at grade and will gravity flow back to a temporarily walled portion of the clear well near the 42-inch final effluent (FE). Variable frequency drives (VFDs) will be used to match incoming flows from the filters based on level sensor feedback. Two 6-mgd submersible duty pumps, a backup 6 mgd submersible pump, and a 1.5 mgd jockey pump are specified for bypass pumping.
- **Temporary UV Disinfection:** Temporary disinfection to meet discharge (not North Coast County WD reuse) permit requirements will be provided by packaged, open-channel UV disinfection skids. Packaged units will include control panels and instrumentations required for operation. Units will be

located outside the Tertiary Filter and UV Building at grade. A 12-mgd primary temporary system will provide the base treatment capacity. In addition, a 6-mgd secondary temporary system will establish stand-by redundancy.

- **Flow Metering:** A flow meter on the temporary bypass pump header will be installed for flow monitoring. In addition, the filter influent flow meter (30-FE-104) may be employed as a redundant flow monitoring point.
- **Level Sensors:** Temporary level sensors will be installed in the UV influent box and clear well to provide redundant feedback to the temporary bypass pumps for level-control and VFD operation.
- **Dose Control:** Dose control for the temporary bypass disinfection system is:
 - *All-On disinfection:* This mode removes all user and instrumentation input that result in UV lamp power adjustment. In this mode, all UV lamps will be set to 100 percent power to provide a validated dose up to the rated flow. The outcome is inefficiency from a power perspective, but it assures a compliant disinfection dose.

1.3.2 UW Chlorination

To maintain use of the UW systems during construction, sodium hypochlorite will be added to the UW distribution system to establish a residual chlorine dose. CCWRP has identified 400 gallons per minute (gpm) as the maximum treated flow, and sodium hypochlorite storage and pumping will be sized to provide an operator adjustable dose of 3-10 milligrams per liter (mg/L) for flows between 50 and 400 gpm. Residual sampling during Bypass startup and testing will be required to establish desired dose during temporary chlorination.

The existing UW pumps and other systems will be used during construction. The following temporary equipment will be deployed for use in the UW chlorination. Configurations of the chlorination are shown schematically in Section 2. Not being a permit-regulated system, this chlorination system will not be discussed in detail regarding operation and response in this document.

- **Temporary Sodium Hypochlorite Tote(s) and Pump(s):** Sodium hypochlorite for UW dosing will be stored in totes and located where the existing 1-inch hypochlorite piping can be accessed in the main building, where the original, now decommissioned, sodium hypochlorite tank and pumps were located. The contractor will provide dosing pumps to connect to the existing 1-inch pipe that leads to the UV gallery from the main operations building. The UW meter (50-FE-118) signal will provide UW flow feedback for dose flow pacing from the temporary chlorination pumps.

1.3.3 IRR Water Reuse Disinfection

The IRR system must continue to receive up to 60 gpm of disinfected water. An inline pressurized UV reactor will be used to provide an equivalent discharge dose. The system will be purchased by the City and provide to the contractor by the City. Redundancy will not be provided for this application.

The existing IRR water pumps and other systems will be used during construction. Piping will be modified to direct the IRR water to the reactor using the strainer bypass loop. The following temporary equipment will be deployed for use in the IRR water disinfection. Configurations of the IRR disinfection are shown schematically in Section 2. This disinfection system will not be discussed in detail regarding operation and response in this document. If the UV system does not operate according to specified requirements, then IRR water supply will cease until operation meets specified requirements.

- **Temporary IRR UV Disinfection:** A City-furnished, contractor-installed inline pressurized UV reactor skid to provide discharge disinfection. The reactor unit will include control panels and instrumentations required for operation and monitoring. The single unit capable of providing a

discharge dose at 60 gpm will be deployed near the IRR strainer bypass loop. The IRR water meter (50-FE-318) signal will provide IRR water flow feedback for operation of the temporary UV reactor if required.

1.4 General and Site-Specific Safety

Plant staff and contractor shall observe required safety plans and operational procedures at all times. Specific safety items relating to bypass phases are provided in Section 2.

1.5 Drainage

The clear well can be drained down to elevation approximately 58.0 through the 42-inch diameter FE pipe. The remainder of the clear well and the UV influent box must be pumped out by the contractor using the bypass pumping system or other sump pumps. The UV channel can be drained to the Filter Gallery floor by opening the drain isolation valve inside the Filter Gallery.

The contractor will determine their preferred method for draining the clear well and UV channel based on the specified constraints and contract documents. The City will assist with CCWRP operations and shutdown coordination.

Section 2

BYPASS PHASES

The following section describes the bypass pumping phases for the Project. A design, activity sequence, safety considerations, and contingency response are detailed with color coded system schematics at each phase.

A phase's activity sequence is a list of operational and rehabilitation activities that relate to the bypass phases directly. The sequence is approximately sequential but may vary based on the contractor's means and methods and schedule. Each phase lists safety considerations that include potential risks; however, the safety concerns here are not to be treated as a complete list. The contractor must develop their own safety plans to meet contractual and regulatory requirements. The contractor shall be responsible for identifying and providing plans and mitigation for all safety hazards during construction. Finally, contingency responses outline operational failure scenarios and responses. These contingency responses are not an exhaustive list but provide a reference to the contractor and City for response planning, equipment scheduling, and staffing.

Shutdowns will be required at certain points in the sequence to access the clear well, UV influent box, and UV channel. Suggested shutdowns are included in the activity sequences, but they may require multiple shutdowns to meet CCWRP operational constraints. Shutdown duration depends on CCWRP's treatment configuration and flow rate, and the maximum duration is provided in the Project specifications. The contractor is responsible for scheduling and coordination of shutdowns.

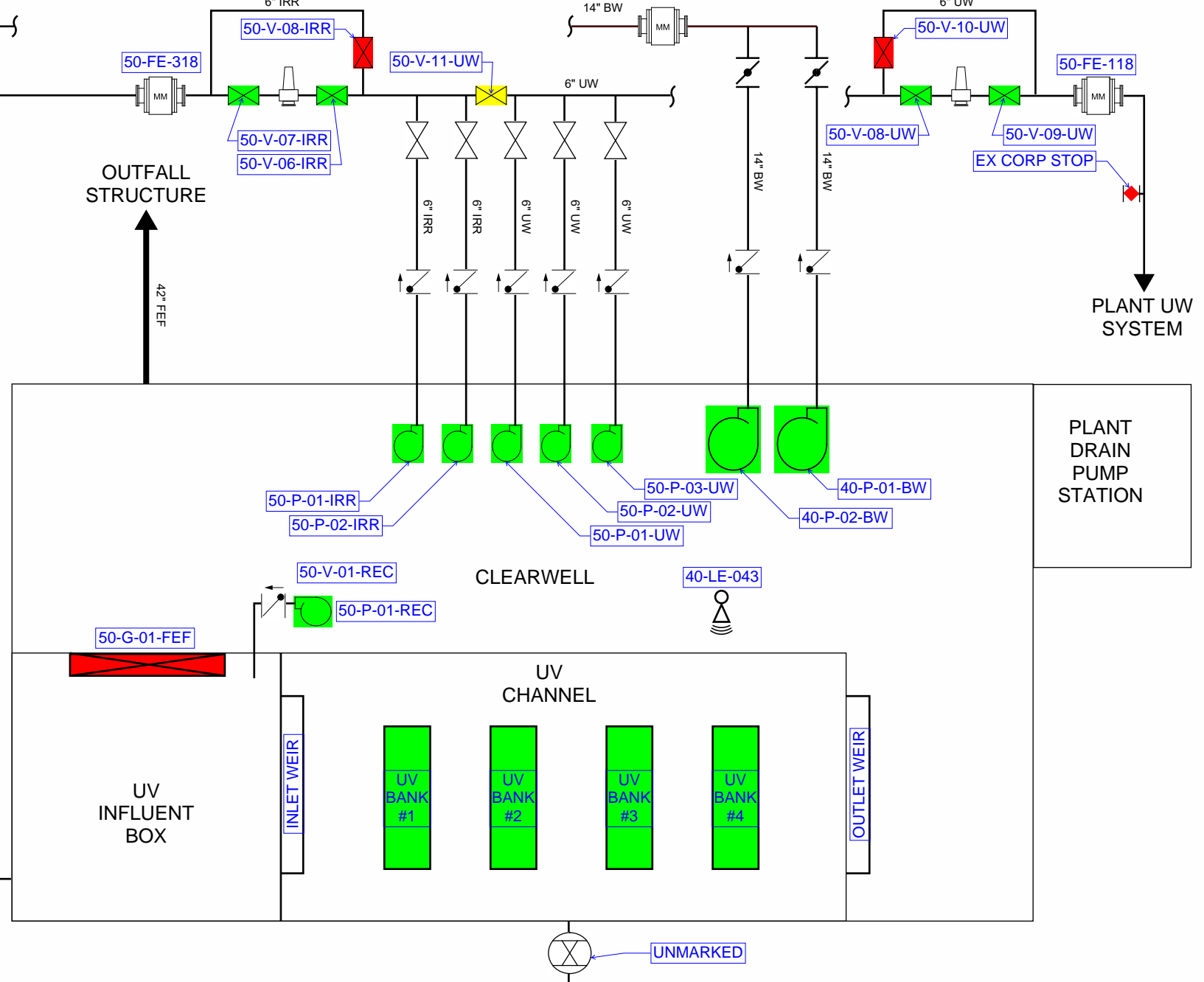
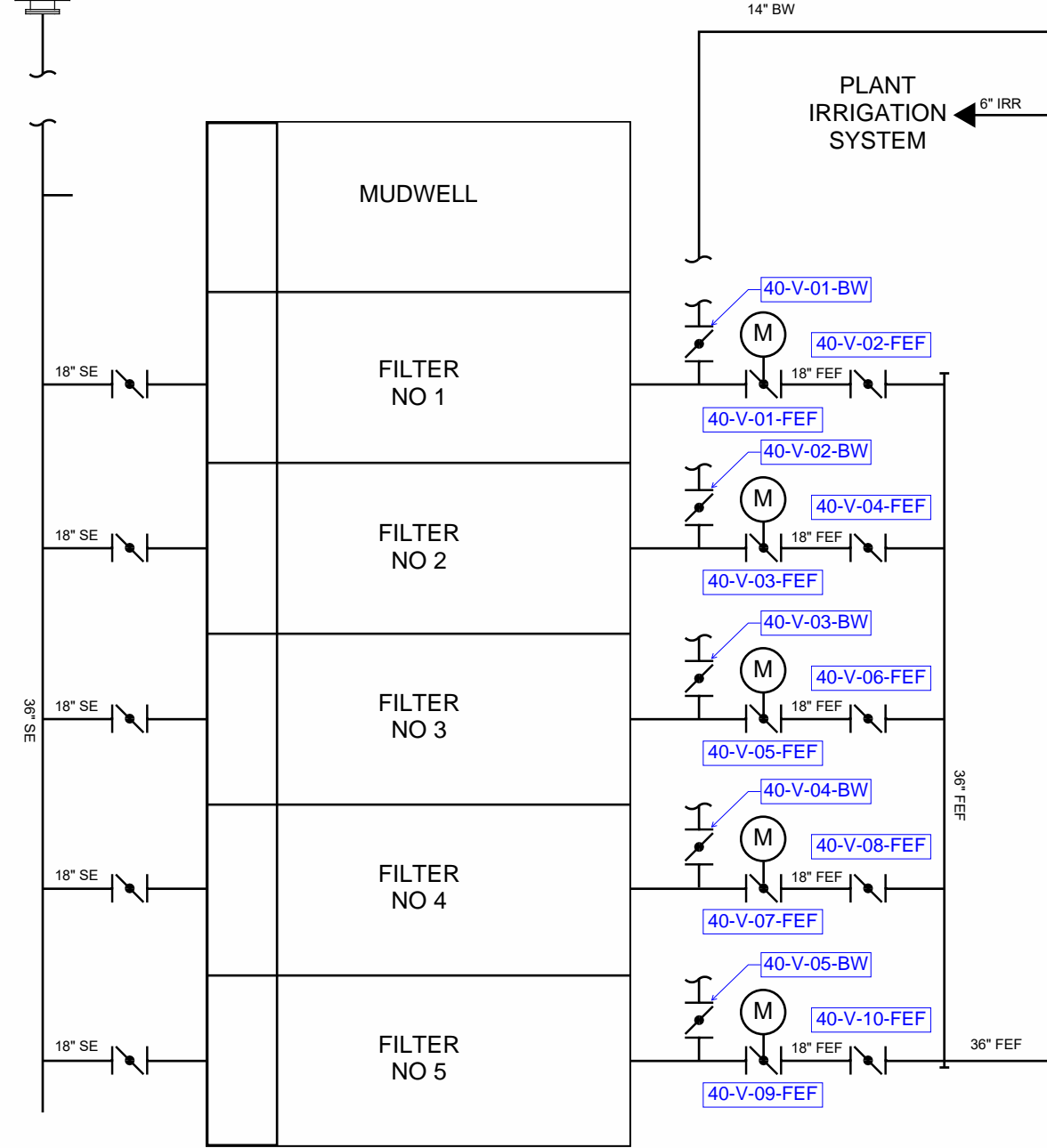
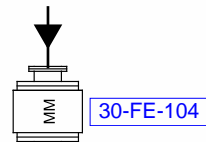
2.1 Phase 1: Normal Operation (NTP - 3/2025)

The disinfection process is to follow standard CCWRP operation until the primary bypass pumps are deployed and tested with the primary temporary disinfection UV system. The City staff will operate CCWRP in coordination with the contractor's activities.

Refer to Figure 1 for the schematic layout during this phase.

NOTES:
 1. SCHEMATIC IS SIMPLIFIED TO SHOW EQUIPMENT RELEVANT TO THE UV REPLACEMENT PROJECT
 2. NOT ALL BW FEEDER PIPES SHOWN FOR CLARITY. BW LINES TO FILTERS ARE FEED FROM A COMMON HEADER.

SEQUENCING BATCH REACTORS



LEGEND:

- CLOSED OR INACTIVE
- OPTIONAL OPERATION
- OPEN OR ACTIVE

CALERA CREEK WRP - NORMAL OPERATION

FIGURE 1

CITY OF PACIFICA, CALIFORNIA
 CALERA CREEK WATER RECYCLING PLANT



2.1.1 Activity Sequence

The following activities shall be completed before proceeding to Phase 2 activities.

1. Deploy primary and secondary temporary UV disinfection units.
2. Shutdown and drain clear well and UV channel for following activities:
 - a. Field verification measurements for:
 - i. Temporary bulkhead installation.
 - ii. Bypass pump deployment.
 - iii. UV channel isolation installation.
 - 1) Seal existing overflow notches into clear well.
 - b. Preliminary cleaning, concrete inspection, rebar scanning for temporary bulkhead installation.
3. Install bypass pumps in the UV influent box and Filter Gallery Deck.
4. Install piping from pumps to UV units and from the UV units to the clear well and UV channel. Flow will be routed to the UV channel until the bypass passes testing.
5. Install temporary level sensors in the UV influent box and clear well.
6. Establish communication connections from temporary level sensors and filter influent flow meter (30-FE-104).
7. Install temporary power panel boards.

2.1.2 Safety Considerations

2.1.2.1 Normal CCWRP Operations

1. Signaling and communication plans shall be in place to notify contract workers and CCWRP staff of operational and construction activities that may affect process flows and safety in the work area.
2. Plant staff shall have continuous access to the UV gallery area and associated operational equipment.
3. Continue to follow established safety and operational plans.

2.1.2.2 Shutdown of UV Channel and Clear well

1. The influent box, UV channel, and clear well are all classified as confined spaces. Confined space entry plans and CCWRP protocols shall be followed.
2. Contractor shall submit shutdown request, schedule, and safety plans according to contract documents.
3. Plant staff shall provide guidance on standard procedures and will conduct CCWRP process-related shutdown activities.

2.1.3 Contingency Response

2.1.3.1 Plant Power Failure

Plant power loss is highly unlikely. If power loss occurs, the CCWRP emergency generator will be relied upon to maintain normal CCWRP operations and disinfection. Filter effluent valves should fail to closed position on power loss. Temporary Disinfection Startup and Testing will include testing of the bypass and disinfection system under power loss conditions. The contractor will use established communications plan to coordinate activities with CCWRP staff during a power loss scenario.

2.2 Phase 2: Bypass Testing (3/2025 – 4/2025)

Once the primary disinfection systems are in place, the contractor will commence the startup and testing of the bypass disinfection system. The City staff will operate CCWRP in coordination with the contractor's activities and assist as indicated in the contract documents.

During the bypass testing phase, the temporary bypass system will discharge downstream of the existing UV influent weir, and the existing UV system will remain online with two available banks for discharge disinfection. The UV influent box gate (50-G-01-FEF) will remain closed to allow the CCWRP UV system to be activated if the bypass system fails or requires adjustment during the testing. The UV recirculation pump (50-P-01-REC) will remain in operation.

This phase maintains a segregated clear well containing only disinfected FE, so the clear well pumped systems (IRR and UW) may continue normal operations. Deployment of the IRR bypass and UW treatment systems are assumed to be done concurrently with the bypass disinfection system and have been included in this phase.

Refer to Figure 2 for the schematic layout during this phase.

2.2.1 Activity Sequence

The following activities shall be completed during Phase 2 before proceeding to Phase 3 activities.

1. Disconnect electrical feeders from existing UV Banks No. 1 and No. 2.
2. Connect feeders to temporary distribution panels to power temporary bypass systems according to plans.
3. Establish instrument and control communication to bypass pumps.
4. Test UV bypass treatment system according to plans and specifications. Recommended operational levels in the UV influent box are as follows:
 - a. High-high alarm: 64.50 feet.
 - b. Pump 2 On/High Alarm: 60.50.
 - c. Pump 2 Off: 60.00.
 - d. Pump 1 On/Level Control Set Pt.: 59.25.
 - e. Jockey Pump off: 59.00.
 - f. Jockey Pump on: 58.00.
 - g. Pumps Off: 57.50.
 - h. Low-low Alarm: 56.00 (to be set according to pump minimum submergence).
5. Connect UW bypass chlorination system. Test for satisfactory operation.
6. Connect IRR water temporary UV disinfection. Test for satisfactory operation.

2.2.2 Safety Considerations

- Normal CCWRP Operations: Refer to Section 2.1.2.1.

2.2.2.1 Installation and Operation of Sodium Hypochlorite System

1. Pressure test existing piping prior to adding chemicals.
2. Provide containment for chemical storage and conveyance systems.
3. Ensure eyewash and shower stations are accessible where persons may be working with or around chemical storage and conveyance piping/equipment.

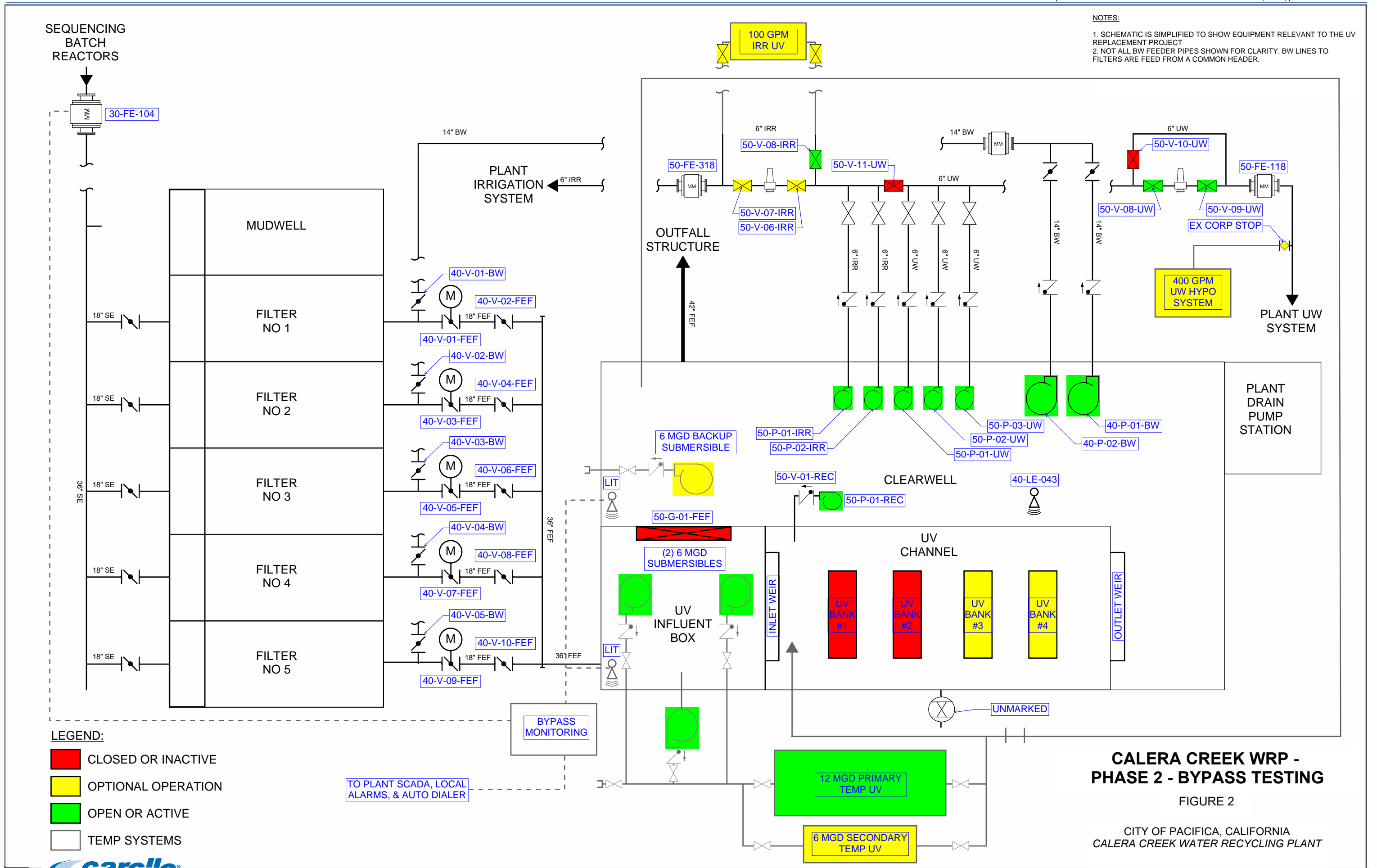
2.2.3 Contingency Response

- Plant Power Failure: Refer to Section 2.1.3.1.

2.2.3.1 Bypass Power Failure

Power failure to the bypass pumps or temporary UV system is unlikely as they are powered by the same set of feeders previously powering the permanent UV system. The response to a power loss would be the same as CCWRP power failure in Section 2.1.3.1.

NOTES:
 1. SCHEMATIC IS SIMPLIFIED TO SHOW EQUIPMENT RELEVANT TO THE UV REPLACEMENT PROJECT
 2. NOT ALL BW FEEDER PIPES SHOWN FOR CLARITY. BW LINES TO FILTERS ARE FEED FROM A COMMON HEADER.



SEQUENCING BATCH REACTORS

30-FE-104

MUDWELL

FILTER NO 1

FILTER NO 2

FILTER NO 3

FILTER NO 4

FILTER NO 5

PLANT IRRIGATION SYSTEM

OUTFALL STRUCTURE

400 GPM UW HYPO SYSTEM

PLANT UW SYSTEM

PLANT DRAIN PUMP STATION

6 MGD BACKUP SUBMERSIBLE

CLEARWELL

UV CHANNEL

UV INFLUENT BOX

UV INLET WEIR

UV BANK #1

UV BANK #2

UV BANK #3

UV BANK #4

OUTLET WEIR

12 MGD PRIMARY TEMP UV

6 MGD SECONDARY TEMP UV

LEGEND:

- CLOSED OR INACTIVE
- OPTIONAL OPERATION
- OPEN OR ACTIVE
- TEMP SYSTEMS

TO PLANT SCADA, LOCAL ALARMS, & AUTO DIALER

BYPASS MONITORING

CALERA CREEK WRP - PHASE 2 - BYPASS TESTING

FIGURE 2

CITY OF PACIFICA, CALIFORNIA
 CALERA CREEK WATER RECYCLING PLANT



2.2.3.2 Bypass Pump Failure (Gate 50-G-01-FEF is CLOSED)

Loss of bypass pumping (e.g., mechanical failure, pipe leakage) during this phase should not result in loss of CCWRP disinfection. If pumping stops for any reason during this phase, CCWRP is still configured to direct flow over the weir to the existing UV channel. The contractor shall communicate the loss of pumping to CCWRP staff immediately, and any alarms associated with bypass pump failure will be connected to CCWRP SCADA to alert operators. The existing UV system will be prepared for operation and other steps taken (e.g., delaying or reducing flows to and/or from the filters) to ensure the UV disinfection can transition successfully.

In this configuration, with the UV bypass gate closed, there is a very small volume to equalize flow during a loss of pumping. The response time to loss of pumping is approximately 2 minutes from normal operating elevation (EL 60.50) to high-high alarm (EL 64.50) at 1 mgd and 20 seconds at 6 mgd. Operating the bypass with the UV bypass gate closed should only occur when the main UV channel is operational as a redundant backup because there is no reasonable expectation that a response could occur to address loss of pumping or bypass treatment. The main UV system lamps should be kept on during testing by use of the recirculation pump (50-P-01-REC) to provide cooling flow. Refer to Attachment A4, Table A4.1 for the response time at different flows in this configuration.

2.2.3.3 Bypass UV Treatment Failure (Gate 50-G-01-FEF is CLOSED)

Other than loss of power discussed above, if the UV system cannot produce adequate disinfection for any reason, then the contractor should communicate the loss of disinfection to CCWRP staff immediately. Similar to the loss of bypass pumping, any alarms related to temporary UV operation will be connected to CCWRP SCADA to alert operators. If the issue is not resolved and the existing UV system is prepared, bypass pumping can cease, and flows can be directed to the UV channel.

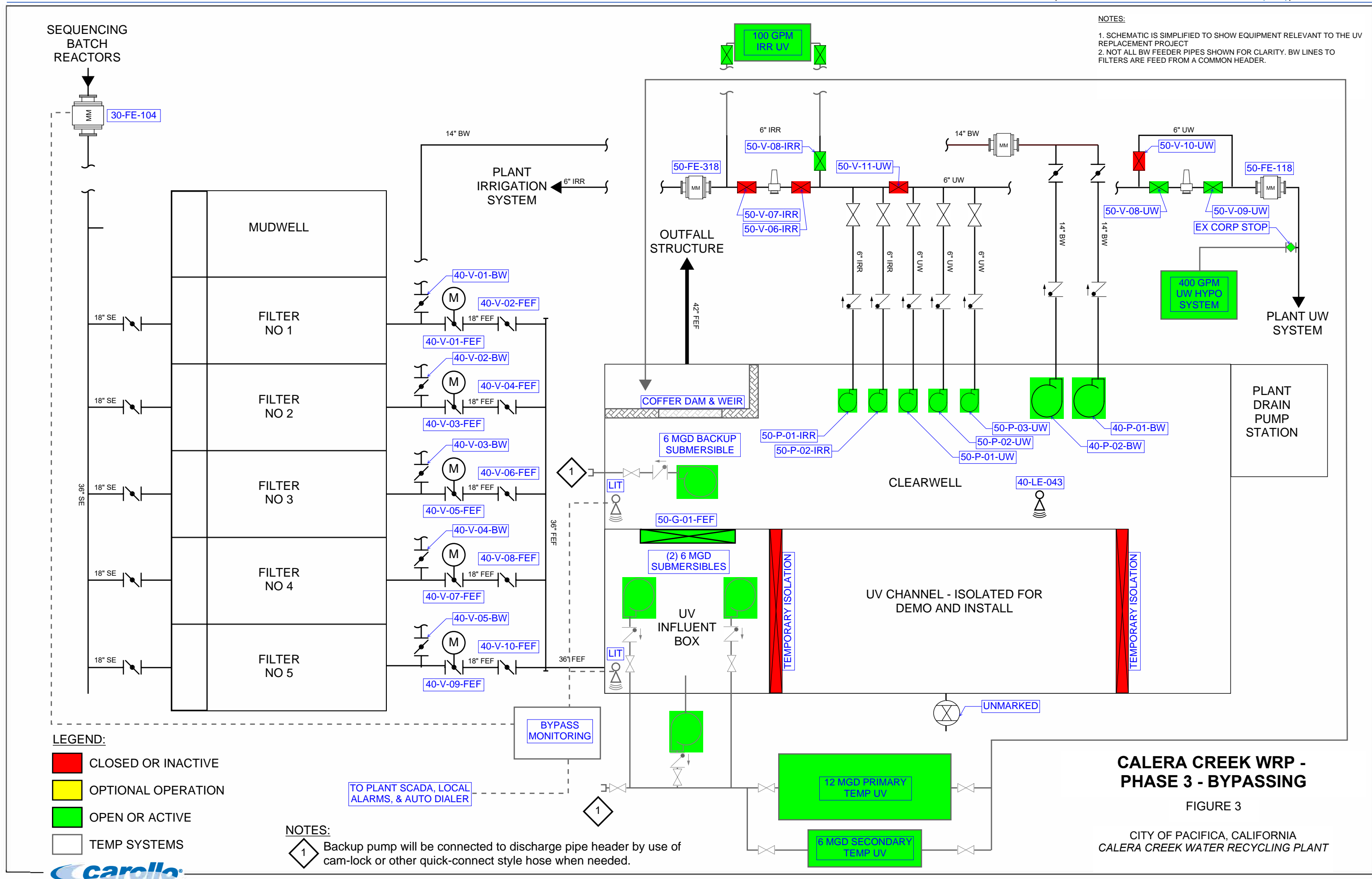
2.3 Phase 3: Bypassing (4/2025 – 9/2025)

After testing of the bypass disinfection system in Phase 2, the full isolation of the UV channel and long-term bypass disinfection operation can commence. CCWRP staff will operate CCWRP in coordination with the contractor's activities and assist as indicated in the contract documents.

During the bypassing phase, all temporary bypass redundant equipment shall be in place. The UV influent box gate (50-G-01-FEF) will be opened/removed after the temporary bulkhead is installed to create additional equalization volume for increased response time during a disruption. This configuration results in undisinfected water behind the temporary bulkhead in the clear well. This water feeds the BWW, IRR, and UW pumps. The temporary systems setup in Phase 2 allow for treatment of the IRR and UW on the pump discharge side for continued use during the bypass.

Refer to Figure 3 for the schematic layout during this phase.

NOTES:
 1. SCHEMATIC IS SIMPLIFIED TO SHOW EQUIPMENT RELEVANT TO THE UV REPLACEMENT PROJECT
 2. NOT ALL BW FEEDER PIPES SHOWN FOR CLARITY. BW LINES TO FILTERS ARE FEED FROM A COMMON HEADER.



SEQUENCING BATCH REACTORS

MUDWELL

FILTER NO 1

FILTER NO 2

FILTER NO 3

FILTER NO 4

FILTER NO 5

PLANT IRRIGATION SYSTEM

OUTFALL STRUCTURE

COFFER DAM & WEIR

6 MGD BACKUP SUBMERSIBLE

50-G-01-FEF

(2) 6 MGD SUBMERSIBLES

UV INFLUENT BOX

CLEARWELL

UV CHANNEL - ISOLATED FOR DEMO AND INSTALL

400 GPM UW HYPO SYSTEM

PLANT UW SYSTEM

PLANT DRAIN PUMP STATION

LEGEND:

- CLOSED OR INACTIVE
- OPTIONAL OPERATION
- OPEN OR ACTIVE
- TEMP SYSTEMS

NOTES:

- 1 Backup pump will be connected to discharge pipe header by use of cam-lock or other quick-connect style hose when needed.

CALERA CREEK WRP - PHASE 3 - BYPASSING

FIGURE 3

CITY OF PACIFICA, CALIFORNIA
 CALERA CREEK WATER RECYCLING PLANT



2.3.1 Activity Sequence

The following activities shall be completed during Phase 3 before proceeding to Phase 4 activities.

1. Shutdown and drain clear well and UV channel for temporary bulkhead installation. Note maximum shutdown time in specifications. Assume multiple shutdowns may be required.
2. Run flow through existing UV system to observe temporary bulkhead for leakage and overflow (EL 62.70).
3. Allow CCWRP to prepare for another shutdown while running temporary bypass UV system.
4. Modify pump levels for clear well bypass operation and adjust operational programming as necessary. Recommended levels are as follows:
 - a. High-high alarm: EL 62.25 feet (assumes temporary bulkhead overflow at EL 62.50).
 - b. Pump 2 On/High Alarm: 60.75.
 - c. Pump 2 Off: 60.00.
 - d. Pump 1 On/Level Control Set Pt.: 59.25.
 - e. Jockey Pump Off: 59.00.
 - f. Jockey Pump On: 58.00.
 - g. Pumps Off: 57.50.
 - h. Low-low Alarm: 56.00 (to be set according to pump minimum submergence).
5. Shutdown and drain clear well and UV channel for following activities:
 - a. Temporary bulkhead installation adjustments, if necessary.
 - b. UV channel isolation.
 - c. UV bypass gate removal.
6. Demolish and replace UV disinfection system.
7. Demolish existing UV weirs. This activity will require either a special bypass pump operation to keep the water level below the work area or a shutdown. The new UV influent gates (40-G-11-FEF and 40-G-21-FEF) and new UV weir gates (40-G-12-FE and 40-G-22-FE) may be used for channel isolation once the weirs are demolished.

2.3.2 Safety Considerations

- Normal CCWRP Operations: Refer to Section 2.1.2.1.
- Shutdown of UV Channel and Clear well: Refer to Section 2.1.2.2.
- Operation of Sodium Hypochlorite System: Refer to Section 2.2.2.1.

2.3.2.1 Work in the UV Channel

The primary purpose of the Project is to reconfigure the UV channel and replace the UV disinfection system. This effort requires extensive work within the isolated UV channel. The UV channel should be treated as confined space for the entire Project.

The existing influent weir will provide the primary isolation of the channel on the upstream end. At EL 65.50, it is 3 feet above the suggested temporary bulkhead overflow elevation (EL 62.50). Assuming the temporary bulkhead provides a 10-foot wide weir crest, the overflow will pass ~18 mgd at EL 63.50 leaving 2 feet of freeboard behind the existing UV inlet weir. The contractor may include isolation above the weir at their discretion.

At the UV Channel discharge, the existing effluent weir at EL 61.0 will require additional isolation (means and methods to be determined by the contractor) to allow for the full proposed operational range for the pumps.

Audible and visual alarms are recommended in the work area to improve evacuation response from the UV channel.

2.3.3 Contingency Response

- Plant Power Failure: Refer to Section 2.1.3.1.
- Bypass Power Failure: Refer to Section 2.2.3.1.
- Bypass Pump Failure (Gate 50-G-01-FEF is CLOSED): Refer to Section 2.2.3.2.
- Bypass UV Treatment Failure (Gate 50-G-01-FEF is CLOSED): Refer to Section 2.2.3.3.

2.3.3.1 Bypass Pump Failure (Gate 50-G-01-FEF is OPEN)

Loss of bypass pumping (e.g., mechanical failure, pipe leakage) during this phase can result in loss of CCWRP disinfection. If pumping stops for any reason during this phase, the filtered flows will fill the clear well until it overflows the temporary bulkhead. The contractor shall communicate the loss of pumping to CCWRP staff immediately, and any alarms associated with bypass pump failure will be connected to CCWRP SCADA to alert operators. If possible, CCWRP should stop or reduce filtered water flow to the UV inlet box to provide more time for the contractor to respond to the disruption.

In this configuration, with the UV bypass gate open, there is additional volume to equalize flow during a loss of pumping. The response time to loss of pumping is approximately 15 minutes from normal operating elevation (EL 60.50) to temporary bulkhead overflow (EL 62.50) at 1 mgd and 2-1/2 minutes at 6 mgd. Refer to Attachment A4, Table A4.2 for the response time at different flows in this configuration. These response times can be considered for differential flow as well as complete pumping loss (i.e., partial pumping loss).

If a temporary bulkhead overflow occurs, undisinfected water will be discharge from CCWRP, and CCWRP staff will determine the response and corrective action required.

2.3.3.2 Bypass UV Treatment Failure (Gate 50-G-01-FEF is OPEN)

Other than loss of power referenced above, if the UV system cannot produce adequate disinfection for any reason, then the contractor should communicate the loss of disinfection to CCWRP staff immediately. Similar to the loss of bypass pumping, any alarms related to temporary UV operation will be connected to CCWRP SCADA to alert operators.

If possible, CCWRP should stop or reduce filtered water flow to the UV inlet box to provide more time for the contractor to respond to the disruption. The response times and overflow conditions are the same as described in Section 2.3.3.1.

Unlike the pump failure scenario, undisinfected or under-disinfected water can be discharged without a temporary bulkhead overflow. The contractor will report the operation of the temporary UV system on a regular basis and key parameters will be sent directly to CCWRP SCADA if feasible and will report any operations below minimum disinfection parameters immediately. If a treatment disruption occurs, CCWRP staff will determine the response and corrective action required.

2.4 Phase 4: UV Startup (9/2025 – 10/2025)

After installation of the new UV disinfection system in Phase 3, startup and testing can begin. The City staff will operate CCWRP in coordination with the contractor's activities and assist as indicated in the contract documents.

During the UV startup phase, the temporary bypass system shall remain in place until the new UV system is validated for operation according to the contract documents and accepted by the City to produce water for discharge to the outfall.¹ The UV influent box gate (50-G-01-FEF) will be demolished and the opening covered per contract drawings prior to the startup phase. The temporary systems for IRR and UW may be decommissioned once the opening is closed.

Refer to Figure 4 for the schematic layout during this phase.

2.4.1 Activity Sequence

The following activities shall be completed during Phase 4 before proceeding to Phase 5 activities.

1. Shutdown and drain clear well and UV channel for following activities:
 - a. temporary bulkhead removal.
 - b. UV bypass gate demolition and opening closed.
2. Modify pump levels for UV inlet bypass operation and adjust operational programming as necessary. Recommended levels are as follows:
 - a. High-high alarm: 64.50 feet.
 - b. Pump 2 On/High Alarm: 60.50.
 - c. Pump 2 Off: 60.00.
 - d. Pump 1 On/Level Control Set Pt.: 59.25.
 - e. Jockey Pump off: 59.00.
 - f. Jockey Pump on: 58.00.
 - g. Pumps Off: 57.50.
 - h. Low-low Alarm: 56.00 (to be set according to pump minimum submergence).
3. Test and commission new UV system.
4. Decommission temporary treatment systems for IRR and UW.

2.4.2 Safety Considerations

- Normal CCWRP Operations: Refer to Section 2.1.2.1.
- Shutdown of UV Channel and Clear well: Refer to Section 2.1.2.2.
- Operation of Sodium Hypochlorite System: Refer to Section 2.2.2.1.

2.4.3 Contingency Response

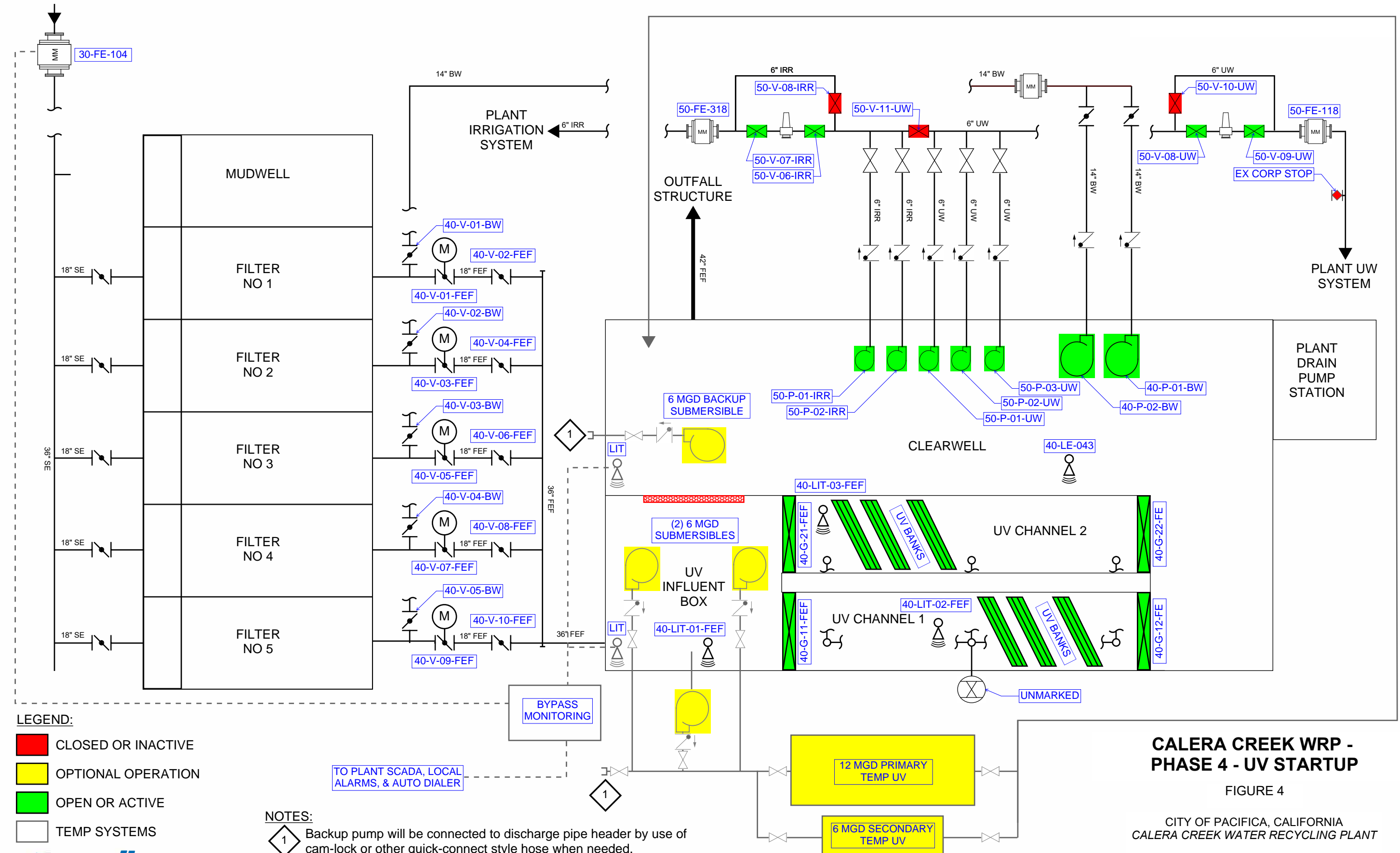
- Plant Power Failure: Refer to Section 2.1.3.1.
- Bypass Power Failure: Refer to Section 2.2.3.1.
- Bypass Pump Failure (Gate 50-G-01-FEF is CLOSED): Refer to Section 2.2.3.2.
- Bypass UV Treatment Failure (Gate 50-G-01-FEF is CLOSED): Refer to Section 2.2.3.3.

¹ Title 22 recycled water cannot be produced until validation testing has been performed and the system approved by DDW and RWQCB prior to the 2025 IRR season.

NOTES:

1. SCHEMATIC IS SIMPLIFIED TO SHOW EQUIPMENT RELEVANT TO THE UV REPLACEMENT PROJECT
2. NOT ALL BW FEEDER PIPES SHOWN FOR CLARITY. BW LINES TO FILTERS ARE FEED FROM A COMMON HEADER.

SEQUENCING BATCH REACTORS



LEGEND:

- CLOSED OR INACTIVE
- OPTIONAL OPERATION
- OPEN OR ACTIVE
- TEMP SYSTEMS

NOTES:

- 1 Backup pump will be connected to discharge pipe header by use of cam-lock or other quick-connect style hose when needed.

CALERA CREEK WRP - PHASE 4 - UV STARTUP

FIGURE 4

CITY OF PACIFICA, CALIFORNIA
CALERA CREEK WATER RECYCLING PLANT



2.5 Phase 5: Normal Operation (10/2025 - Project Closeout)

This is the final phase in which the bypass is decommissioned and the new UV system operation is handed over to CCWRP for operation.

Refer to Figure 5 for the schematic layout during this phase.

2.5.1 Activity Sequence

The following activities shall occur during Phase 5.

1. Decommission and remove bypass systems.

2.5.2 Safety Considerations

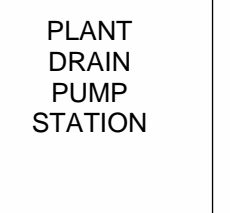
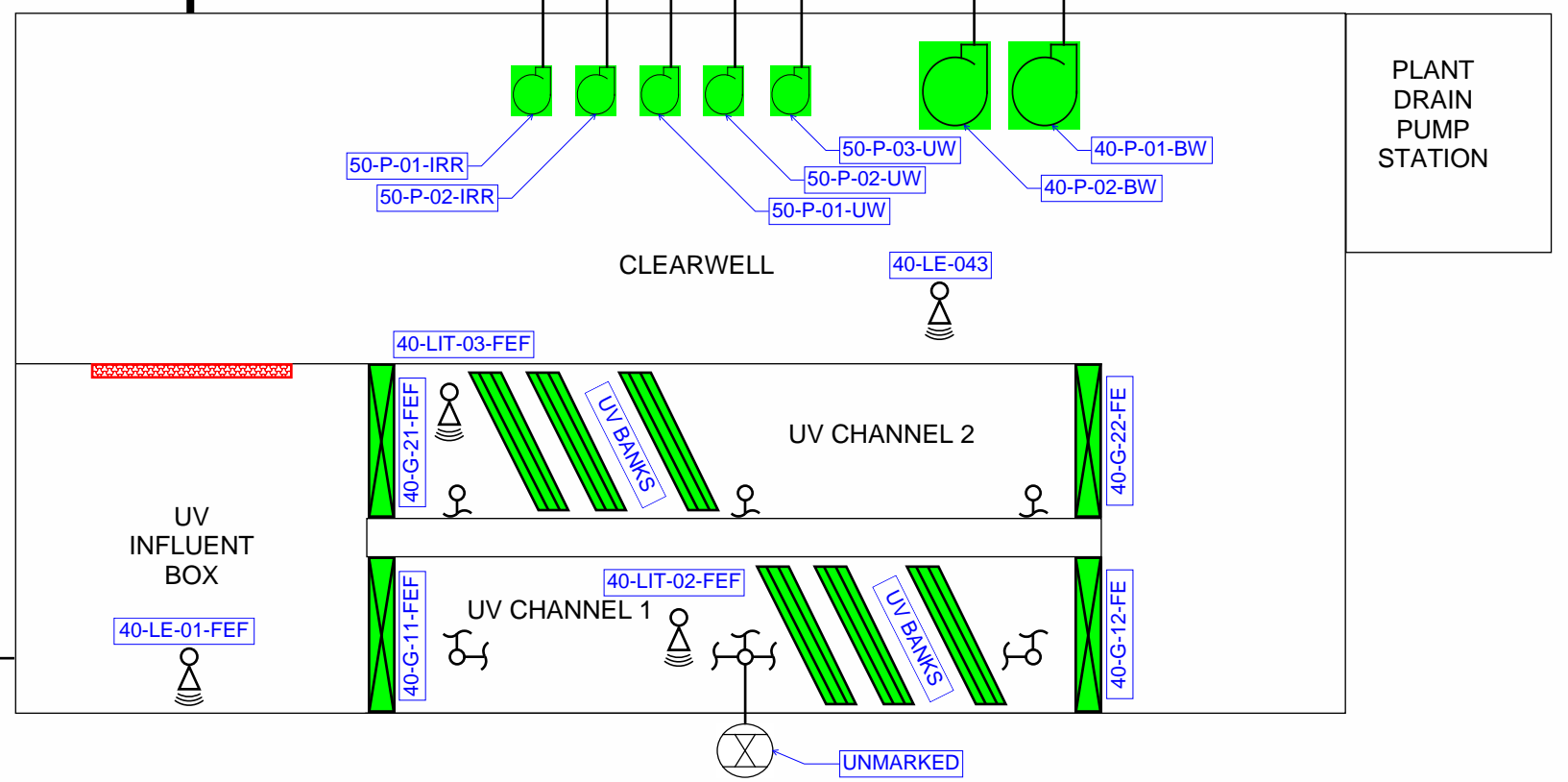
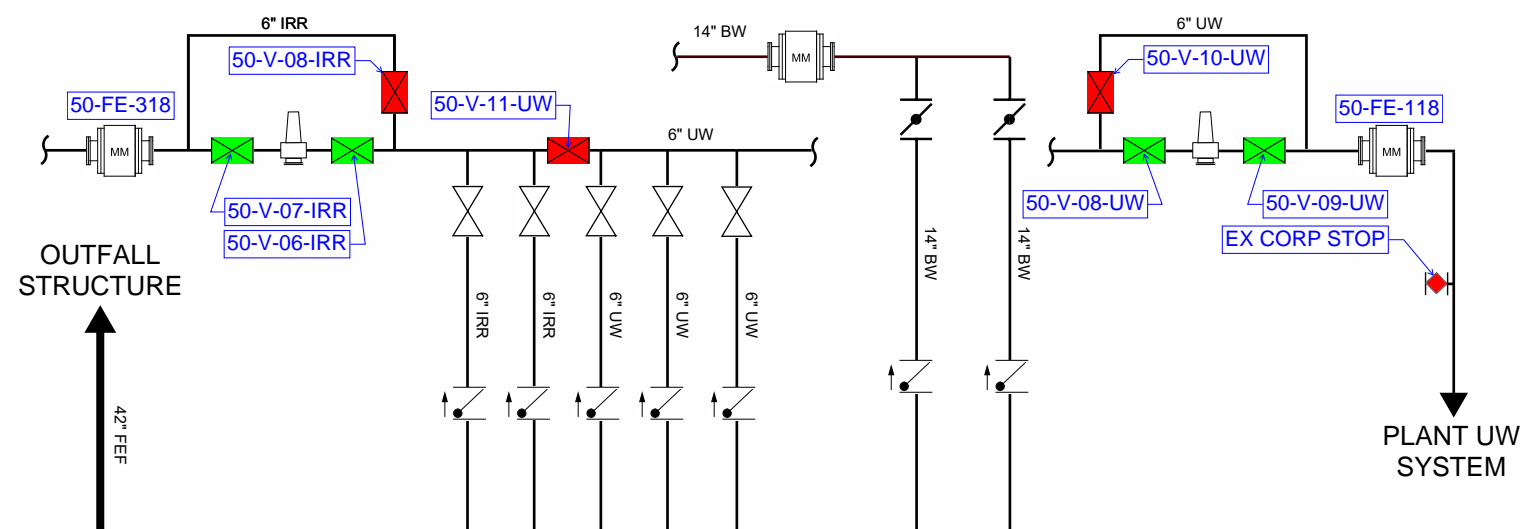
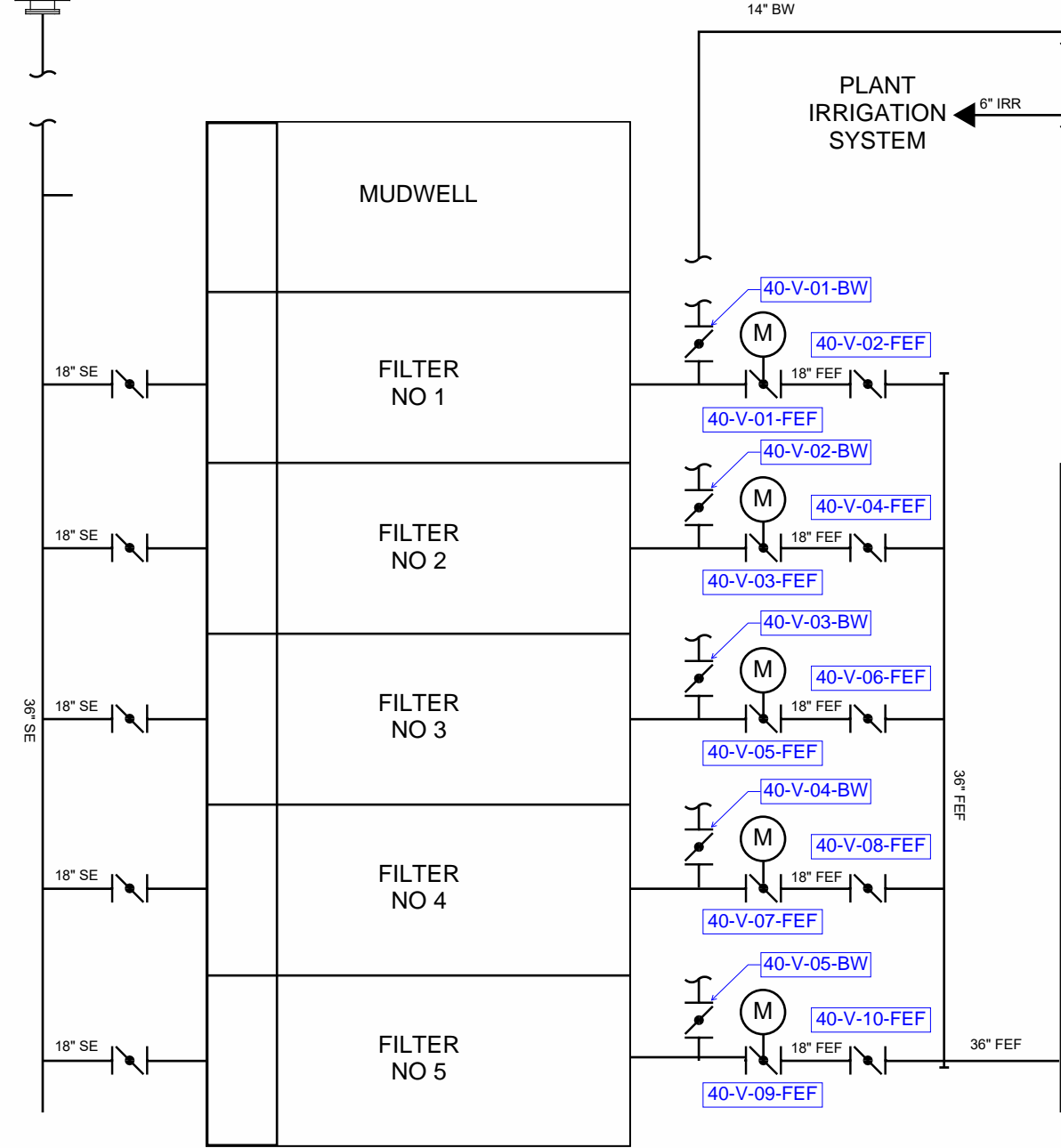
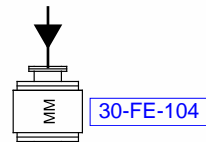
- Normal CCWRP Operations: Refer to Section 2.1.2.1.

2.5.3 Contingency Response

- Plant Power Failure: Refer to Section 2.1.3.1.

NOTES:
 1. SCHEMATIC IS SIMPLIFIED TO SHOW EQUIPMENT RELEVANT TO THE UV REPLACEMENT PROJECT
 2. NOT ALL BW FEEDER PIPES SHOWN FOR CLARITY. BW LINES TO FILTERS ARE FEED FROM A COMMON HEADER.

SEQUENCING BATCH REACTORS



LEGEND:

- CLOSED OR INACTIVE
- OPTIONAL OPERATION
- OPEN OR ACTIVE

CALERA CREEK WRP - PHASE 5 - NORMAL OPERATION

FIGURE 5

CITY OF PACIFICA, CALIFORNIA
 CALERA CREEK WATER RECYCLING PLANT



Attachment A1

CALERA CREEK WATER RECLAMATION PLANT 1996 RECORD DRAWINGS – FILTER/UV FACILITY EXCERPTS

DATE: 20-SEP-1996

TIME: 08:27

FILE No. m:\pacific\ecw\p\pcc\pcc40s01.dgn

username
JOB No.

REV	DATE	BY	DESCRIPTION
9/96	JMS		CONFORMED DRAWING
8/4/96	JMS		UV CHANNEL MOD.
7/3/96	DWJ		STRUCTURAL MODIFICATION

SCALE: 3/8" = 1'-0"

WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: K. STACHL
 DRAWN: K. STACHL
 CHECKED: M. FORDHAM

SUBMITTED: *Shirley M. Miller*
 PROJECT ENGINEER

C. 043548
 R. C. E. NO. DATE 5/17/96

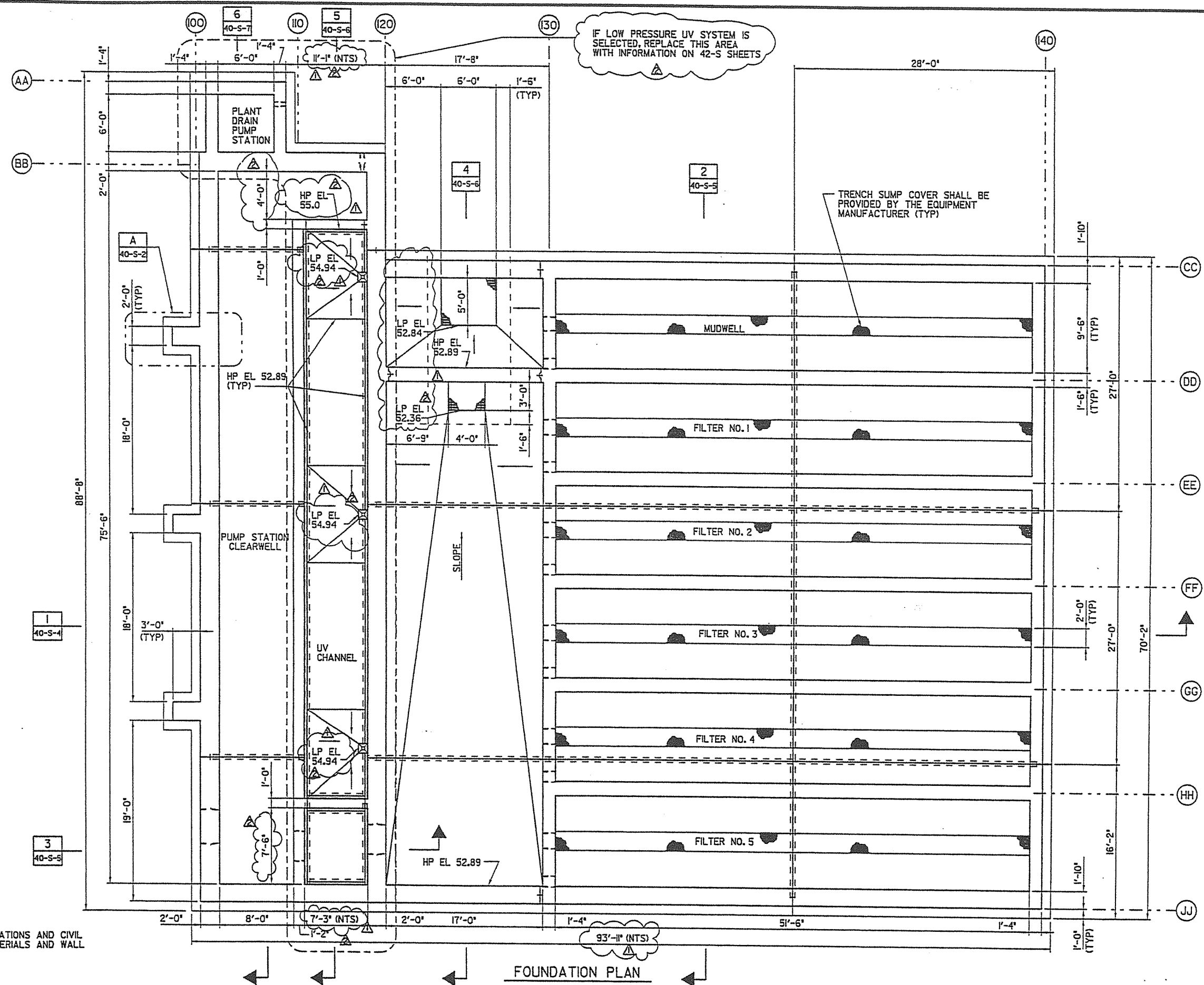
30393
 R. C. E. NO. DATE 5/17/96

MONTGOMERY WATSON
 Walnut Creek, California

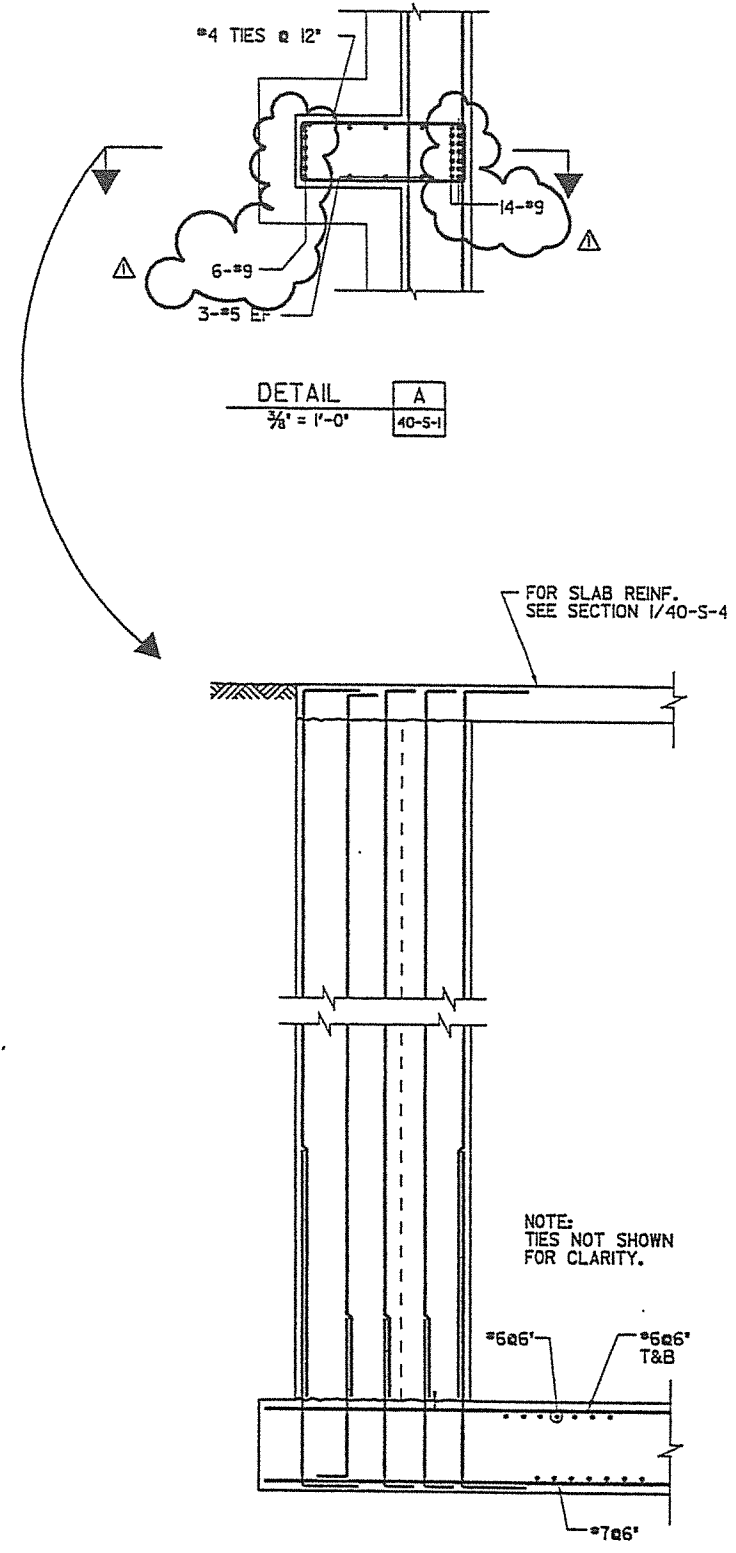
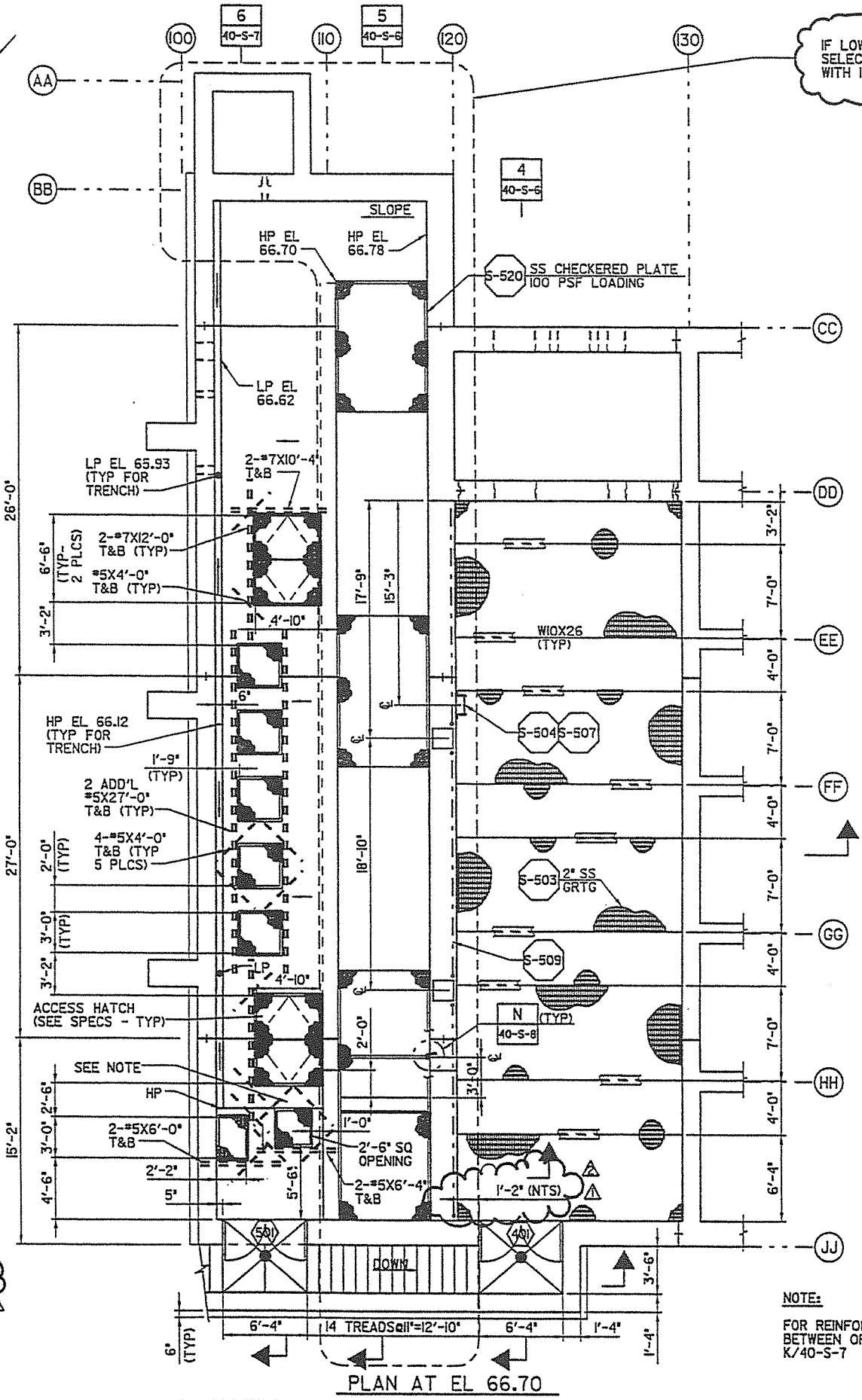
CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 TERTIARY FILTER SYSTEM (TETRA OPTION)
 FOUNDATION PLAN

SHEET 40-S-1

NOTE:
 SEE EARTHWORK SPECIFICATIONS AND CIVIL DRAWINGS FOR BASE MATERIALS AND WALL BACKFILL REQUIREMENTS



username: jms JOB No. 9/36 JMS CONFORMED DRAWING
 FILE No. m:\pacific\ccwrp\br\pcc40s02.dgn DATE: 20-SEP-1998 TIME: 08:27
 10/19/96 JMS ADDENDUM NO. 5
 11/3/96 DML STRUCTURAL MODIFICATION
 REV DATE BY DESCRIPTION



SCALE: AS NOTED

WARNING: 0 1/2 IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: K. STACHL
 DRAWN: K. STACHL
 CHECKED: M. FORDHAM

SUBMITTED: [Signature]
 PROJECT ENGINEER: [Signature]
 MONTEGOMERY WATSON

C. 043548
 R. C. E. NO.
 30393
 R. C. E. NO.

5/17/96
 DATE
 5/17/96
 DATE

WALNUT CREEK, CALIFORNIA

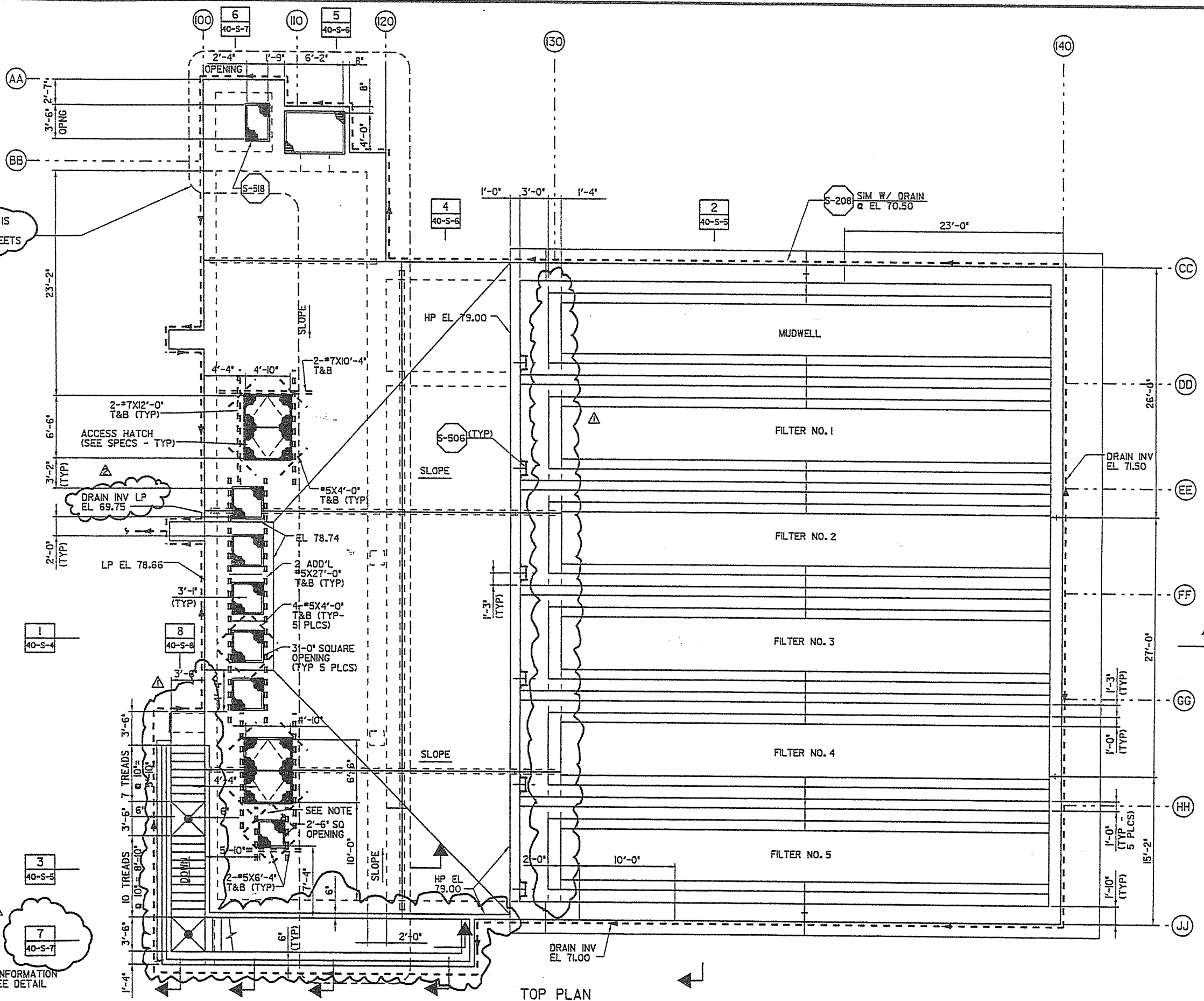
CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 TERTIARY FILTER SYSTEM (TETRA OPTION)
 PLAN AND DETAILS

SHEET 40-S-2

PROFESSIONAL ENGINEER
 No. C 02388
 Exp. 6-30-96
 CIVIL
 STATE OF CALIFORNIA

FILE No. m:\pacific\ccwrp\ar\pcc40s3.dgn DATE: 20-SEP-1998 TIME: 08:27

IF LOW PRESSURE UV SYSTEM IS SELECTED, REPLACE THIS AREA WITH INFORMATION ON 42-S SHEETS



NOTE:
FOR REINFORCEMENT INFORMATION BETWEEN OPENINGS SEE DETAIL K/40-S-7

TOP PLAN



REV	DATE	BY	DESCRIPTION
1	9/26	JMS	CONFORMED DRAWING
2	9/26	JMS	ADDENDUM NO. 3
3	7/3/96	DMJ	STRUCTURAL MODIFICATION

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

WARNING: IF THIS BAR DOES NOT MEASURE 1/2" THEN DRAWING IS NOT TO SCALE.

DESIGNED	K. STACHL	SUBMITTED	<i>Senada M. Miller</i>	C 043548	5/11/96
DRAWN	K. STACHL	PROJECT ENGINEER		R. C. E. NO.	DATE
CHECKED	M. FORDHAM		<i>Paul E. Furr</i>	30393	5/11/96
			MONTGOMERY WATSON	R. C. E. NO.	DATE



MONTGOMERY WATSON

Walnut Creek, California

CITY OF PACIFICA
CALERA CREEK WATER RECYCLING PLANT
TERTIARY FILTER SYSTEM (TETRA OPTION)
TOP PLAN

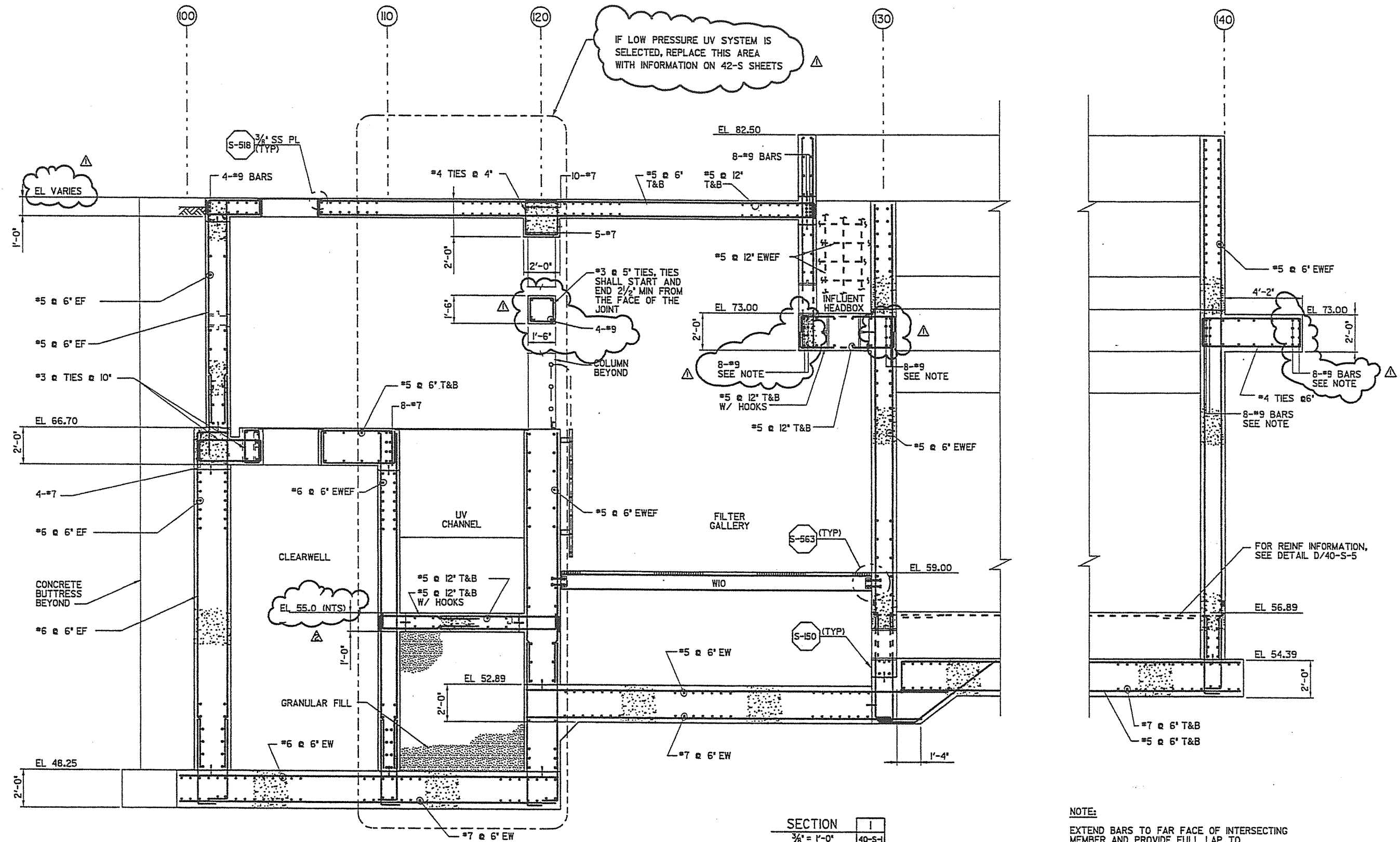
SHEET
40-S-3

DATE: 20-SEP-1996

TIME: 08:27

FILE No. m:\pacifica\cevrp\sr\pac40s04.dgn

username: JOB No.



SECTION	1
3/8" = 1'-0"	40-S-1
	40-S-2
	40-S-3

NOTE:
 EXTEND BARS TO FAR FACE OF INTERSECTING MEMBER AND PROVIDE FULL LAP TO PERPENDICULAR REINFORCEMENT



9/96	JMS	CONFORMED DRAWING	
10/96	JMS	ADDENDUM NO. 5	
11/96	DMJ	STRUCTURAL MODIFICATION	
REV	DATE	BY	DESCRIPTION

SCALE: AS NOTED
 WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED	K. STACHL	SUBMITTED	<i>Jessica Miller</i>	C. 043548	5/17/96
DRAWN	K. STACHL	PROJECT ENGINEER		R. C. E. NO.	DATE
CHECKED	M. FORDHAM		<i>Paul E. Fowell</i>	30393	5/17/96
			MONTGOMERY WATSON	R. C. E. NO.	DATE

MONTGOMERY WATSON
 Walnut Creek, California

CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 TERTIARY FILTER SYSTEM (TETRA OPTION)
 SECTION

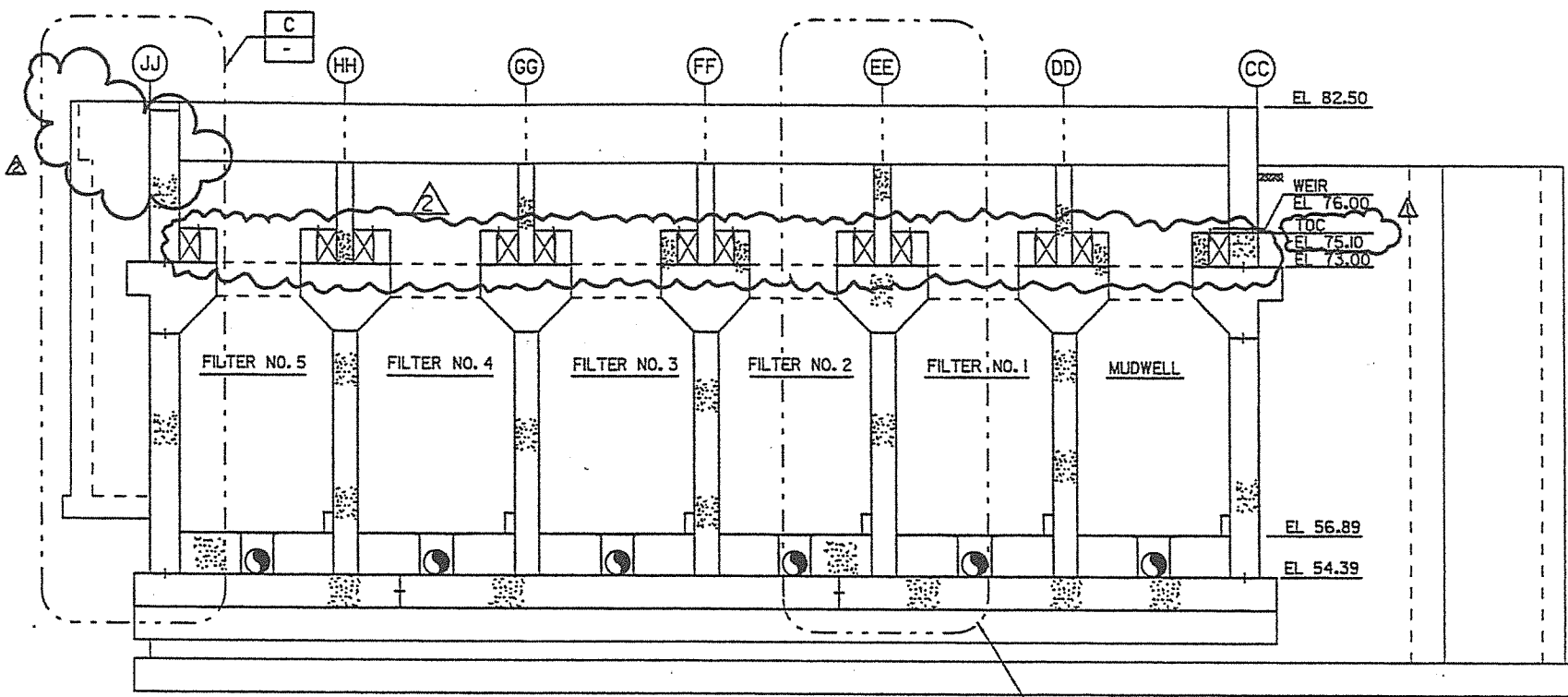
SHEET
 40-S-4

DATE: 20-SEP-1996

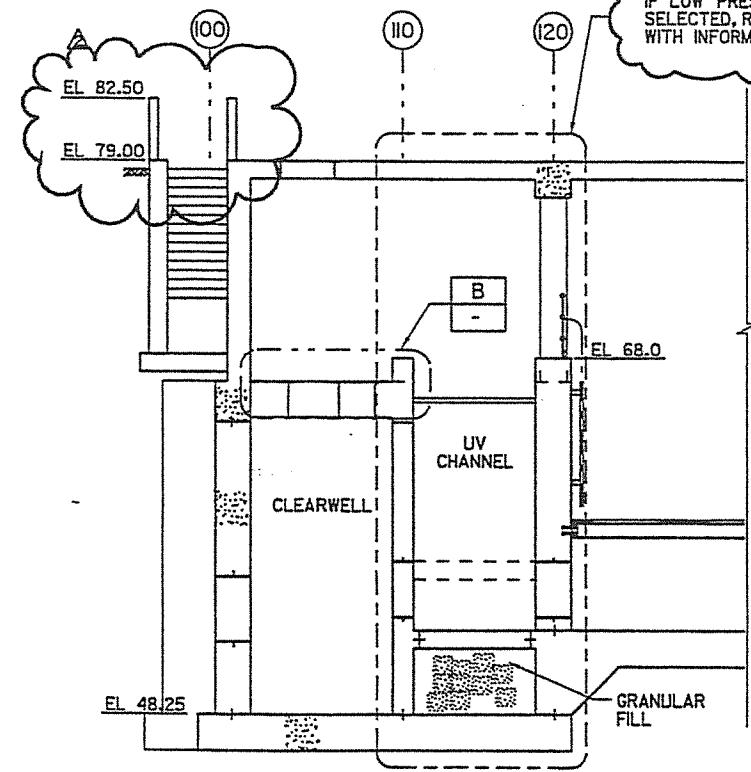
TIME: 08:27

FILE No. m:\pacific\ccwrp\str\pcc40s05.dgn

JOB No.

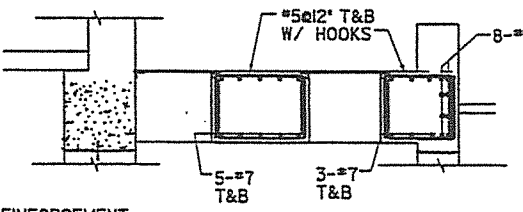


SECTION 2
3/8" = 1'-0"



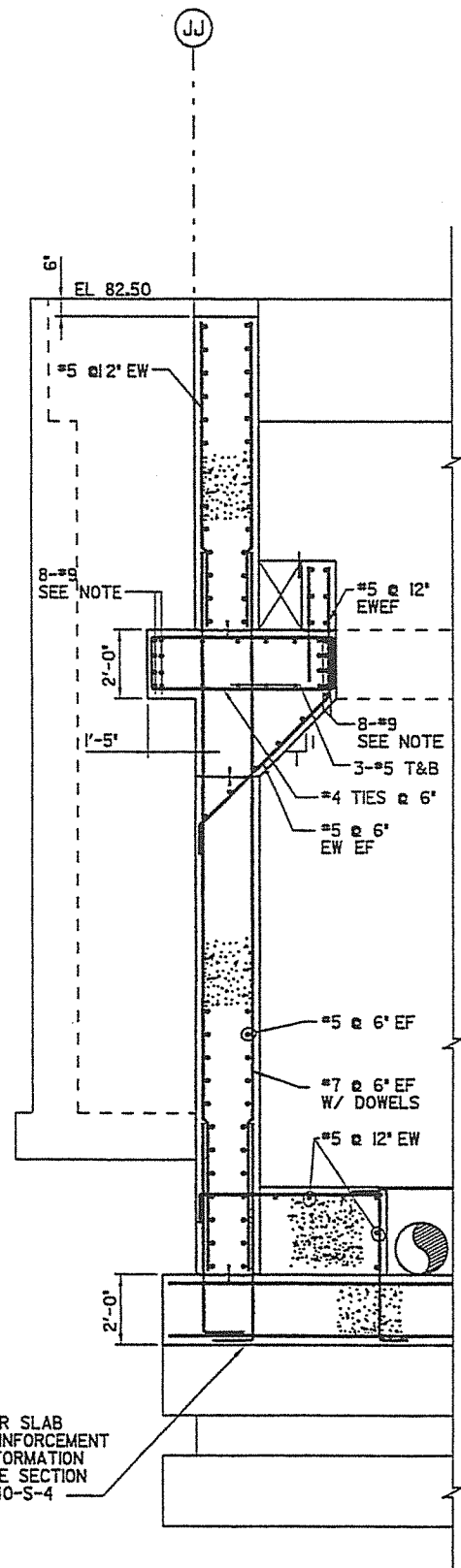
SECTION 3
3/8" = 1'-0"

IF LOW PRESSURE UV SYSTEM IS SELECTED, REPLACE THIS AREA WITH INFORMATION ON 42-S SHEETS



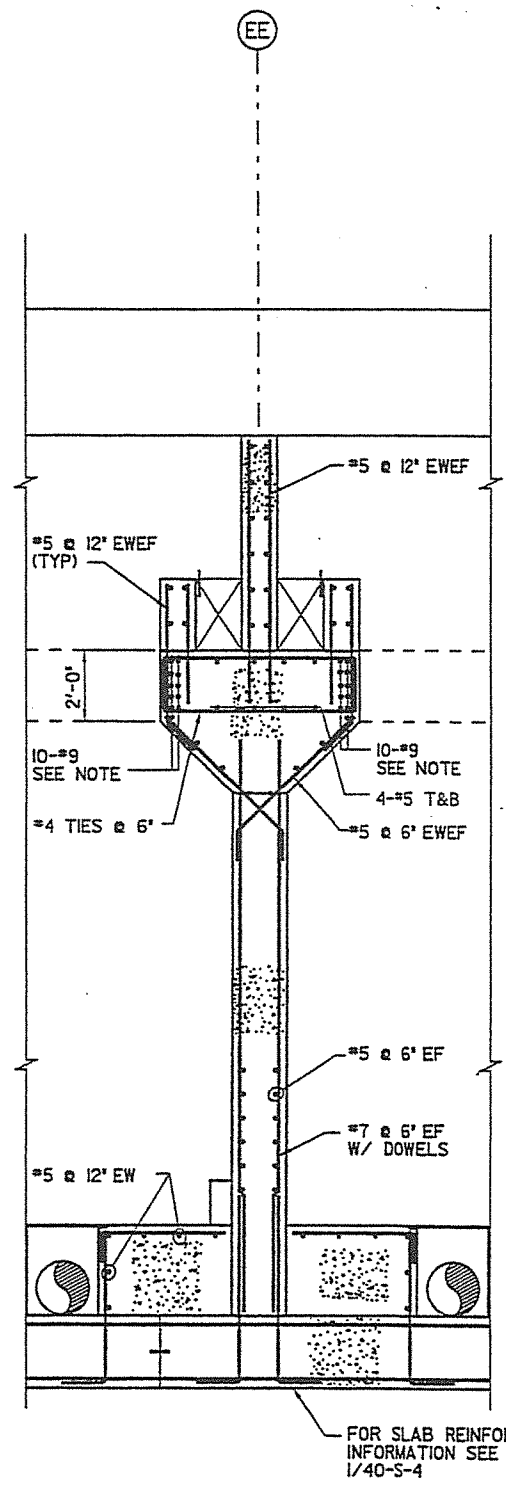
DETAIL B
3/8" = 1'-0"

FOR WALL REINFORCEMENT INFORMATION SEE SECTION 1/40-S-4



DETAIL C
3/8" = 1'-0"

FOR SLAB REINFORCEMENT INFORMATION SEE SECTION 1/40-S-4



DETAIL D
3/8" = 1'-0"

FOR SLAB REINFORCEMENT INFORMATION SEE SECTION 1/40-S-4

- NOTES:
1. EXTEND BARS TO FAR FACE OF INTERSECTING MEMBERS AND PROVIDE FULL LAP TO PERPENDICULAR REINFORCEMENT
 2. THE SUMP COVERS FOR THE TETRA FILTER OPTION WILL BE CONCRETE. THE CONTRACTOR MUST OBTAIN SPECIFIC INSTALLATION DETAILS FROM THE FILTER MANUFACTURER FOR THE SUMP COVERS.

REV	DATE	BY	DESCRIPTION
1/2/96	JMS		CONFORMED DRAWING
1/3/96	DML		STRUCTURAL MODIFICATION
1/2/96	JMS		NOTES

SCALE: AS NOTED

WARNING: 1/2

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

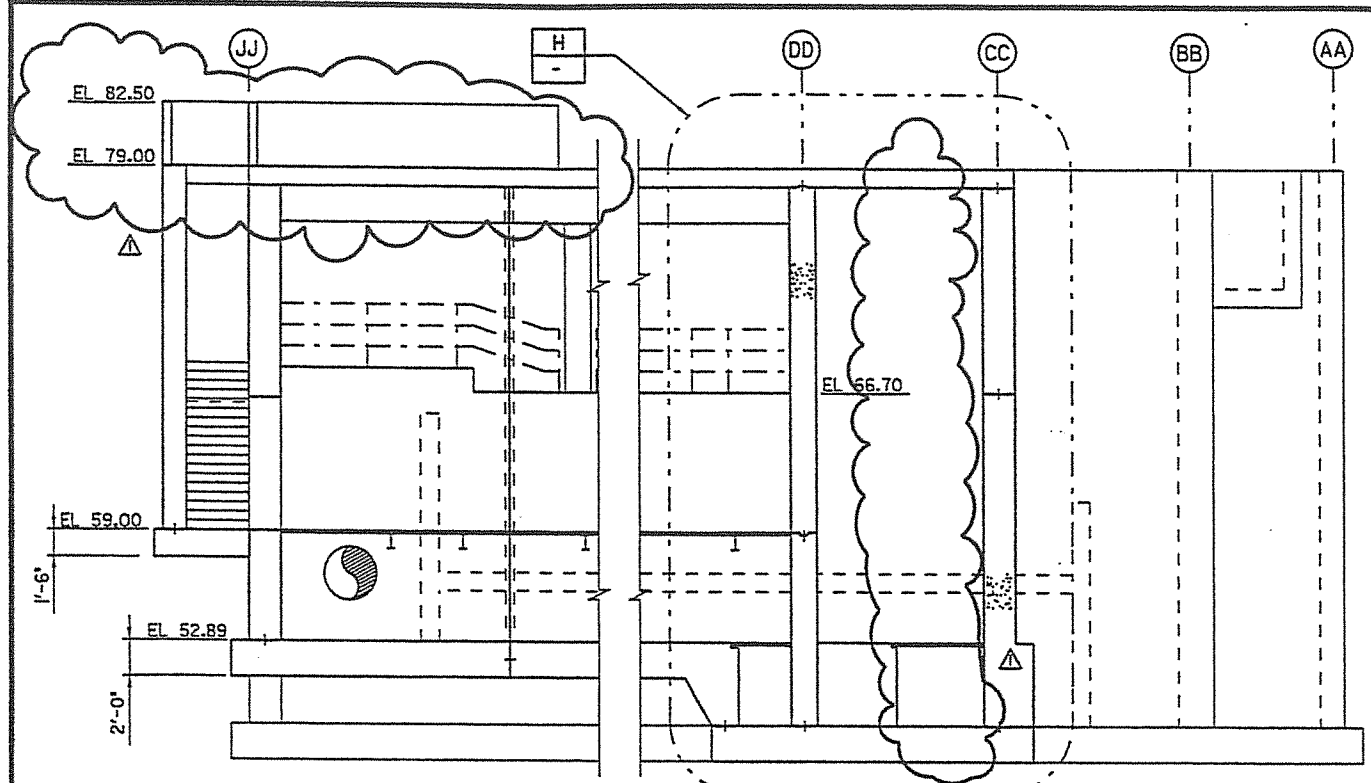
DESIGNED	K. STACHL	SUBMITTED	<i>Jenette M. Stachl</i>	C. 043548	5/17/96
DRAWN	K. STACHL	PROJECT ENGINEER		R. C. E. NO.	DATE
CHECKED	M. FORDHAM		<i>M. Fordham</i>	30393	5/17/96
			MONTGOMERY WATSON	R. C. E. NO.	DATE

MONTGOMERY WATSON
Walnut Creek, California

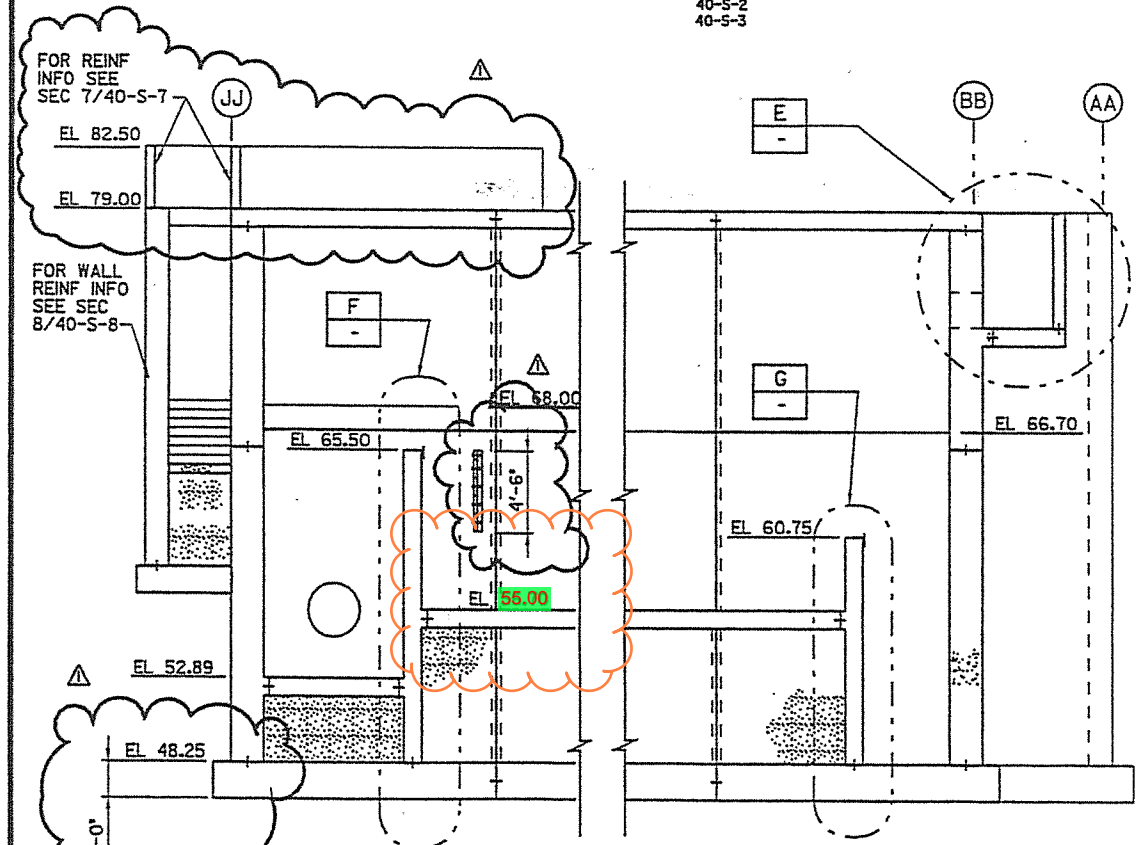
CITY OF PACIFICA
CALERA CREEK WATER RECYCLING PLANT
TERTIARY FILTER SYSTEM (TETRA OPTION)
SECTIONS AND DETAILS



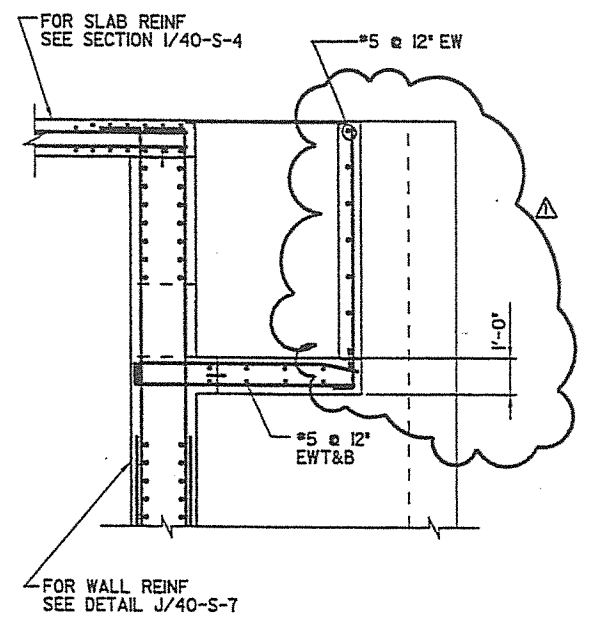
FILE No. m:\pacific\ccwrp\br\pcc40s06.dgn
 USERNAME: jms
 DATE: 20-SEP-1996
 TIME: 09:27



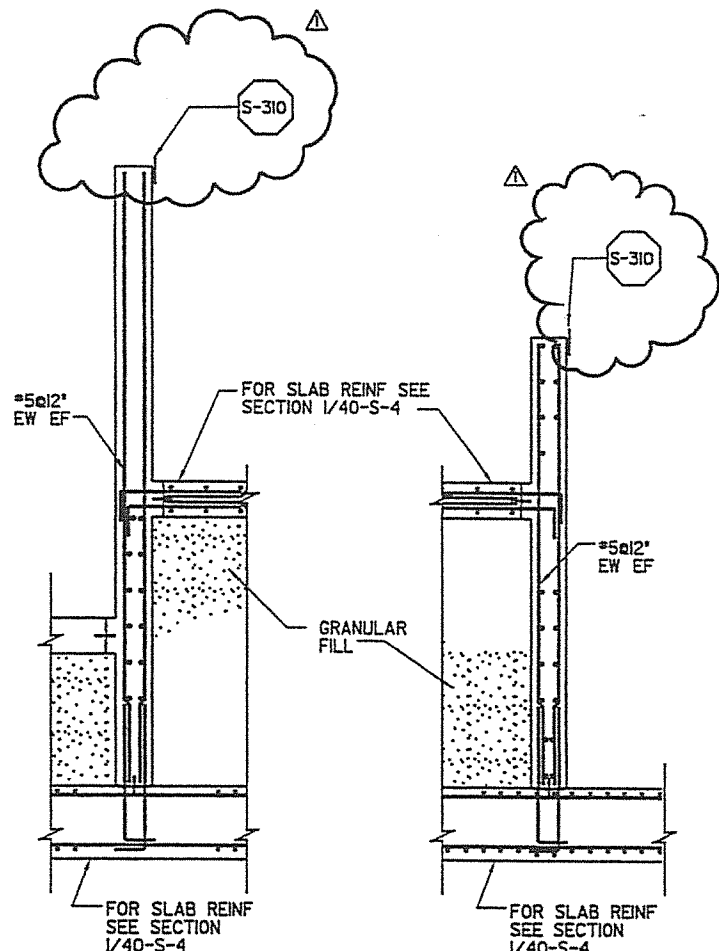
SECTION 4
 $\frac{3}{8}'' = 1'-0''$
 40-S-1
 40-S-2
 40-S-3



SECTION 5
 $\frac{3}{8}'' = 1'-0''$
 40-S-1
 40-S-2
 40-S-3

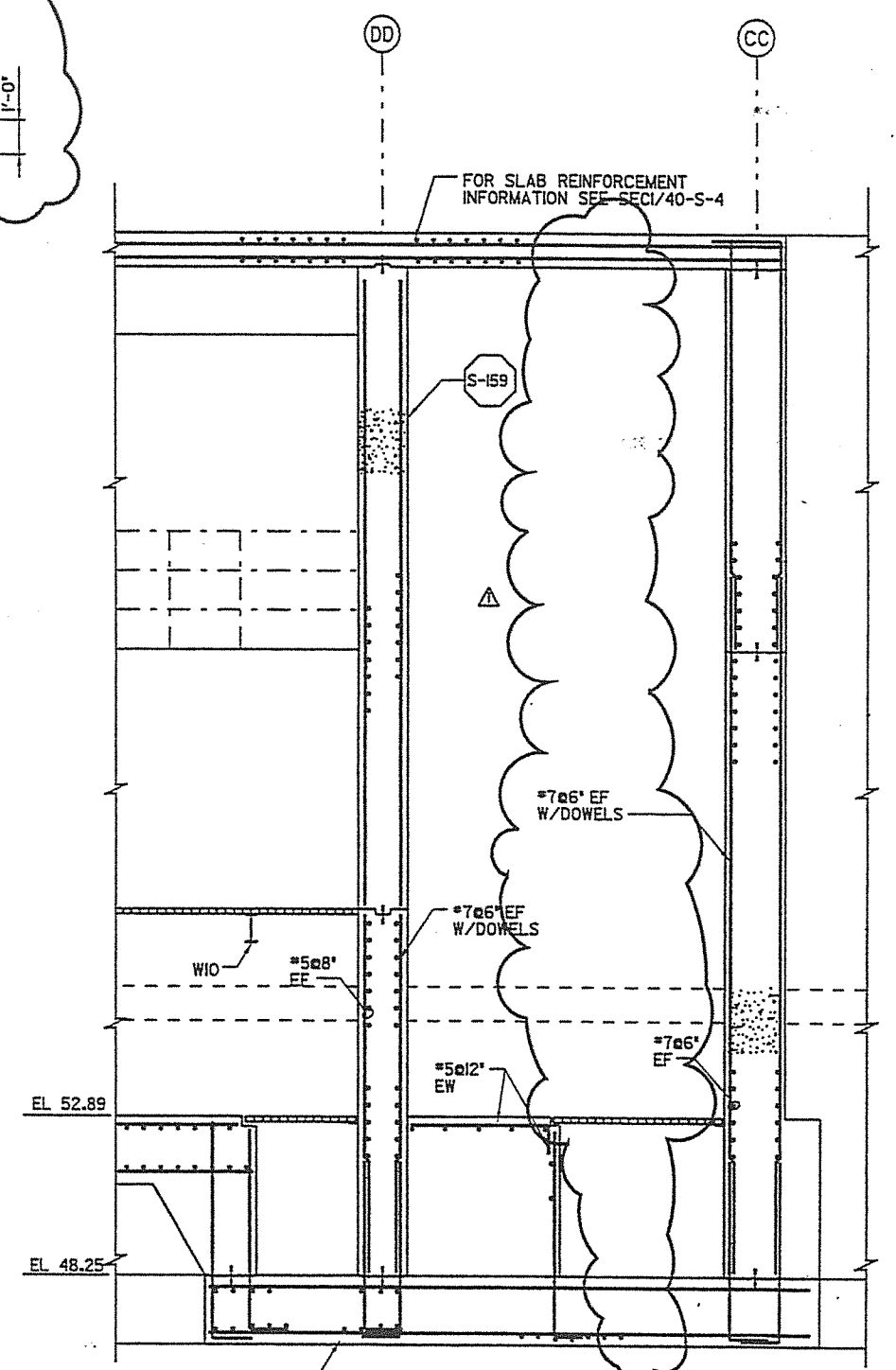


DETAIL E
 $\frac{3}{8}'' = 1'-0''$



DETAIL F
 $\frac{3}{8}'' = 1'-0''$

DETAIL G
 $\frac{3}{8}'' = 1'-0''$



DETAIL H
 $\frac{3}{8}'' = 1'-0''$



REV	DATE	BY	DESCRIPTION
9/26	JMS		CONFORMED DRAWING
11/29/96	JMS		STRUCTURAL MODIFICATION

SCALE: AS NOTED
 WARNING: IF THIS BAR DOES NOT MEASURE 1/2 THEN DRAWING IS NOT TO SCALE.

DESIGNED	K. STACHL	SUBMITTED	<i>Janet Miller</i>	C. 043548	5/17/96
DRAWN	K. STACHL	PROJECT ENGINEER		R. C. E. NO.	DATE
CHECKED	M. FORDHAM		<i>Paul E. Fordham</i>	30393	5/17/96
			MONTGOMERY WATSON	R. C. E. NO.	DATE



MONTGOMERY WATSON
 Walnut Creek, California

CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 TERTIARY FILTER SYSTEM (TETRA OPTION)
 SECTIONS AND DETAILS

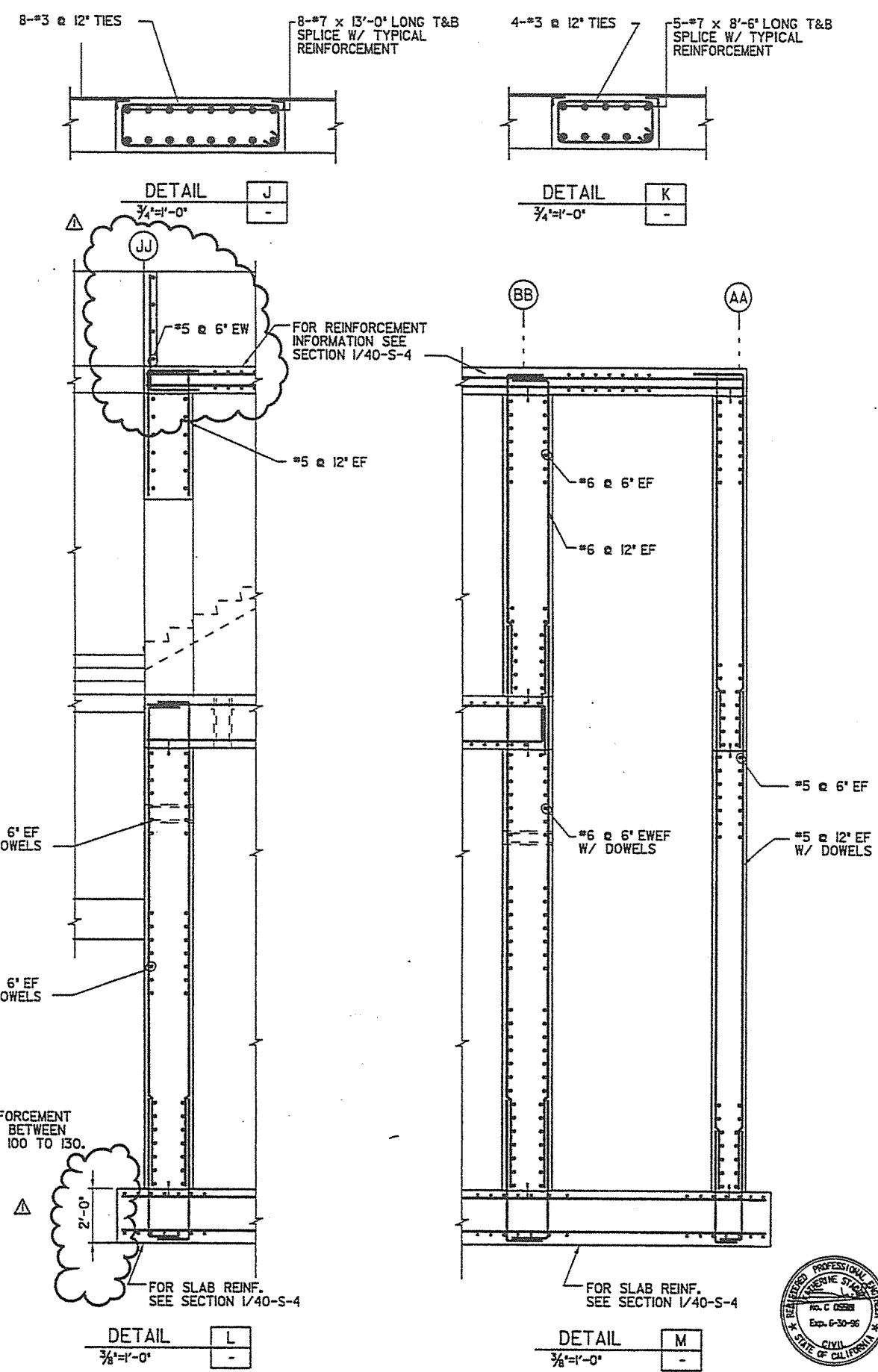
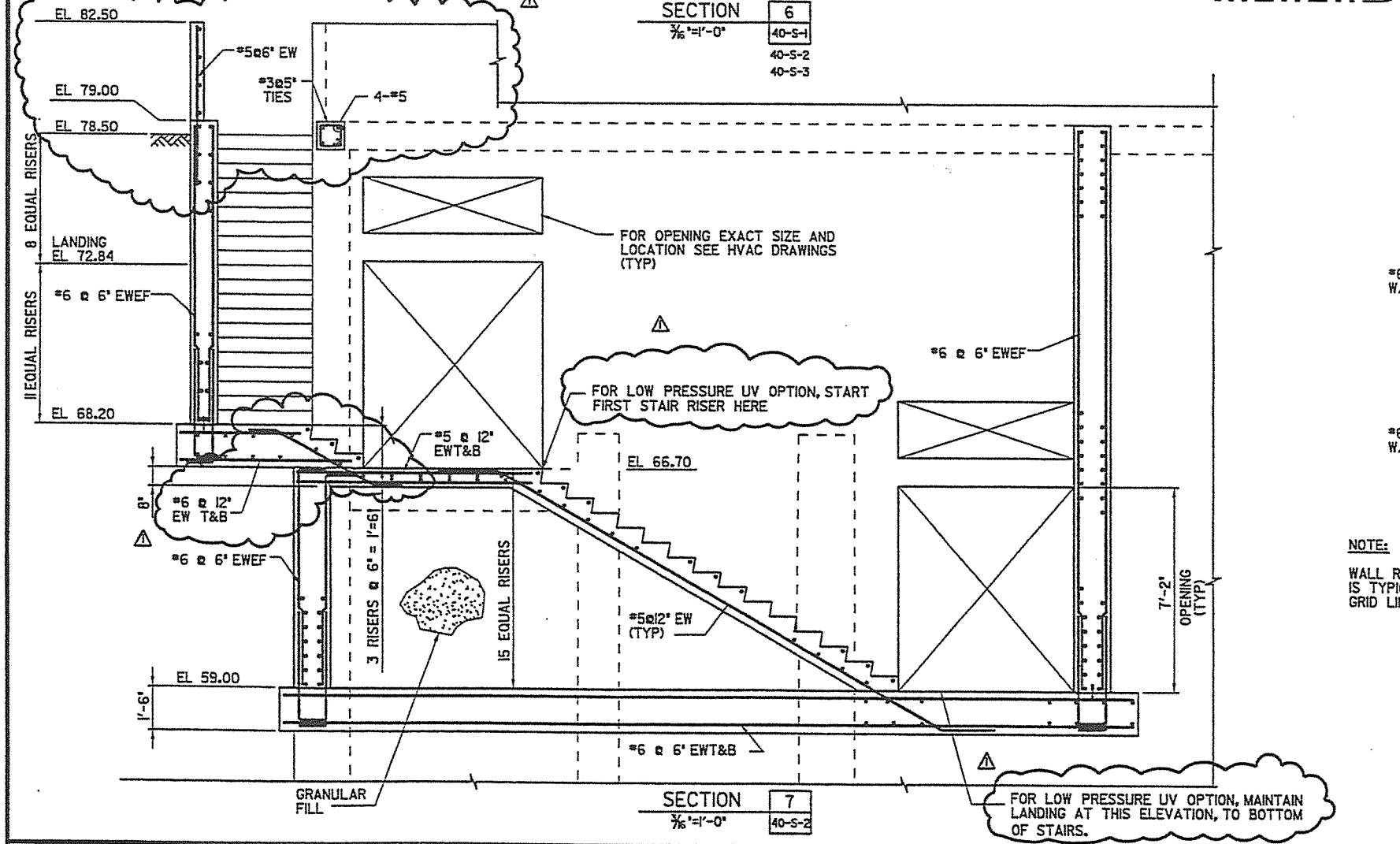
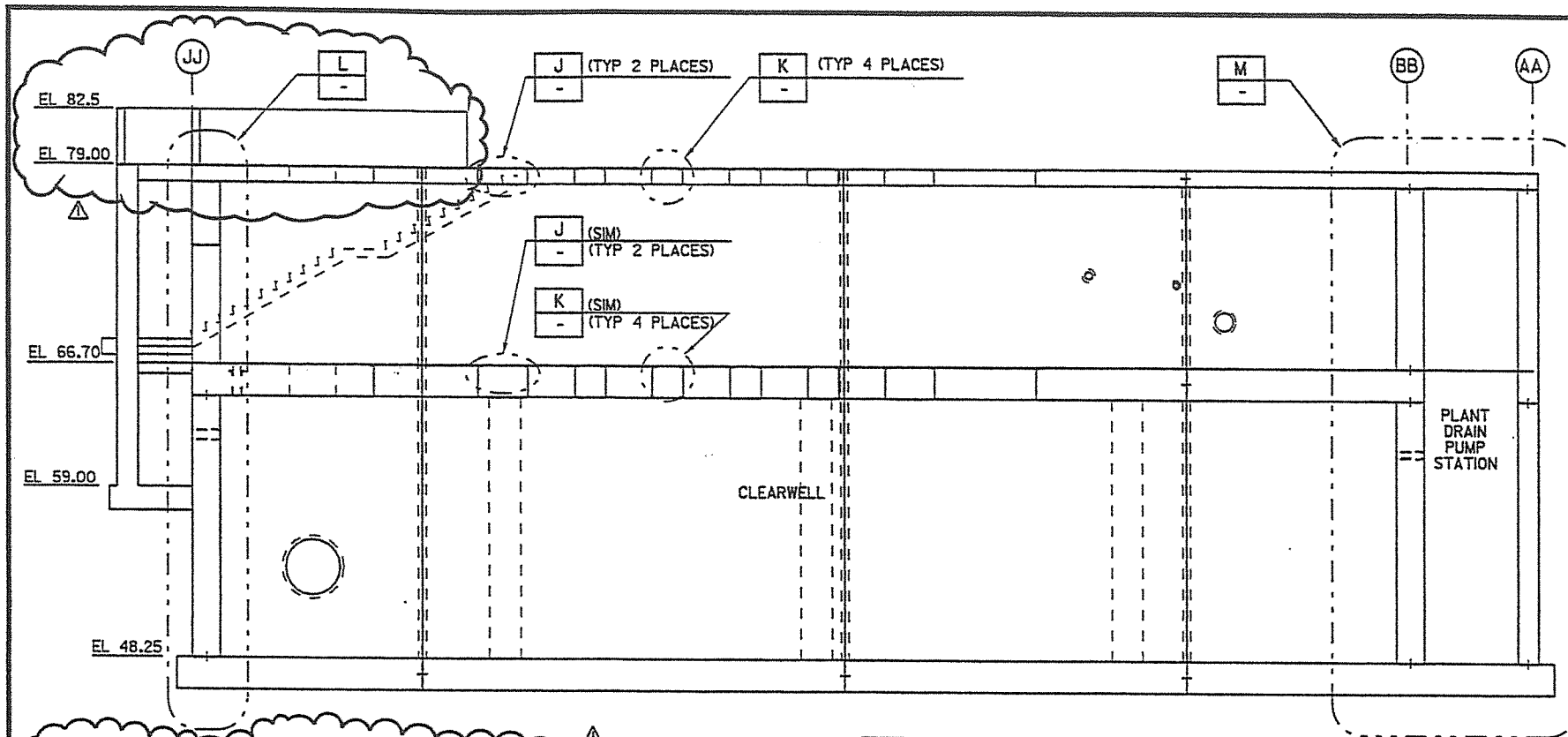
SHEET
 40-S-6

DATE: 20-SEP-1996

TIME: 08:27

FILE No. m:\pacific\ccw\p\st\pcc0907.dgn

USERID: JMS
JOB No.



NOTE:
WALL REINFORCEMENT IS TYPICAL BETWEEN GRID LINES 100 TO 130.

FOR SLAB REINF. SEE SECTION 1/40-S-4

FOR SLAB REINF. SEE SECTION 1/40-S-4

REV	DATE	BY	DESCRIPTION
1/1	7/2/96	JMS	STRUCTURAL MODIFICATION

SCALE: AS NOTED
WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: K. STACHL	SUBMITTED: <i>Standa Miller</i>	C 043548	5/17/96
DRAWN: K. STACHL	PROJECT ENGINEER	R. C. E. NO.	DATE
CHECKED: M. FORDHAM	<i>M. Fordham</i>	30393	5/17/96
	MONTGOMERY WATSON	R. C. E. NO.	DATE

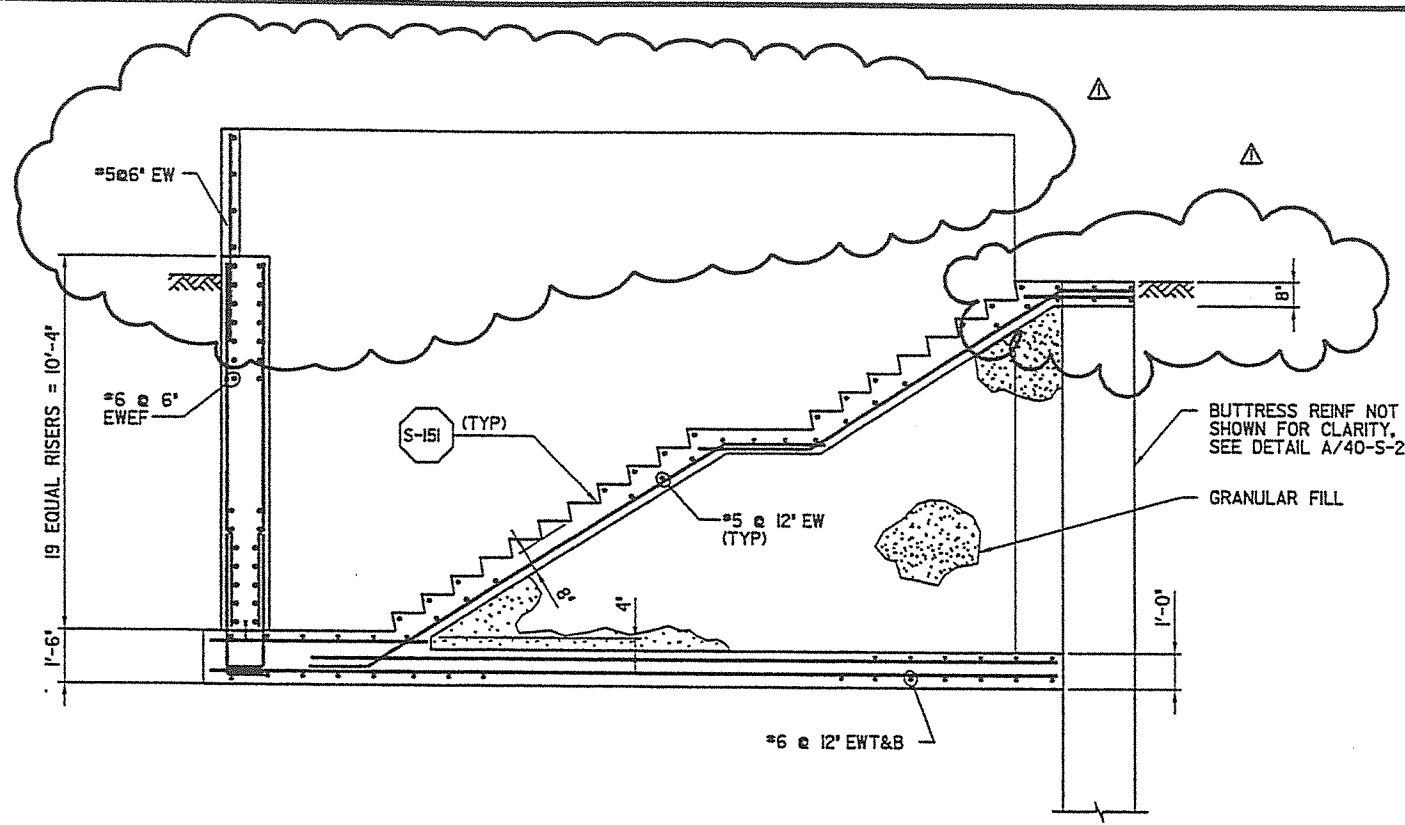
MONTGOMERY WATSON
Walnut Creek, California

CITY OF PACIFICA
CALERA CREEK WATER RECYCLING PLANT
TERTIARY FILTER SYSTEM (TETRA OPTION)
SECTIONS AND DETAILS

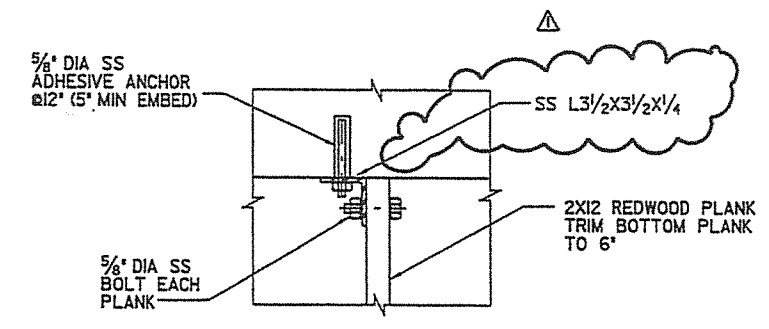


SHEET
40-S-7

DATE: 20-SEP-1996
 TIME: 08:27
 FILE No. m:\pacifica\ccwrp\at\pcc40s8.dgn



SECTION 8
 3/8" = 1'-0" 40-S-3



DETAIL N
 1/2" = 1'-0" 40-S-2



REV	DATE	BY	DESCRIPTION
1	9/17/96	JMS	CONFORMED DRAWING
2	7/3/96	JMS	STRUCTURAL MODIFICATION

SCALE: AS NOTED
 WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED	K. STACHL	SUBMITTED	<i>Shanda M. Miller</i>	C. 043548	5/17/96
DRAWN	K. STACHL	PROJECT ENGINEER		R. C. E. NO.	DATE
CHECKED	M. FORDHAM		<i>Ren E. Furell</i>	30393	5/17/96
			MONTGOMERY WATSON	R. C. E. NO.	DATE

MONTGOMERY WATSON
 Walnut Creek, California

CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 TERTIARY FILTER SYSTEM (TETRA OPTION)
 SECTION

SHEET
 40-S-8

Sverdrup

Sverdrup Civil, Inc.
700 Coast Highway, Suite B
Pacifica, CA 94044

650 738 4660
FAX: 650 355 7256

City of Pacifica/Sverdrup Civil, Inc.

PROPOSED CHANGE ORDER (PCO) TABLE OF CONTENTS

Ref: City of Pacifica, Calera Creek Water Recycling Plant

PCO#: PCO 99

Subj: Precast Concrete Lids for Filter Building

Resolution: Resolved in Change Order Number 123
 Cancelled as of date: _____

TABULAR TABLE OF CONTENTS:

- A. Correspondence
- B. Authorization
- C. Request for Proposal (RFP) to Contractor, requesting price, time estimate
- D. Contractor's Response to RFP (estimate)
- E. Construction Manager's Estimate
- F. Record of Negotiation
- G. Other Items: CO-123, T&M



Con#:98006423.SVC

WALSH PACIFIC CONSTRUCTION
City of Pacifica/Sverdrup Civil, Inc.
CORRESPONDENCE FORM

Date: 4/24/98

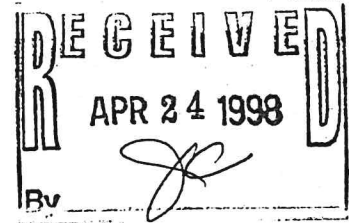
To: Sverdrup Civil, Inc.
Perry Petersen
700 Coast Highway, Suite B
Pacifica, CA 94044

From: Jeff Casey

Ref: City of Pacifica, Calera Creek Water Recycling Plant
Walsh Pacific Job 9698

Corr#: W-111

Subj: PCO # 99 Dimensions w/ regards to hatch.



Dear Perry:

We have had several conversations with the City on possible arrangements of monorail beams and hatches in the Roof Slab of the Filter Building and need confirmation on the following:

1. We have constructed the Lift Slab Blockout as depicted in the drawing associated with PCO #99.
2. The Upper Slab Hatch remaining is not moved per this PCO. Does the City desire this hatch to be located similar to the relocated hatch below it (see Sverdrup letter of 1/27/98, #S325). If so please confirm with a Sketch.
3. Locations of eye bolts can be installed per City direction at a future date once exact locations are known.
4. Monorail beams can be located per City direction at a future date once exact locations are known.

Please confer with the City and expedite a reply as the forming is well underway in this area.

Very Truly Yours,
Walsh Pacific Construction

Jeff Casey
Assistant Project Manager - Electrical / Instrumentation

cc: File 9698 1.3
Dublin/Read



Cor#:98006703.SVC

Sverdrup

Sverdrup Civil, Inc.
700 Coast Highway, Suite B
Pacifica, CA 94044

650 359-9777
FAX: 650 359-9778

**City of Pacifica/Sverdrup Civil, Inc.
CORRESPONDENCE FORM**

Date: May 11, 1998
To: Ron Probert
Walsh Pacific
From: Tom Buckman
Ref: City of Pacifica, Calera Creek Water Recycling Plant
Corr#: S366
Subj: PCO #99 Dimensions with Regards to Hatches
Response to Walsh letter W111

Dear Ron:

In response to your letter W111 requesting confirmation for information you received verbally from the City, the following is provided.

1. No comment
2. The City wants the upper and the lower hatches to line up. This information was provide in CDC #24.
3. The City wants the eye bolts left out. The City will install them at a later date.
4. The City wants the monorail to be centered on the lift points for the #3 and irrigation pumps.

If you have any questions, please contact me.

Sincerely,

Tom Buckman
Resident Engineer

cc: Scott Holmes, Perry Petersen, Gary Rathunde

DATE: 20-SEP-1996

TIME: 08:27

FILE No. m:\pacific\ccwrp\str\pcc040s03.dgn

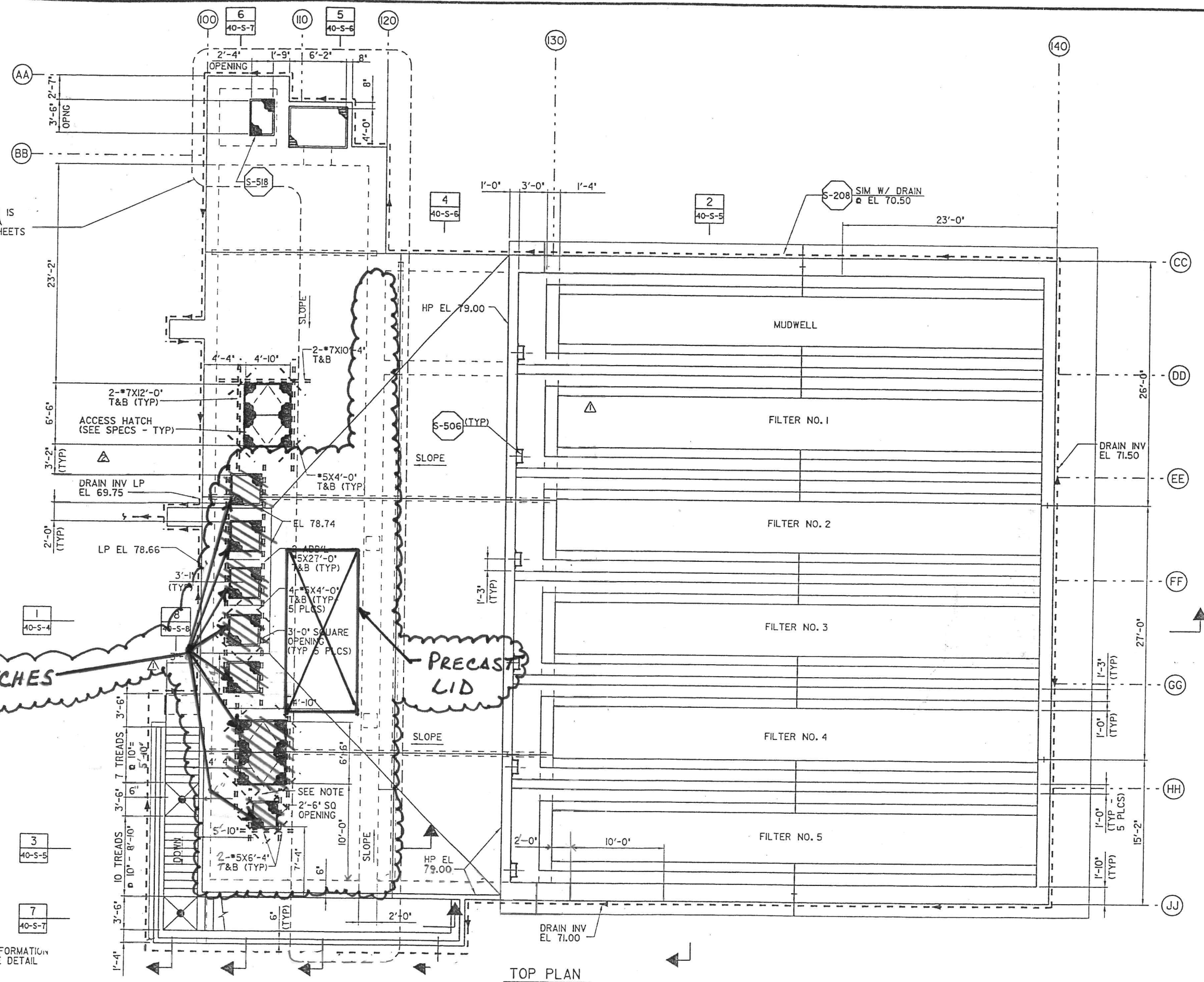
username
JOB No.

IF LOW PRESSURE UV SYSTEM IS SELECTED, REPLACE THIS AREA WITH INFORMATION ON 42-S SHEETS

DELETE HATCHES

PRECAST LID

NOTE:
FOR REINFORCEMENT INFORMATION BETWEEN OPENINGS SEE DETAIL K/40-S-7



TOP PLAN



REV	DATE	BY	DESCRIPTION
1	9/96	JMS	CONFORMED DRAWING
2	11/7/96	JMS	ADDENDUM NO. 3
3	1/23/96	DMJ	STRUCTURAL MODIFICATION

SCALE: 3/8" = 1'-0"

WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED	K. STACH
DRAWN	K. STACH
CHECKED	M. FORDHAM

SUBMITTED	<i>Standa Mitchell</i>	C 043548	5/17/96
PROJECT ENGINEER		R. C. E. NO.	DATE
	<i>Ray E. Powell</i>	30393	5/17/96
	MONTGOMERY WATSON	R. C. E. NO.	DATE



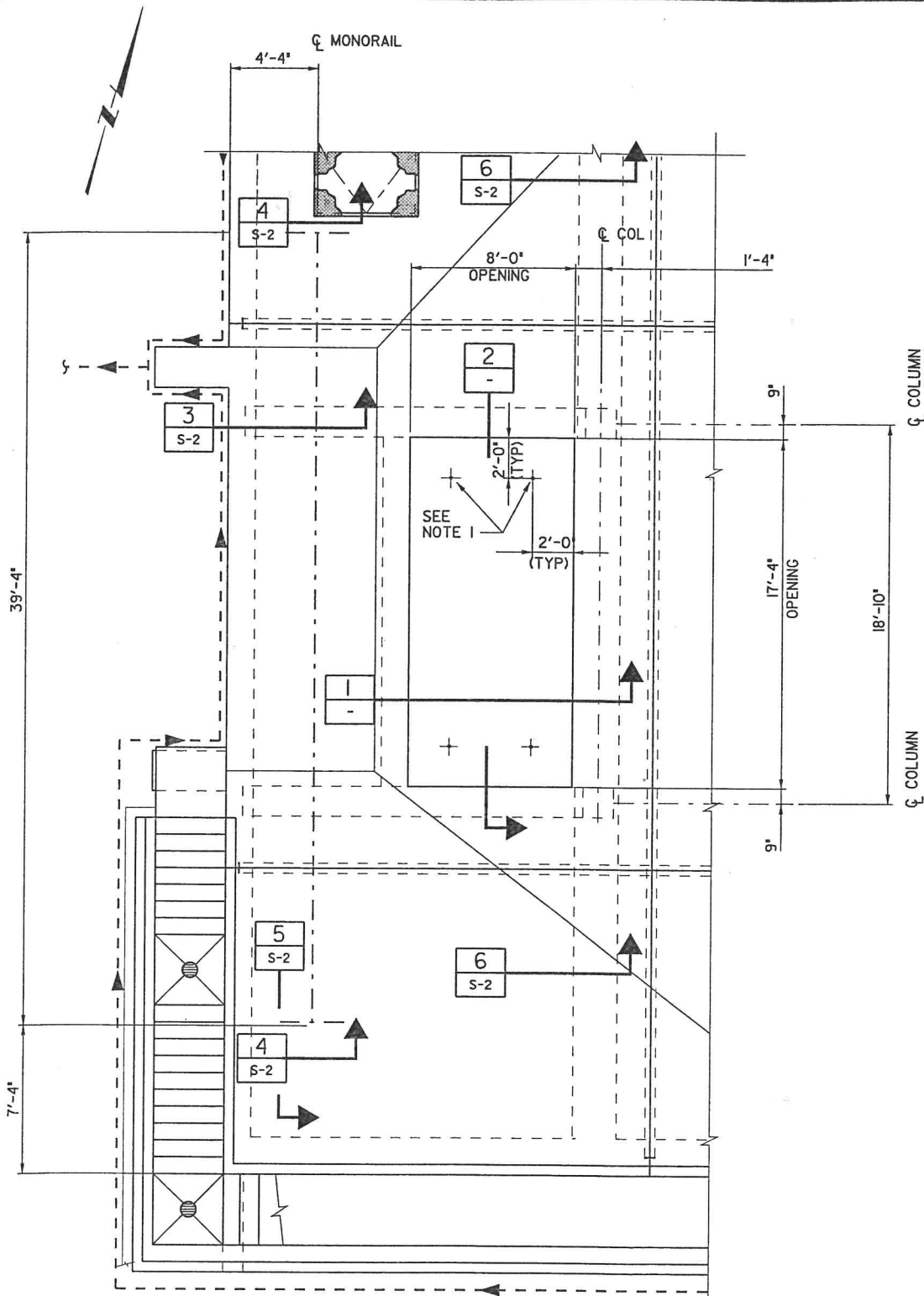
MONTGOMERY WATSON
Walnut Creek, California

PCO#99-1

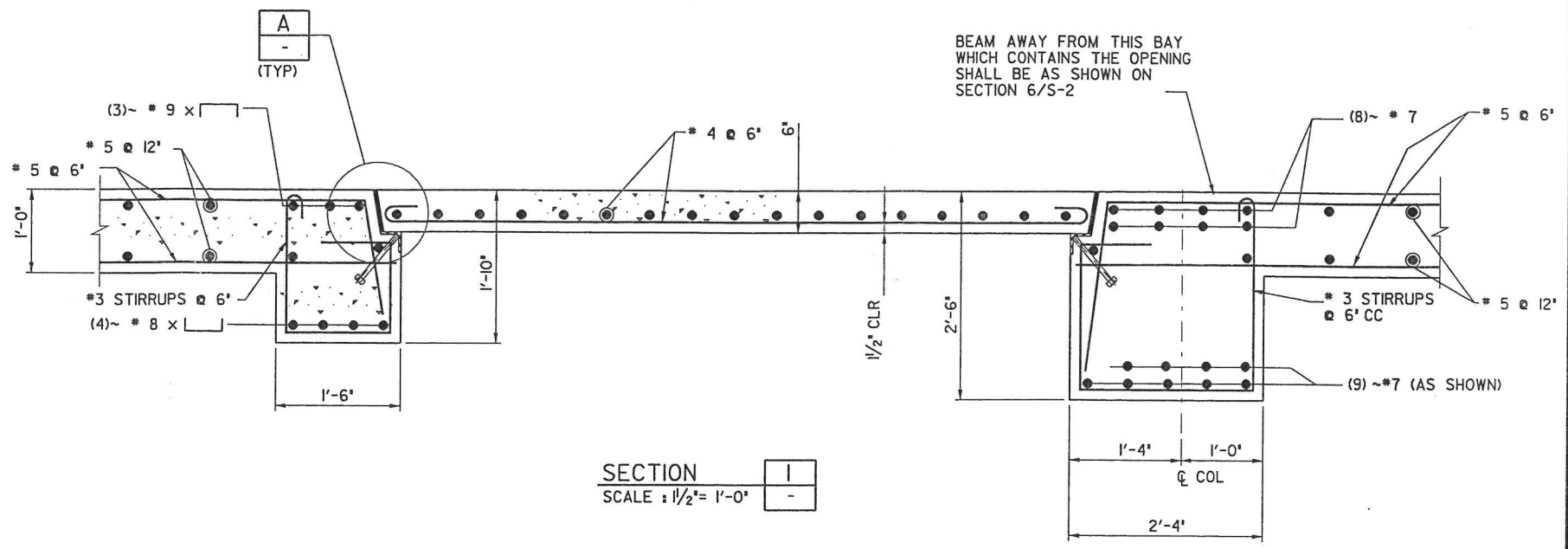
CITY OF PACIFICA
CALERA CREEK WATER RECYCLING PLANT
TERTIARY FILTER SYSTEM (TETRA OPTION)
TOP PLAN

SHEET
40-S-3

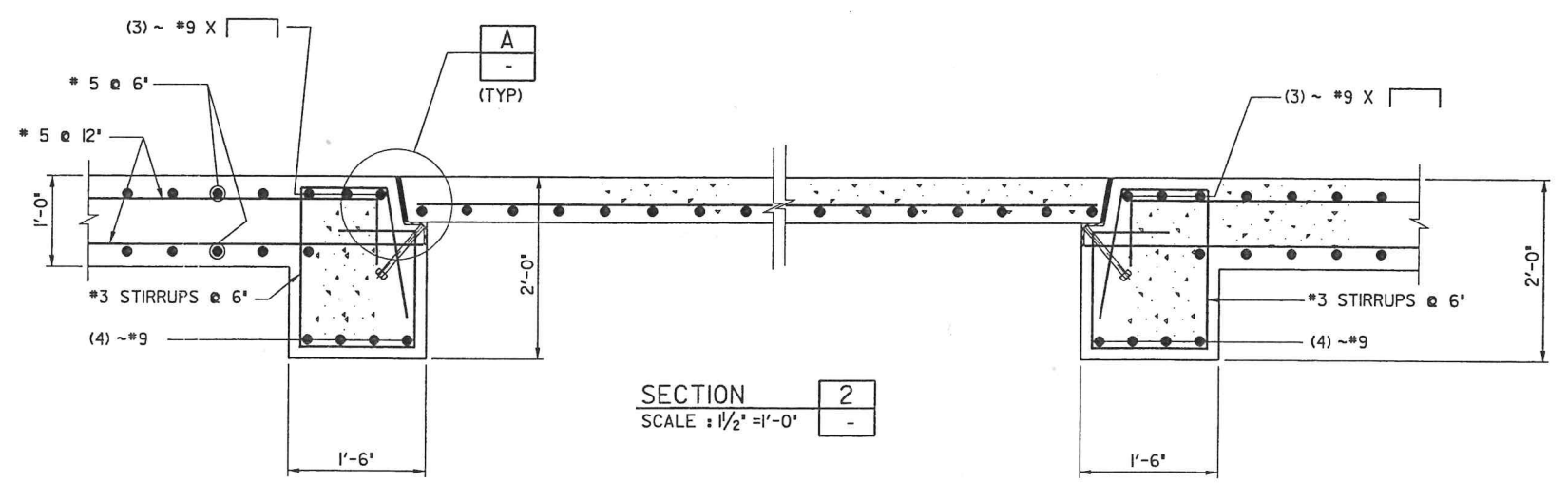
username: \$\$\$\$\$\$ FILE No. \$\$\$\$\$\$ DATE: 27-FEB-1998 TIME: 14:52



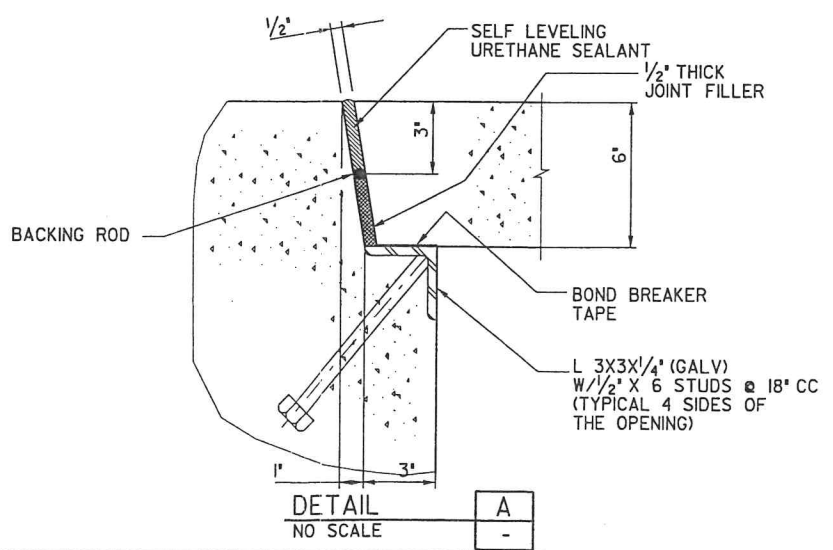
PLAN
SCALE: 1/4" = 1'-0"



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



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



DETAIL A
NO SCALE

NOTES:
1. THE REMOVABLE SLAB SHALL BE PROVIDED WITH (4)~ 1-INCH DIAMETER HOLES AS SHOWN FOR FUTURE LIFTING. HOLES SHALL BE PROVIDED WITH A NYLON PLUG TO SEAL IT FROM THE WEATHER.

REV	DATE	BY	DESCRIPTION

SCALE: AS NOTED
WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: D. HOOLEY	SUBMITTED:
DRAWN: R. GARCIA	PROJECT ENGINEER: R. C. E. NO. DATE
CHECKED: K. MONROE	MONTGOMERY WATSON: R. C. E. NO. DATE

MONTGOMERY WATSON
Walnut Creek, California

CITY OF PACIFICA	SHEET
CALERA CREEK WATER RECYCLING PLANT	S-1
FILTER TOP SLAB MODIFICATION	

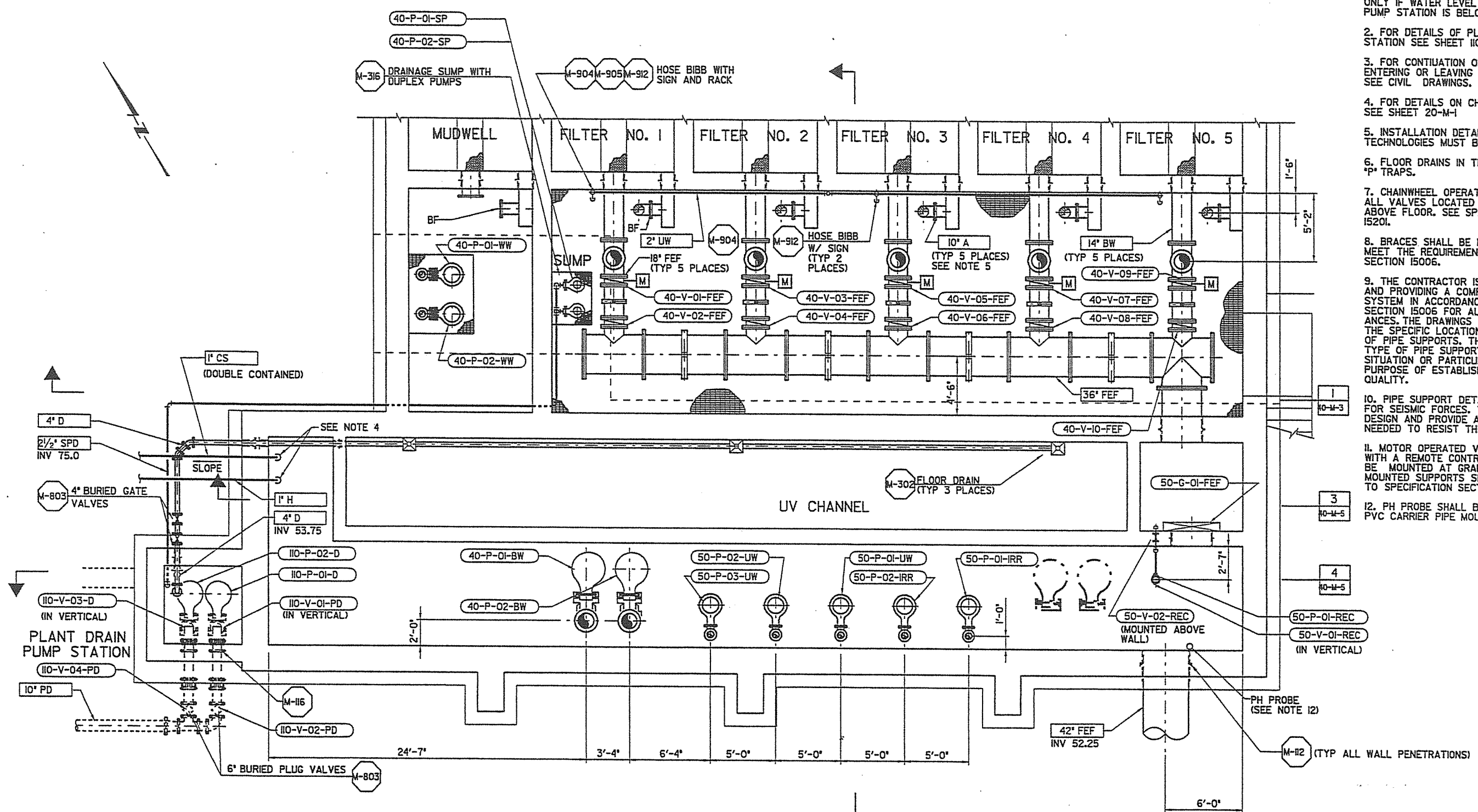
DATE: 18-SEP-1998

TIME: 16:08

FILE No. m:\pacific\cswrp\muc\pcc0m01.dgn

user:ms
JOB No.

- NOTES:**
1. DRAINING OF UV CHANNEL CAN OCCUR ONLY IF WATER LEVEL IN PLANT DRAIN PUMP STATION IS BELOW ELEVATION 56.70.
 2. FOR DETAILS OF PLANT DRAIN PUMP STATION SEE SHEET 110-M-1
 3. FOR CONTINUATION OF PIPING EITHER ENTERING OR LEAVING THE STRUCTURE SEE CIVIL DRAWINGS.
 4. FOR DETAILS ON CHEMICAL DIFFUSER SEE SHEET 20-M-1
 5. INSTALLATION DETAILS PROVIDED BY TETRA TECHNOLOGIES MUST BE FOLLOWED FOR THE 10" A
 6. FLOOR DRAINS IN THIS AREA ARE WITHOUT "P" TRAPS.
 7. CHAINWHEEL OPERATORS ARE REQUIRED FOR ALL VALVES LOCATED GREATER THAN 7'-0" ABOVE FLOOR. SEE SPECIFICATION SECTION 1520L.
 8. BRACES SHALL BE PROVIDED AS NEEDED TO MEET THE REQUIREMENTS OF SPECIFICATION SECTION 15006.
 9. THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING AND PROVIDING A COMPLETE PIPING SUPPORT SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 15006 FOR ALL PIPING AND APPURTENANCES. THE DRAWINGS INTENTIONALLY DO NOT SHOW THE SPECIFIC LOCATIONS OR THE REQUIRED NUMBER OF PIPE SUPPORTS. THE DRAWINGS ONLY SHOW THE TYPE OF PIPE SUPPORT REQUIRED FOR A GENERAL SITUATION OR PARTICULAR PIPE RUN FOR THE PURPOSE OF ESTABLISHING A MINIMUM LEVEL OF QUALITY.
 10. PIPE SUPPORT DETAILS SHOWN ARE NOT DESIGNED FOR SEISMIC FORCES. THE CONTRACTOR SHALL DESIGN AND PROVIDE ADDITIONAL SUPPORTS AS NEEDED TO RESIST THE SPECIFIC SEISMIC FORCES.
 11. MOTOR OPERATED VALVES SHALL BE PROVIDED WITH A REMOTE CONTROL PANEL WHICH SHALL BE MOUNTED AT GRADE. FREE STANDING OR WALL MOUNTED SUPPORTS SHALL BE PROVIDED. REFER TO SPECIFICATION SECTION 1520L.
 12. PH PROBE SHALL BE INSTALLED IN A 6-INCH PVC CARRIER PIPE MOUNTED TO WALL.



LOWER PIPING PLAN



REV	DATE	BY	DESCRIPTION
1	9/98	JMS	CONFORMED DRAWING

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

WARNING: IF THIS BAR DOES NOT MEASURE THEN DRAWING IS NOT TO SCALE.

DESIGNED: J. SKREL	SUBMITTED: <i>Jennifer M. Sures</i>	C 043548	5/17/96
DRAWN: M. SKINNER	PROJECT ENGINEER	R. C. E. NO.	DATE
CHECKED: J. GOSSETT	<i>Paul E. Farnell</i>	30293	5/17/96
	MONTGOMERY WATSON	R. C. E. NO.	DATE

MONTGOMERY WATSON
Walnut Creek, California

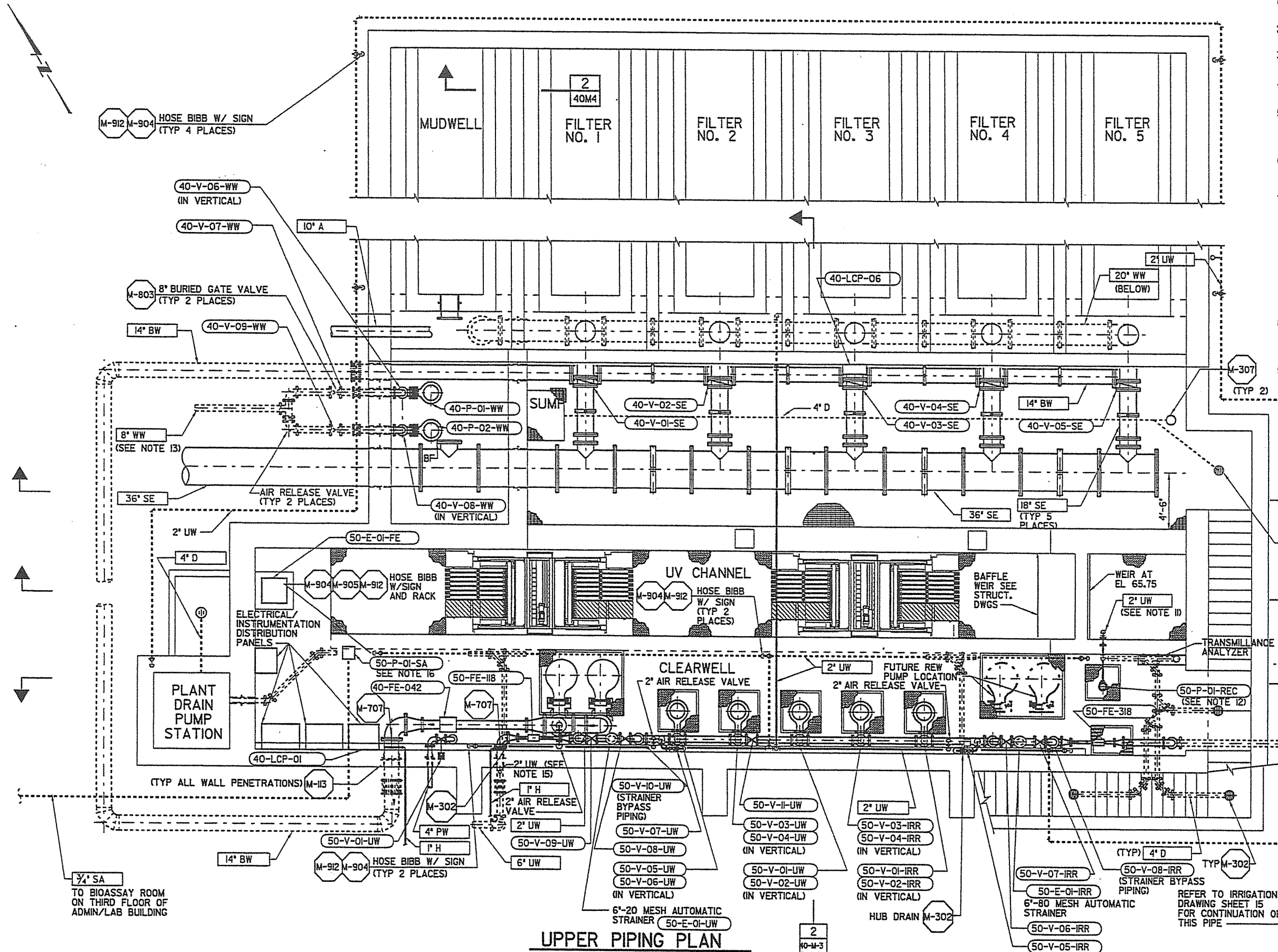
CITY OF PACIFICA	SHEET
CALERA CREEK WATER RECYCLING PLANT	
TERTIARY FILTER SYSTEM (TETRA OPTION)	40-M-1
LOWER PLAN	

DATE: 19-SEP-1996

TIME: 16:03

FILE No. m:\pacifica\covrp\mec\pac40m2.dgn

user:ms
JOB No.



NOTES:

- SEE FILTER MANUFACTURER FOR INSTALLATION DRAWINGS AND DETAILS OF FILTER INTERNALS
- SEE STRUCTURAL DRAWINGS FOR FILTER STRUCTURE DIMENSIONS AND ELEVATIONS
- FOR CONTINUATION OF PIPING EITHER ENTERING OR LEAVING THE STRUCTURE SEE CIVIL DRAWINGS.
- FLOOR DRAINS IN THIS AREA ARE WITHOUT 'P' TRAPS.
- CHAINWHEEL OPERATORS ARE REQUIRED FOR ALL VALVES LOCATED GREATER THAN 7'-0" ABOVE FLOOR. SEE SPECIFICATION SECTION 1520.
- BRACES SHALL BE PROVIDED AS NEEDED TO MEET THE REQUIREMENTS OF SPECIFICATION SECTION 15006.
- THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING AND PROVIDING A COMPLETE PIPING SUPPORT SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 15006 FOR ALL PIPING AND APPURTENANCES. THE DRAWINGS INTENTIONALLY DO NOT SHOW THE SPECIFIC LOCATIONS OR THE REQUIRED NUMBER OF PIPE SUPPORTS. THE DRAWINGS ONLY SHOW THE TYPE OF PIPE SUPPORT REQUIRED FOR A GENERAL SITUATION OR PARTICULAR PIPE RUN FOR THE PURPOSE OF ESTABLISHING A MINIMUM LEVEL OF QUALITY. ALL PIPE SUPPORT SYSTEMS SHALL BE CORROSION RESISTANT.
- PIPE SUPPORT DETAILS SHOWN ARE NOT DESIGNED FOR SEISMIC FORCES. THE CONTRACTOR SHALL DESIGN AND PROVIDE ADDITIONAL SUPPORTS AS NEEDED TO RESIST THE SPECIFIC SEISMIC FORCES.
- MOTOR OPERATED VALVES SHALL BE PROVIDED WITH A REMOTE CONTROL PANEL, WHICH SHALL BE MOUNTED, FREE STANDING OR WALL MOUNTED SUPPORTS SHALL BE PROVIDED. REFER TO SPECIFICATION SECTION 1520.
 - UV OPTION SHOWN IS FOR MEDIUM POWER SYSTEM ONLY.
 - 2" UW SHALL TERMINATE AT ELEVATION 67.50.
- PUMPS 50-P-01-PEC HAS A CHECK VALVE IN THE VERTICAL AND A SHUT OFF GATE VALVE ABOVE THE WALL PRIOR TO ENTRY INTO THE UV INFLUENT CHANNEL.
- THE CROWN OF THE 36" SE LINE FROM THE SBR'S TO THE FILTERS SHALL STAY BELOW ELEVATION 76.0 TO MAINTAIN FULL PIPE FLOW.
- THE CONTRACTOR SHALL, IF REQUIRED BY THE UV SYSTEM SELECTED, FURNISH AND INSTALL AN ACTIVE HARMONIC CONDITIONER (AHC) COMPLETE WITH IT'S CIRCUIT BREAKERS, CT AND ASSOCIATED WIRING AND CONDUIT. THE AHC SHALL BE DESIGNED TO SUPPRESS THE HARMONIC CURRENT PRODUCED BY THE UV SYSTEM TO NOT MORE THAN 5% TOTAL HARMONIC CURRENT DISTORTION (THD) AS DEFINED BY THE ANSI/IEEE 519-1992 AS MEASURED AT THE SWBD-UV MAIN BUS. NO EQUIPMENT UPSTREAM OF THE SWBD-UV SHALL SEE MORE THAN 5% TOTAL HARMONIC VOLTAGE DISTORTION AS CAUSED BY THE UV SYSTEM. REFER TO SPECIFICATION SECTION 1632 AND DRAWING E-6 FOR DETAILS.
- TAP 6" UW WITH 2" UW EXTEND 2" UW VERTICAL TO INVERT ELEVATION 80.00 PROVIDE 2" EXPOSED GATE VALVE IN VERTICAL. PROVIDE 90° ELBOW TO SOUTH END PROVIDE THREADED END CAP.
- PUMP 50-P-01-SA SHALL BE SIZED FOR 10 GPM AT 75 TDH AND MEET THE REQUIREMENT OF SPECIFICATION SECTION 11052 PARAGRAPH 2.3.
- PRIOR TO THE 10" AIR LINE ENTERING THE FILTER IT SHALL BE PROVIDED WITH A PIPE LOOP SUCH THAT THE INVERT OF THE PIPE IS AT ELEVATION 80.0. THIS WILL ENTAIL THE PIPE EXTENDING ABOVE THE GROUND SURFACE. THE EXPOSED PORTION OF PIPE SHALL BE PROVIDED WITH WEATHERPROOF INSULATION.

REFER TO IRRIGATION DRAWING SHEET 15 FOR CONTINUATION OF THIS PIPE

REGISTERED PROFESSIONAL ENGINEER
 MARY SHORE
 No. C 043548
 6-30-95
 CIVIL
 STATE OF CALIFORNIA

UPPER PIPING PLAN

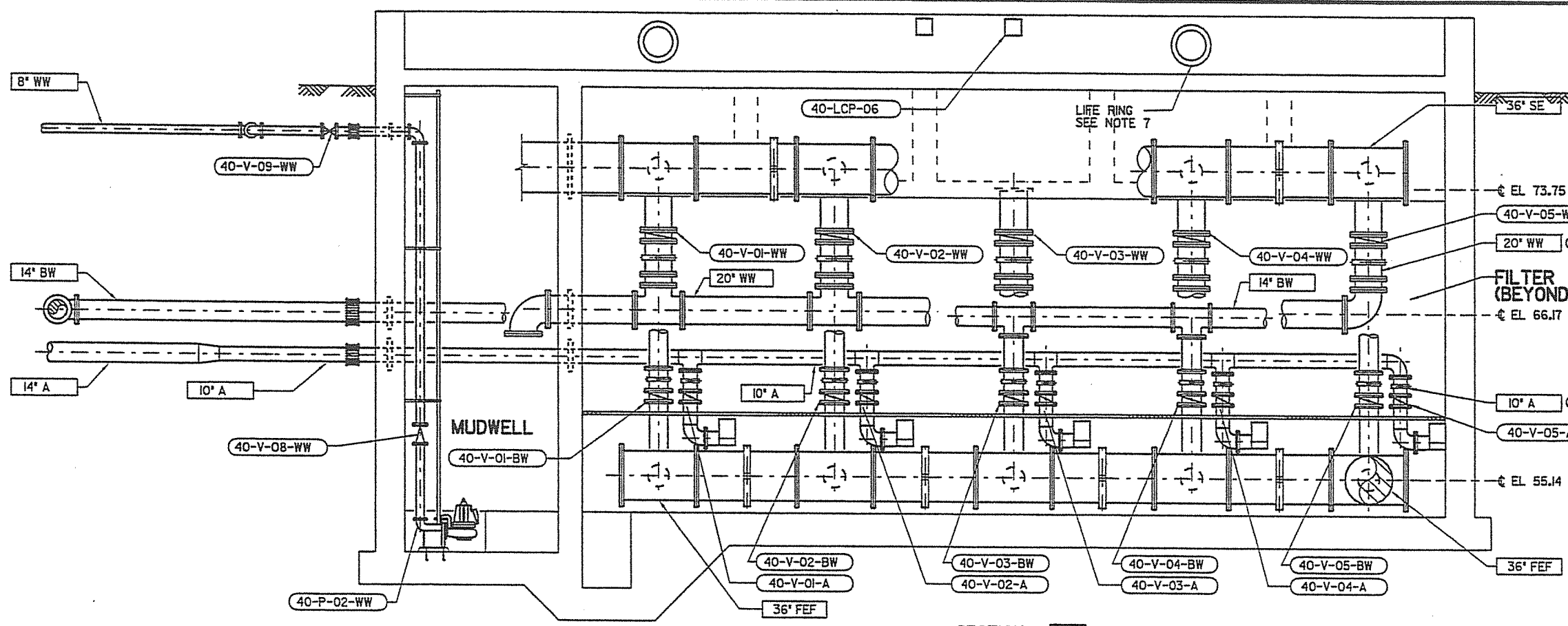
SCALE: 1/4" = 1' - 0" WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.		DESIGNED: J. SKREL DRAWN: M. SKINNER CHECKED: J. GOSSETT	SUBMITTED: [Signature] PROJECT ENGINEER [Signature] MONTGOMERY WATSON	C 043548 R. C. E. NO. 30393 R. C. E. NO.	5/11/96 DATE 5/11/96 DATE	CITY OF PACIFICA CALERA CREEK WATER RECYCLING PLANT TERTIARY FILTER SYSTEM (TETRA OPTION) UPPER PLAN	SHEET 40-M-2
---	--	--	--	---	------------------------------------	---	-----------------



DATE: 23-SEP-1996
TIME: 09:38

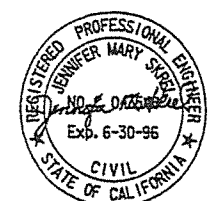
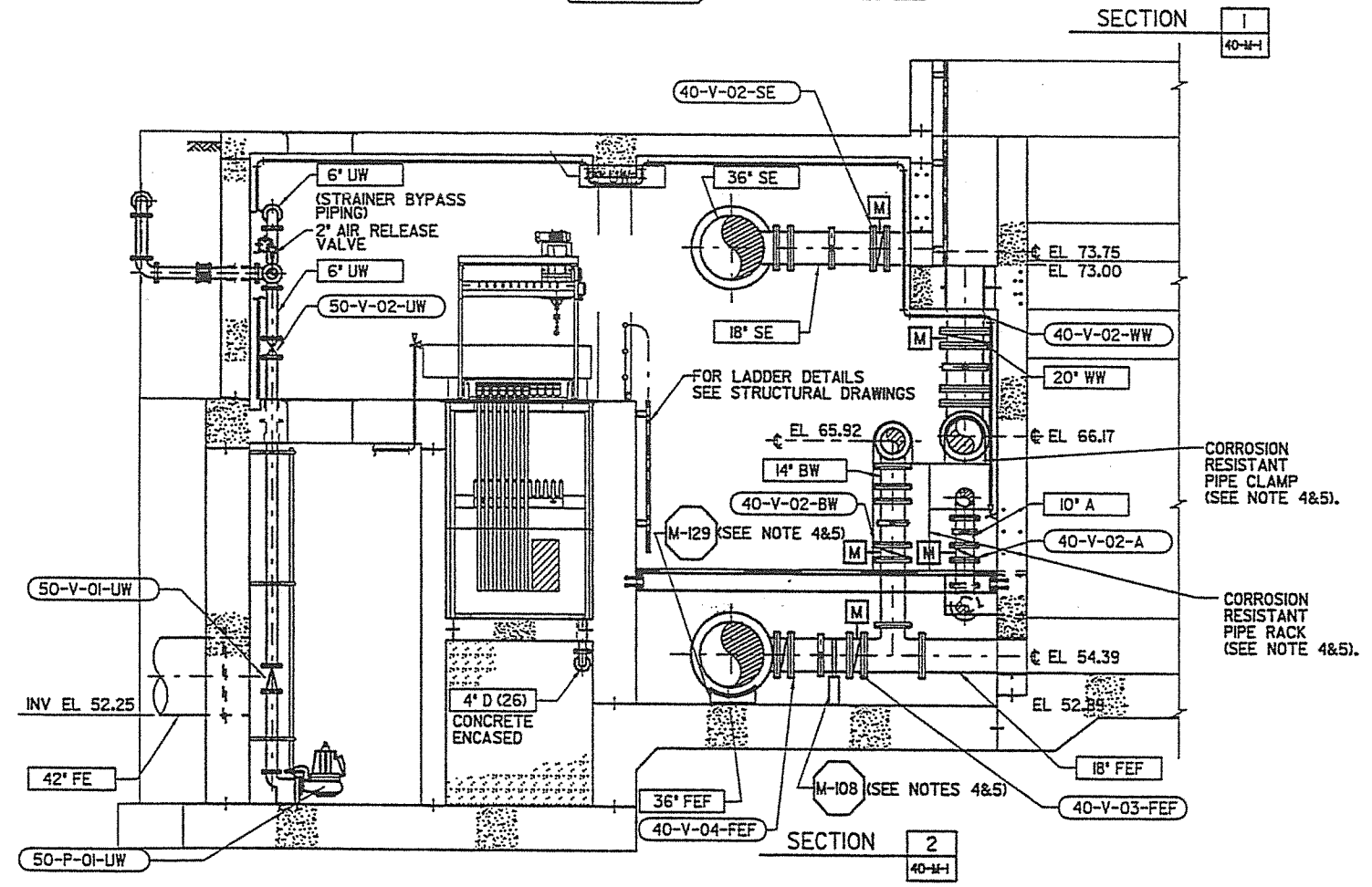
FILE No. m:\pacifica\cswrp\mcc\acc40m03.dgn

username
JOB No.



- NOTES:
- SEE FILTER MANUFACTURER FOR INSTALLATION DRAWINGS AND DETAILS OF FILTER INTERNALS
 - CHAINWHEEL OPERATORS ARE REQUIRED FOR ALL VALVES LOCATED GREATER THAN 7'-0" ABOVE FLOOR. SEE SPECIFICATION SECTION 1520I.
 - BRACES SHALL BE PROVIDED AS NEEDED TO MEET THE REQUIREMENTS OF SPECIFICATION SECTION 15006.
 - THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING AND PROVIDING A COMPLETE PIPING SUPPORT SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 15006 FOR ALL PIPING AND APPURTENANCES. THE DRAWINGS INTENTIONALLY DO NOT SHOW THE SPECIFIC LOCATIONS OR THE REQUIRED NUMBER OF PIPE SUPPORTS. THE DRAWINGS ONLY SHOW THE TYPE OF PIPE SUPPORT REQUIRED FOR A GENERAL SITUATION OR PARTICULAR PIPE RUN FOR THE PURPOSE OF ESTABLISHING A MINIMUM LEVEL OF QUALITY. ALL PIPE SUPPORT SYSTEMS SHALL BE CORROSION RESISTANT. DETAILS M-129 AND M-108 ARE CALLED OUT ONLY TO INDICATE SUPPORT INTENT.
 - PIPE SUPPORT DETAILS ARE NOT DESIGNED FOR SEISMIC FORCES. THE CONTRACTOR SHALL DESIGN AND PROVIDE ADDITIONAL SUPPORTS AS NEEDED TO RESIST THE SPECIFIC SEISMIC FORCES.

MOTOR OPERATED VALVES SHALL BE PROVIDED WITH A REMOTE CONTROL PANEL WHICH SHALL BE MOUNTED, FREE STANDING OR WALL MOUNTED SUPPORTS SHALL BE PROVIDED. REFER TO SPECIFICATION SECTION 1520I.
 - CONTRACTOR SHALL PROVIDE 2-COAST GUARD APPROVED LIFE RINGS WITH 75 FT OR 3 BRAID NYLON ROPE ATTACHED TO EACH RING. PROVIDE RACK TO MOUNT TO CONCRETE.
 - THE CONTRACTOR SHALL, IF REQUIRED BY THE UV SYSTEM SELECTED, FURNISH AND INSTALL AN ACTIVE HARMONIC CONDITIONER (AHC) COMPLETE WITH IT'S CIRCUIT BREAKERS, CT AND ASSOCIATED WIRING AND CONDUIT. THE AHC SHALL BE DESIGNED TO SUPPRESS THE HARMONIC CURRENT PRODUCED BY THE UV SYSTEM TO NOT MORE THAN 5% TOTAL HARMONIC CURRENT DISTORTION (THD) AS DEFINED BY THE ANSI/IEEE 519-1992 AS MEASURED AT THE SWBD-UV MAIN BUS. NO EQUIPMENT UPSTREAM OF THE SWBD-UV SHALL SEE MORE THAN 5% TOTAL HARMONIC VOLTAGE DISTORTION AS CAUSED BY THE UV SYSTEM. REFER TO SPECIFICATION SECTION 1632I AND DRAWING E-6 FOR DETAILS.



SCALE:	WARNING
1/4" = 1'-0"	IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.
DESIGNED: J. SKREL	DRAWN: M. SKINNER
CHECKED: J. GOSSETT	

SUBMITTED: <i>J. Skrell</i>	C 043548	5/17/96
PROJECT ENGINEER	R. C. E. NO.	DATE
SUBMITTED: <i>John Skrell</i>	30393	5/17/96
PROJECT ENGINEER	R. C. E. NO.	DATE

MONTGOMERY WATSON
Walnut Creek, California

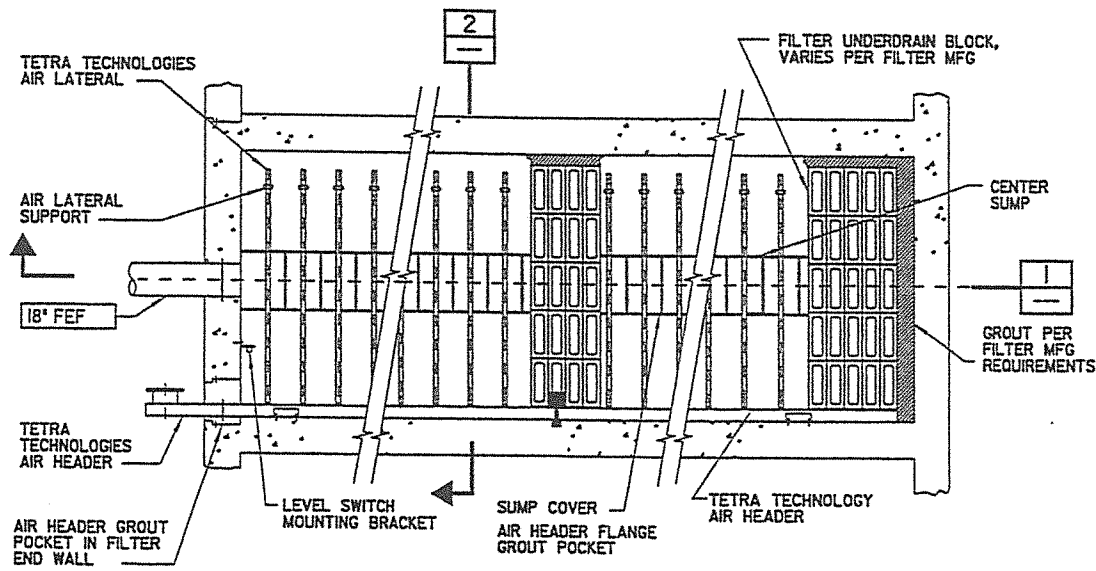
CITY OF PACIFICA
CALERA CREEK WATER RECYCLING PLANT
TERTIARY FILTERS (TETRA OPTION) SECTIONS
SHEET 40-M-3

DATE: 18-SEP-1996

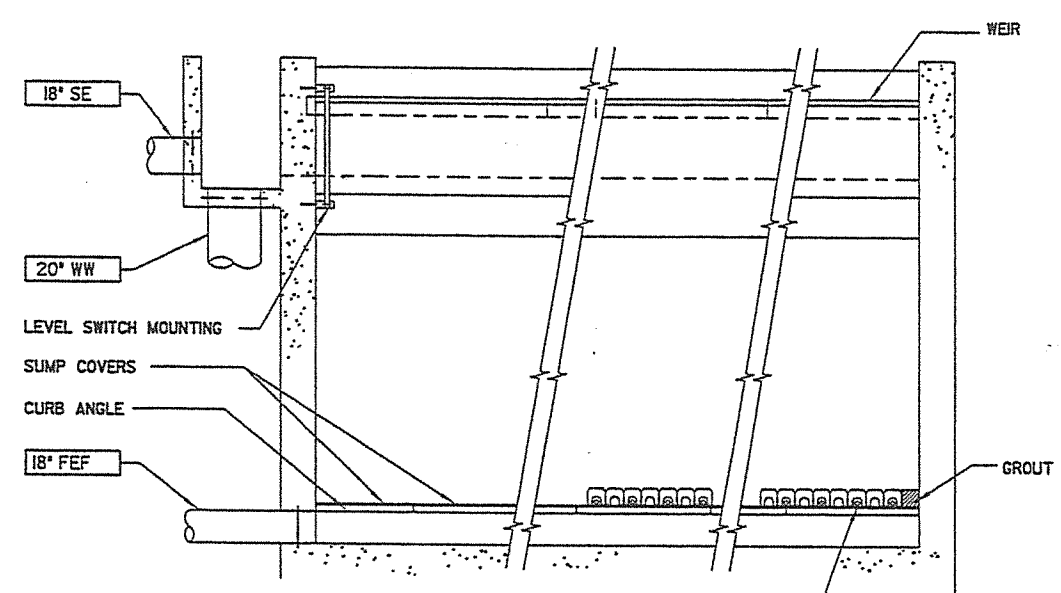
TIME: 16:29

FILE No. m:\pacifica\ccwrp\moe\pcc\04.dgn

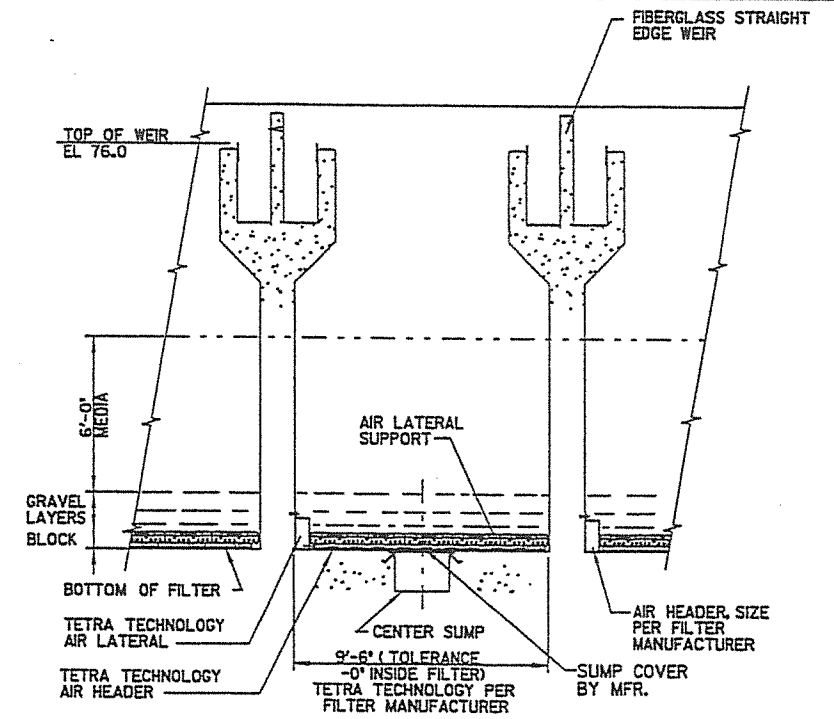
user:mms
JOB No.



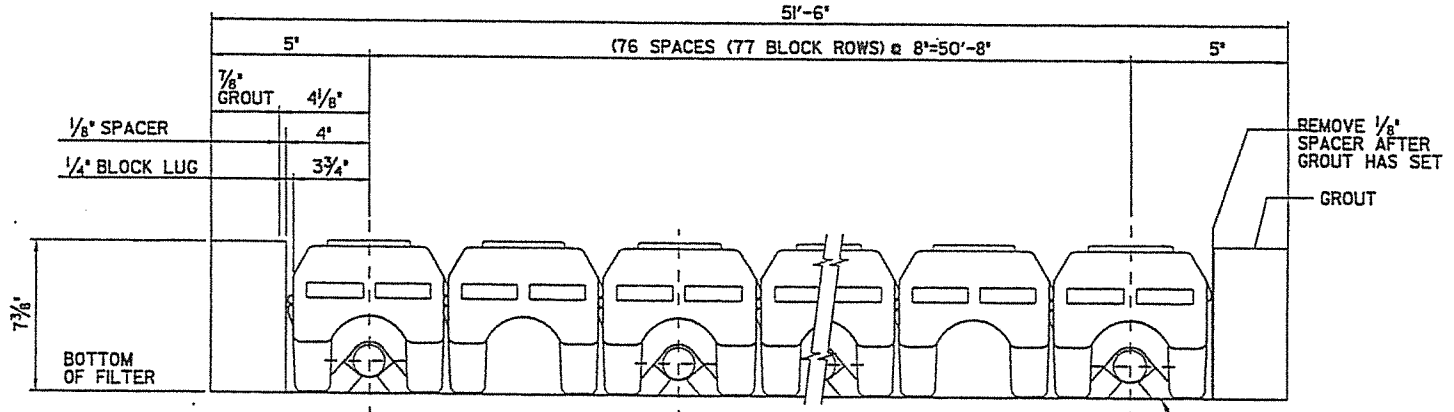
LOWER FILTER PLAN



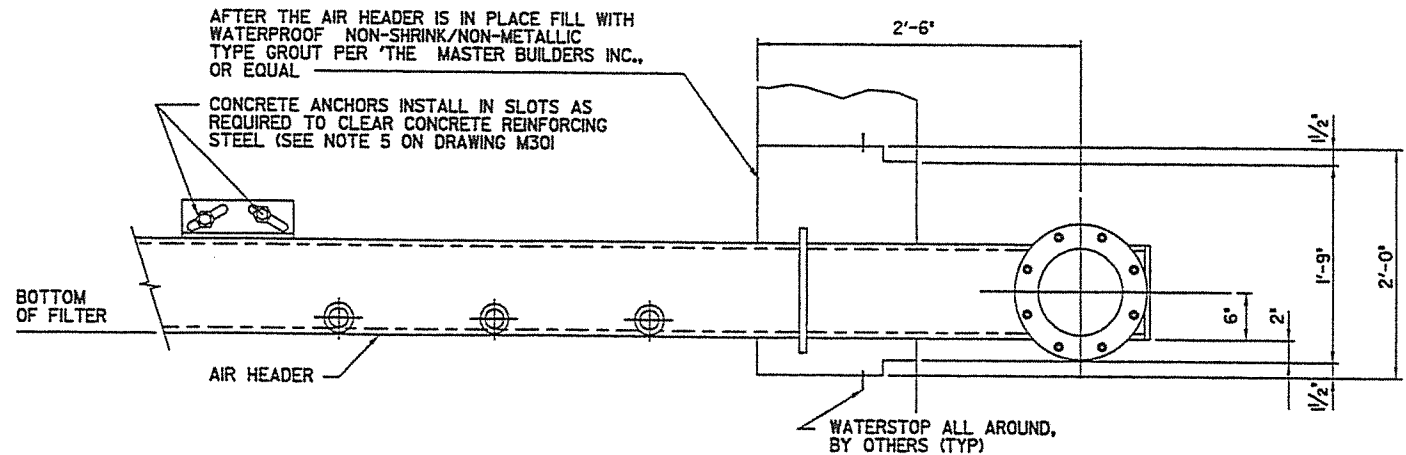
SECTION 1



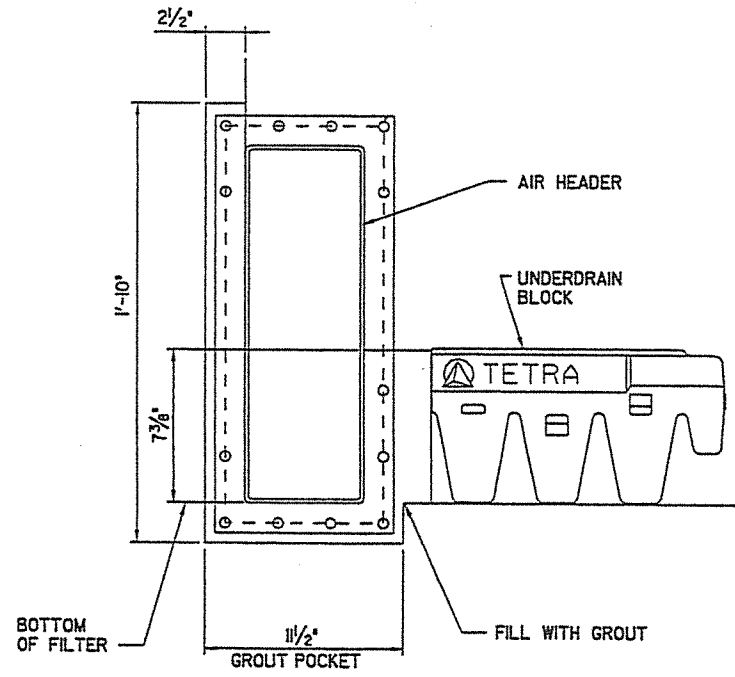
SECTION 2



TETRA TECHNOLOGY UNDERDRAIN BLOCK DETAIL



TETRA TECHNOLOGY UNDERDRAIN BLOCK DETAIL



TETRA TECHNOLOGY UNDERDRAIN BLOCK DETAIL

NOTE:
THE LAYOUTS AND DETAILS SHOWN ON THIS SHEET ARE DESIGNED BY TETRA TECHNOLOGIES AND ARE PROVIDED TO SHOW THE DIFFERENCES BETWEEN THE TWO FILTER MANUFACTURERS, TETRA TECHNOLOGIES, INC. AND LEOPOLD. THE LAYOUT AND DETAILS SHOWN ARE NOT SUFFICIENT FOR INSTALLATION OF THE FILTERS. THE CONTRACTOR MUST WORK CLOSELY WITH THE FILTER MANUFACTURER DURING CONSTRUCTION. INSTALLATION OF FILTER COMPONENTS SHALL BE PER THE MANUFACTURERS RECOMMENDATIONS, UNLESS OTHERWISE NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS.



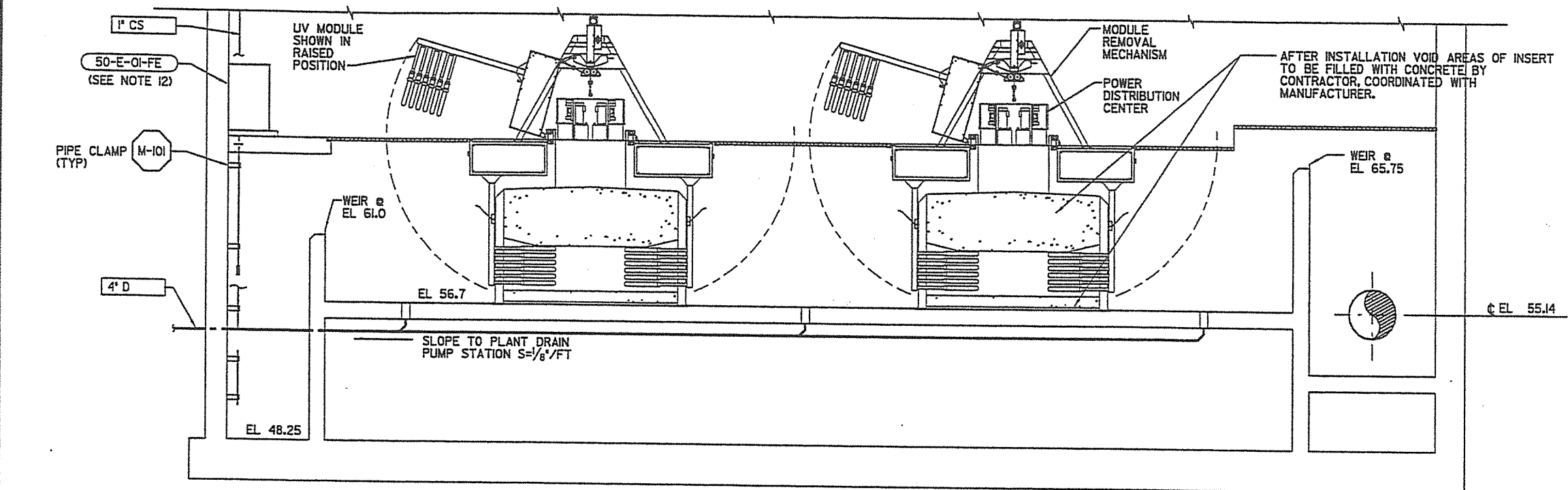
SCALE: NONE	WARNING: IF THIS BAR DOES NOT MEASURE THEN DRAWING IS NOT TO SCALE.	DESIGNED: J. SKREBEL	SUBMITTED: <i>Banner Mary Skrebel</i>	C 043548	5/17/96
		DRAWN: M. SKINNER	PROJECT ENGINEER	R. C. E. NO.	DATE
REV 9/96	JMS CONFORMED DRAWING	CHECKED: J. GOSSETT	<i>Joe E. Furr</i>	30393	5/17/96
DATE	BY	DESCRIPTION	MONTGOMERY WATSON	R. C. E. NO.	DATE

MONTGOMERY WATSON
Walnut Creek, California

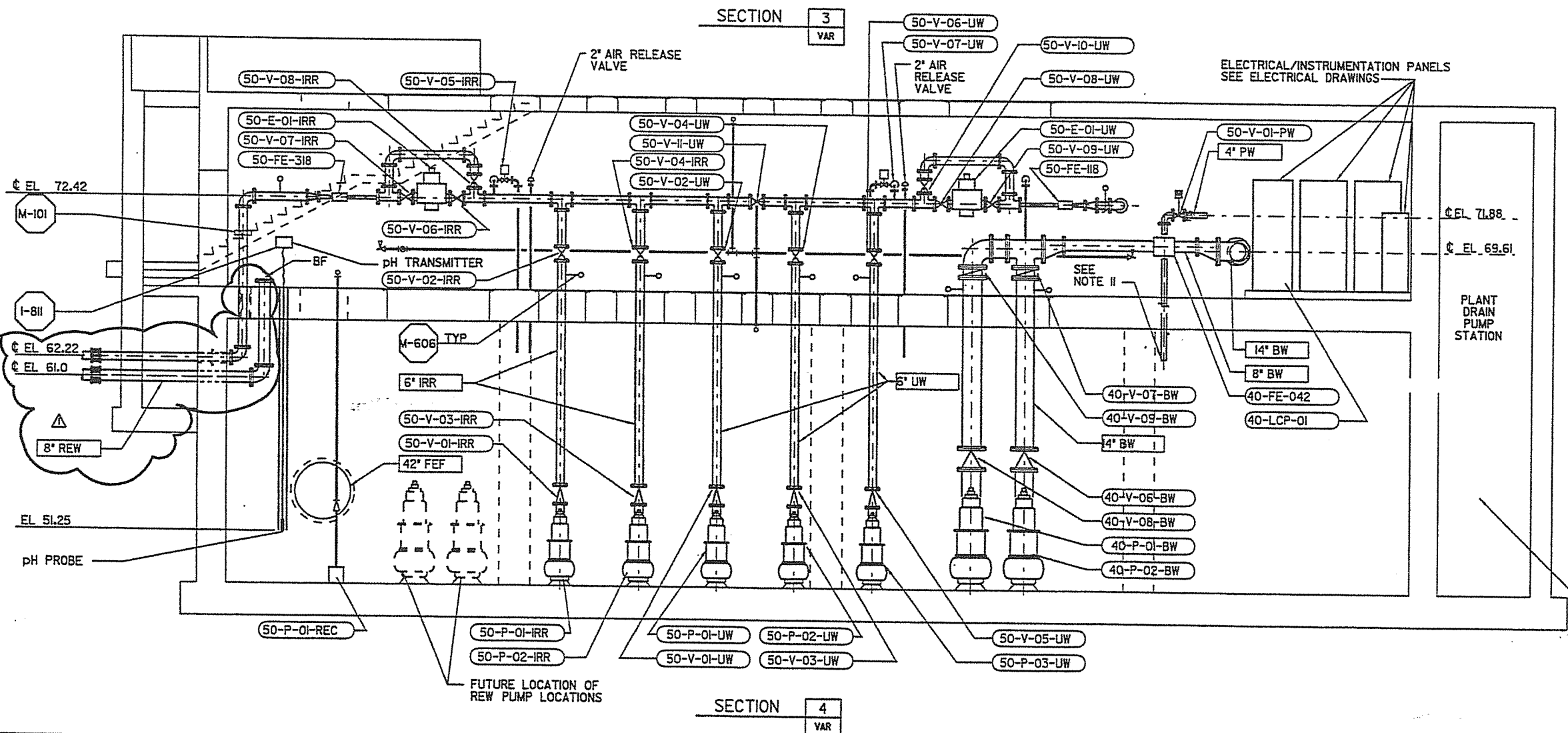
CITY OF PACIFICA
CALERA CREEK WATER RECYCLING PLANT
TERTIARY FILTER SYSTEM (TETRA OPTION)
LOWER FILTER PLAN AND DETAILS

SHEET 40-M-4

DATE: 18-SEP-1996
 TIME: 15:35
 FILE No. m:\pacific\ccwrp\mec\pcc-0m05.dgn
 USERNAME: JMS



- NOTES
1. DRAINING OF UV CHANNEL CAN OCCUR ONLY IF ELEVATION OF PLANT DRAIN PUMP STATION IS BELOW ELEVATION 56.70.
 2. FOR CONTINUATION OF PIPING EITHER ENTERING OR LEAVING THE STRUCTURE SEE CIVIL OR IRRIGATION DRAWINGS.
 3. FOR DETAILS ON CHEMICAL DIFFUSER SEE SHEET 20-M-1
 4. INSTALLATION DETAILS PROVIDED BY TETRA TECHNOLOGIES MUST BE FOLLOWED FOR THE 10' A
 5. CHAINWHEEL OPERATORS ARE REQUIRED FOR ALL VALVES LOCATED GREATER THAN 7'-0" ABOVE FLOOR. SEE SPECIFICATION SECTION 1520.
 6. BRACES SHALL BE PROVIDED AS NEEDED TO MEET THE REQUIREMENTS OF SPECIFICATION SECTION 15006.
 7. THE CONTRACTOR IS RESPONSIBLE FOR DESIGNING AND PROVIDING A COMPLETE PIPE SUPPORT SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 15006 FOR ALL PIPING AND APPURTENANCES. THE DRAWINGS INTENTIONALLY DO NOT SHOW THE SPECIFIC LOCATIONS OR THE REQUIRED NUMBER OF PIPE SUPPORTS. THE DRAWINGS ONLY SHOW THE TYPE OF PIPE SUPPORT REQUIRED FOR A GENERAL SITUATION OR PARTICULAR PIPE RUN FOR THE PURPOSE OF ESTABLISHING A MINIMUM LEVEL OF QUALITY. PIPE SUPPORTS FOR UW AND IRR PIPING CAN BE SIMILAR TO DETAIL M-102, M-103, OR M-104 IN CORROSION RESISTANT MATERIALS. CORROSION RESISTANT PIPE SUPPORTS FOR THE BW PIPING CAN BE EITHER FLOOR OR WALL MOUNT.
 8. PIPE SUPPORT DETAILS SHOWN ARE NOT DESIGNED FOR SEISMIC FORCES. THE CONTRACTOR SHALL DESIGN AND PROVIDE ADDITIONAL SUPPORTS AS NEEDED TO RESIST THE SPECIFIC SEISMIC FORCES.
 9. MOTOR OPERATED VALVES SHALL BE PROVIDED WITH A REMOTE CONTROL PANEL, WHICH SHALL BE MOUNTED, FREE STANDING OR WALL MOUNTED SUPPORTS SHALL BE PROVIDED. REFER TO SPECIFICATION SECTION 1520.
 10. ROUTE DRAINS FROM STRAINERS INTO FLOOR DRAINAGE PIPE GOING TO PLANT DRAIN PUMP STATION.
 11. BOTTOM OF 4" PW, AIR RELEASE VALVE PIPES AND PUMP RECIRCULATION PIPES INTO CLEARWELL SHALL BE INVERT 62.7
 12. CONTRACTOR TO SUPPLY SUCTION TUBING FROM SAMPLE POINT TO SAMPLER IN A 2" CARRIER PIPE CLAMPED TO CONCRETE COLUMN. CARRIER PIPE SHALL TERMINATE AT ELEV 51.25
 13. STRAINER 50-E-01-IRR SHALL BE SIZED AT 4-INCH. CONTRACTOR SHALL PROVIDE NECESSARY REDUCERS FOR INSTALLATION.



SEE SHEET 110-M-1 FOR DETAILS



REV	DATE	BY	DESCRIPTION
1	5/17/96	JMS	CONFORMED DRAWING
2	5/17/96	JMS	STRAINER
3	5/17/96	JMS	DEW LINE

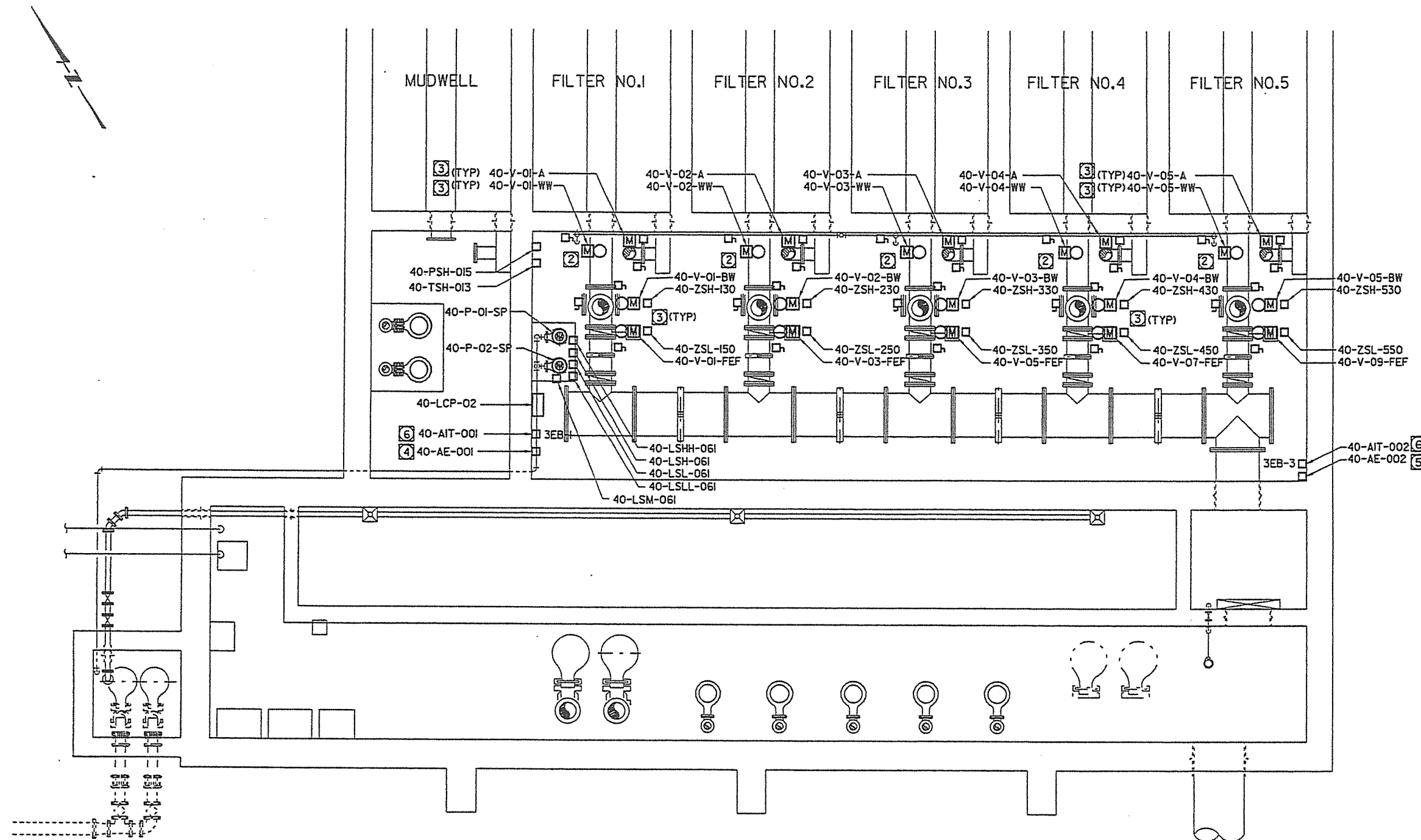
SCALE: 1/4" = 1'-0"
 WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: J. SKREINER	SUBMITTED: Jennifer M. Skreiner	C 043548	5/17/96
DRAWN: M. SKINNER	PROJECT ENGINEER	R. C. E. NO.	DATE
CHECKED: J. GOSSETT	30393	5/17/96	
	MONTGOMERY WATSON	R. C. E. NO.	DATE

MONTGOMERY WATSON
 Walnut Creek, California

NOTES:

1. FOR EXACT LOCATION OF ALL VALVES, REFERENCE DRAWINGS 40-M-1, 40-M-2, AND 40-M-3.
2. PROVIDE REMOTE MOUNTED CONTROL STATION FOR THE CONTROL VALVES. PROVIDE ALL CONDUITS, FITTINGS AND CONDUCTORS BETWEEN THE CONTROL STATION AND THE VALVE OPERATOR.
3. ALL MOTORIZED VALVE OPERATORS ARE PROVIDED WITH OPEN AND CLOSE LIMIT SWITCHES. THE CONTRACTOR SHALL PROVIDE ALL CONDUITS AND CONDUCTORS AND SHALL CONNECT EACH OF THESE LIMIT SWITCHES TO REMOTE I/O NO.5, FOR REMOTE STATUS INDICATION AND CONTROL TO 40-MCP-01.
4. 3/4" C, CABLE BY MANUFACTURER TO 40-AIT-001.
5. 3/4" C, CABLE BY MANUFACTURER TO 40-AIT-002.
6. 1" C, 2/C#16SHLD & 2/C#16SHLD SP TO REMOTE I/O NO.5



PLAN

FILE No. 1114.0129
 TIME: 09:01
 23-SEP-1996
 JOB No. 1114.0129

REV	DATE	BY	DESCRIPTION

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

WARNING
IF THIS BAR DOES NOT MEASURE THEN DRAWING IS NOT TO SCALE.

DESIGNED: H. HONNIBALL	SUBMITTED: <i>[Signature]</i>	C 093596	5/17/96
DRAWN: D. GORDON	PROJECT ENGINEER: <i>[Signature]</i>	R. C. E. NO.	DATE
CHECKED: J. FULLER	<i>[Signature]</i>	30393	5/17/96
	MONTGOMERY WATSON		

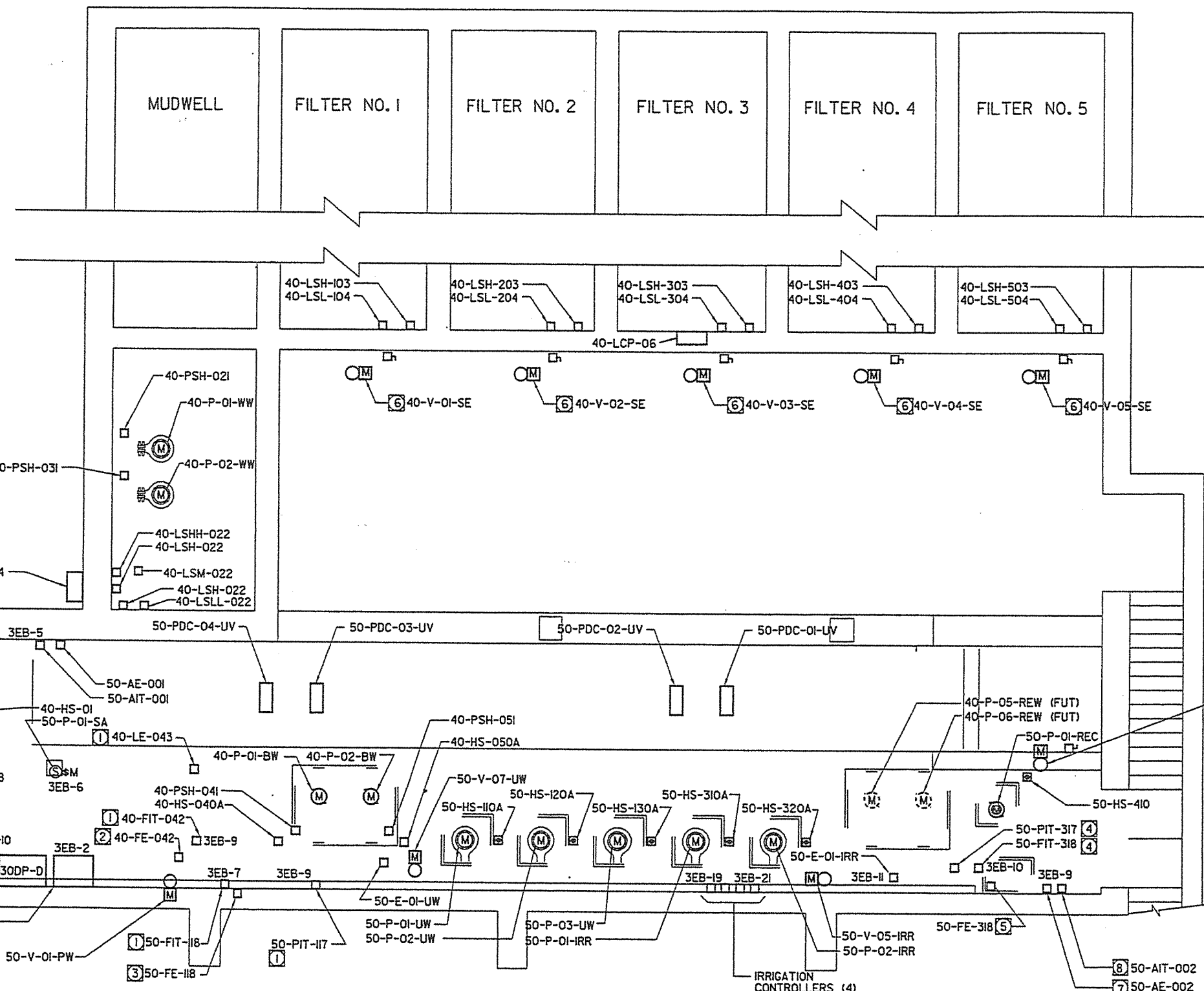
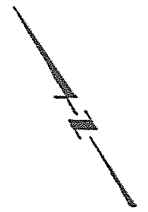


MONTGOMERY WATSON
Walnut Creek, California

CITY OF PACIFICA
CALERA CREEK WATER RECYCLING PLANT
TERTIARY FILTERS SYSTEM
LOWER EQUIPMENT PLAN



SHEET
40-E-2



PLAN

- NOTES:
- ① 1" C, 2/C#16SHLD AND 2/C#16SHLD SP TO REMOTE I/O NO.5.
 - ② 3/4" C, 2#12, 1#12GRD TO 40-FIT-042
1" C, 2-2/C#16SHLD TO 40-FIT-042.
 - ③ 3/4" C, 2#12, 1#12GRD TO 50-FIT-118
1" C, 2-2/C#16SHLD TO 50-FIT-118.
 - ④ 1" C, 2/C#16SHLD AND 2/C#16SHLD SP TO REMOTE I/O NO.1.
 - ⑤ 3/4" C, 2#12, 1#12GRD TO 50-FIT-318
1" C, 2-2/C#16SHLD TO 50-FIT-318.
 - ⑥ ALL MOTORIZED VALVE OPERATORS ARE PROVIDED WITH OPEN AND CLOSE LIMIT SWITCHES. THE CONTRACTOR SHALL PROVIDE ALL CONDUITS AND CONDUCTORS AND SHALL CONNECT EACH OF THESE LIMIT SWITCHES TO REMOTE I/O NO.5, FOR REMOTE STATUS INDICATION AND CONTROL TO 40-MCP-01.
 - ⑦ 1" C, CABLE BY MANUFACTURER TO 50-AIT-002
 - ⑧ 1" C, 2/C#16SHLD & 2/C#16 SHLD SP TO REMOTE I/O NO.1

FILE No. 1114.0126
 JOB No. 1114.0126
 TIME: 09:01
 m:\pacific\ccwrp\ale\pcc4003.dgn

REV	DATE	BY	DESCRIPTION
9/96	JAS		CONFORMED DRAWING

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

WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: H. HONNIGALL
 DRAWN: D. GORDON
 CHECKED: J. FULLER

SUBMITTED: *Janet M. Miller*
 PROJECT ENGINEER

DATE: 5/17/96
 R. C. E. NO. 04354B

MONTGOMERY WATSON
 DATE: 5/17/96
 R. C. E. NO. 3039X



MONTGOMERY WATSON

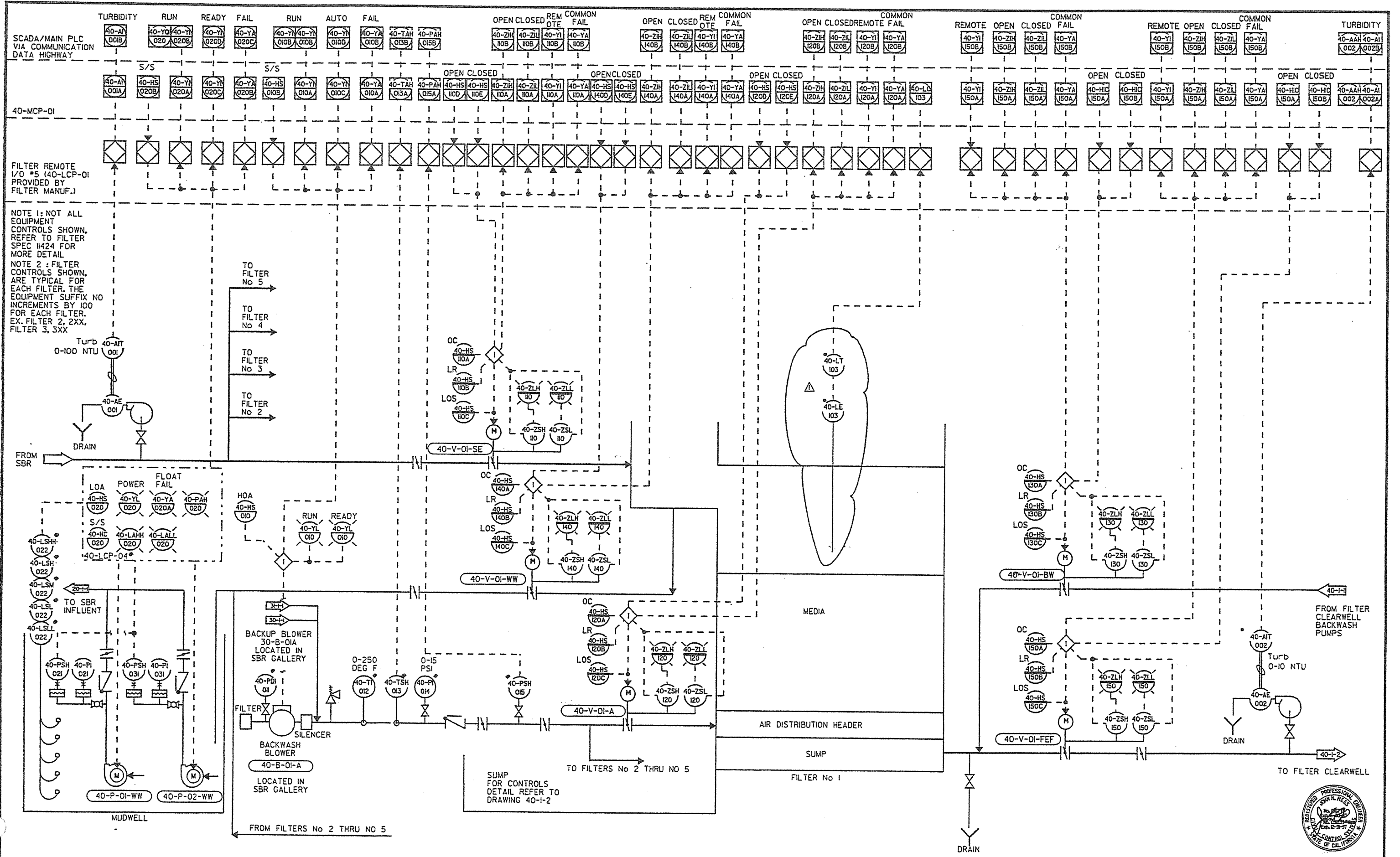
Walnut Creek, California

CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 TERTIARY FILTERS SYSTEM
 UPPER EQUIPMENT PLAN

SHEET
 40-E-3



FILE No. 1114.0127
 JOB No. 1114.0127
 TIME: 13:55
 DATE: 17-SEP-1996



NOTE 1: NOT ALL EQUIPMENT CONTROLS SHOWN. REFER TO FILTER SPEC #424 FOR MORE DETAIL.
 NOTE 2: FILTER CONTROLS SHOWN ARE TYPICAL FOR EACH FILTER. THE EQUIPMENT SUFFIX NO INCREMENTS BY 100 FOR EACH FILTER. EX. FILTER 2, 2XX, FILTER 3, 3XX

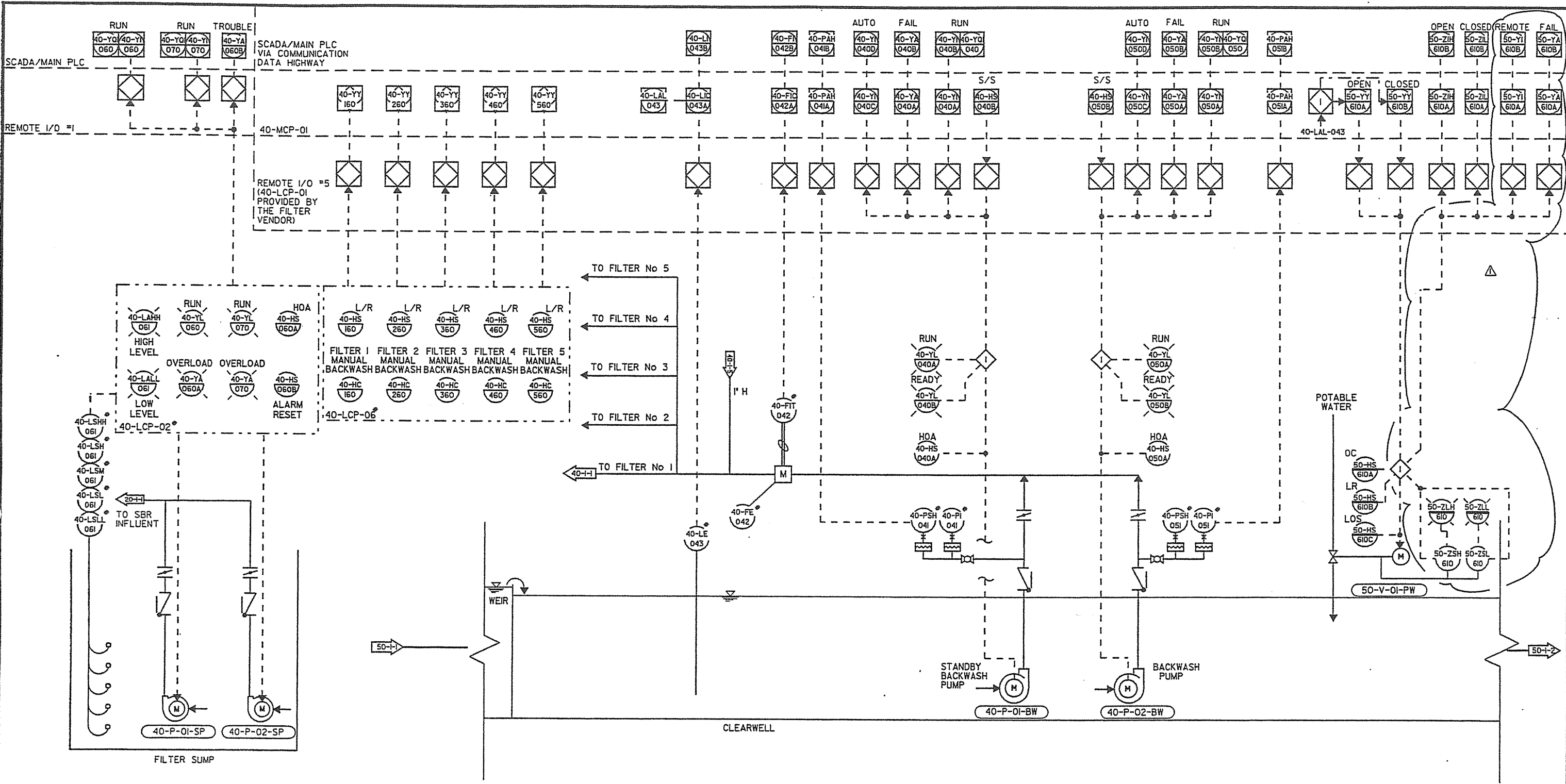
SCALE:	WARNING	DESIGNED D. WILCOXSON	SUBMITTED
NONE	IF THIS BAR DOES NOT MEASURE THEN DRAWING IS NOT TO SCALE.	DRAWN D. WILCOXSON	PROJECT ENGINEER
REV DATE BY DESCRIPTION	CHECKED B. GAUS	30393	5/17/96
3/96 DRW CONFORMED DRAWING		R. C. E. NO.	DATE
7/2/96 DRW CHANGE 40-LE/LT-103, DELETE 40-LSH-104			

MONTGOMERY WATSON
 Walnut Creek, California

CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 FILTRATION P & ID #1
 SHEET 40-1-1



Job No. 1114.0127
 FILE No. 4:\proj\pacifica\ccwrp\ins\precd02.dgn
 TIME: 13:55
 E: 17-SEP-1998



REV	DATE	BY	DESCRIPTION
9/96	DRW		CONFORMED DRAWING
11/3/96	DRW		ADD REMOTE AND COMMON FAIL

SCALE: NONE
 WARNING: IF THIS BAR DOES NOT MEASURE IT THEN DRAWING IS NOT TO SCALE.

DESIGNED D. WILCOXSON	SUBMITTED <i>[Signature]</i>	C 043548	5/17/96
DRAWN D. WILCOXSON	PROJECT ENGINEER	R. C. E. NO.	DATE
CHECKED B. GAUS	<i>[Signature]</i>	30393	5/17/96
	MONTGOMERY WATSON	R. C. E. NO.	DATE

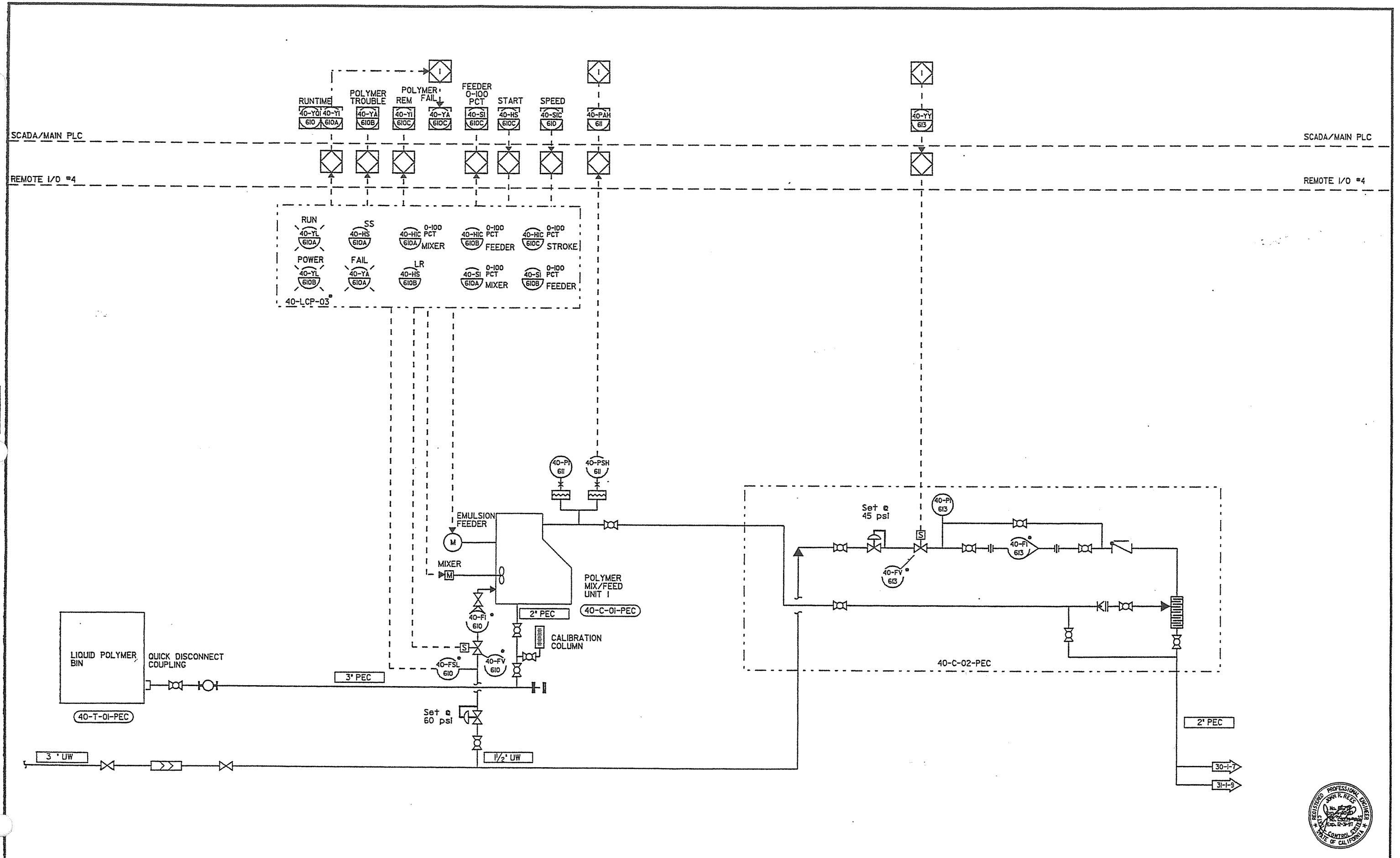


MONTGOMERY WATSON
 Walnut Creek, California

CITY OF PACIFICA		SHEET
CALERA CREEK WATER RECYCLING PLANT		40-1-2
FILTRATION P & ID #2		



FILE No. 4:\proj\pacifica\ccwr\p\luc\pec\013.dgn
 TIME: 13:55
 JOB No. 114.0127



REV	DATE	BY	DESCRIPTION
9/96	DRY	CONFORMED DRAWING	

SCALE: NONE
 WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: D. WILCOXSON
 DRAWN: D. WILCOXSON
 CHECKED: B. GAUS
 SUBMITTED: [Signature]
 PROJECT ENGINEER
 [Signature]
 MONTGOMERY WATSON

C 043548 R. C. E. NO. 5/17/96 DATE
 30393 R. C. E. NO. 5/17/96 DATE
MONTGOMERY WATSON
 Walnut Creek, California

CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 FILTER POLYMER FEED P & ID

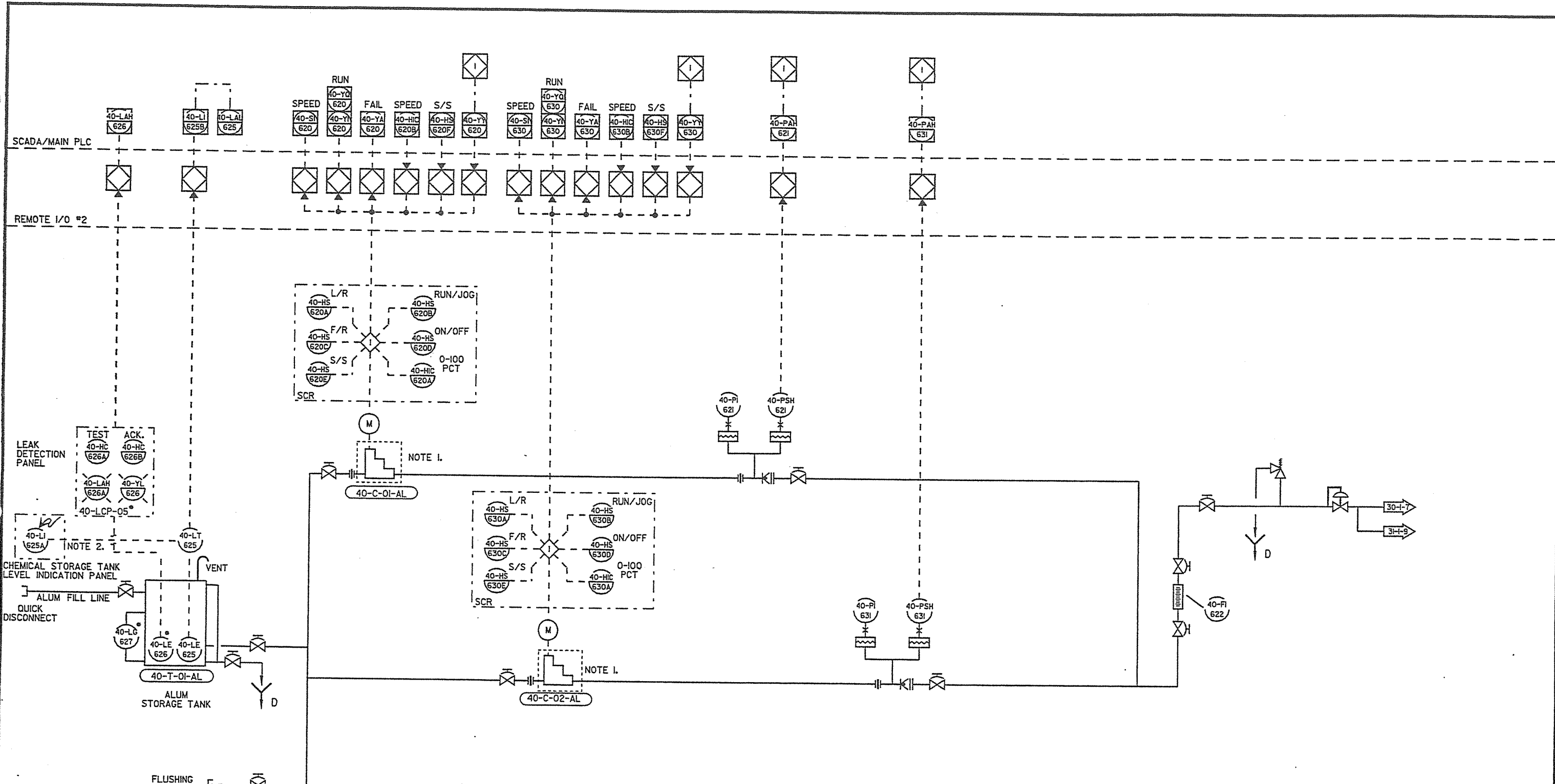
SHEET 40-1-3

TE: 17-SEP-1998

TIME: 13:55

FILE No. C:\proj\pacifica\cewp\ins\pccau04.dgn

JOB No. 114.0127



- NOTES**
- FOR INSTALLATION DETAILS REFER TO 30-M-8/31-M-8 TYPICAL METERING PUMP INSTALLATION SCHEMATIC
 - THE INSTRUMENTATION SUPPLIER SHALL PROVIDE A COMBINED LEVEL INDICATION PANEL FOR ALL CHEMICAL TANK INDICATIONS AT THE TRUCK FILL AREA



SCALE:	NONE
WARNING	IF THIS BAR DOES NOT MEASURE IT THEN DRAWING IS NOT TO SCALE.
DESIGNED	D. WILCOXSON
DRAWN	D. WILCOXSON
CHECKED	B. GADS

SUBMITTED	PROJECT ENGINEER	C-943546	5/17/96
DATE		R. C. E. NO.	DATE
30393		5/17/96	
DATE		R. C. E. NO.	DATE



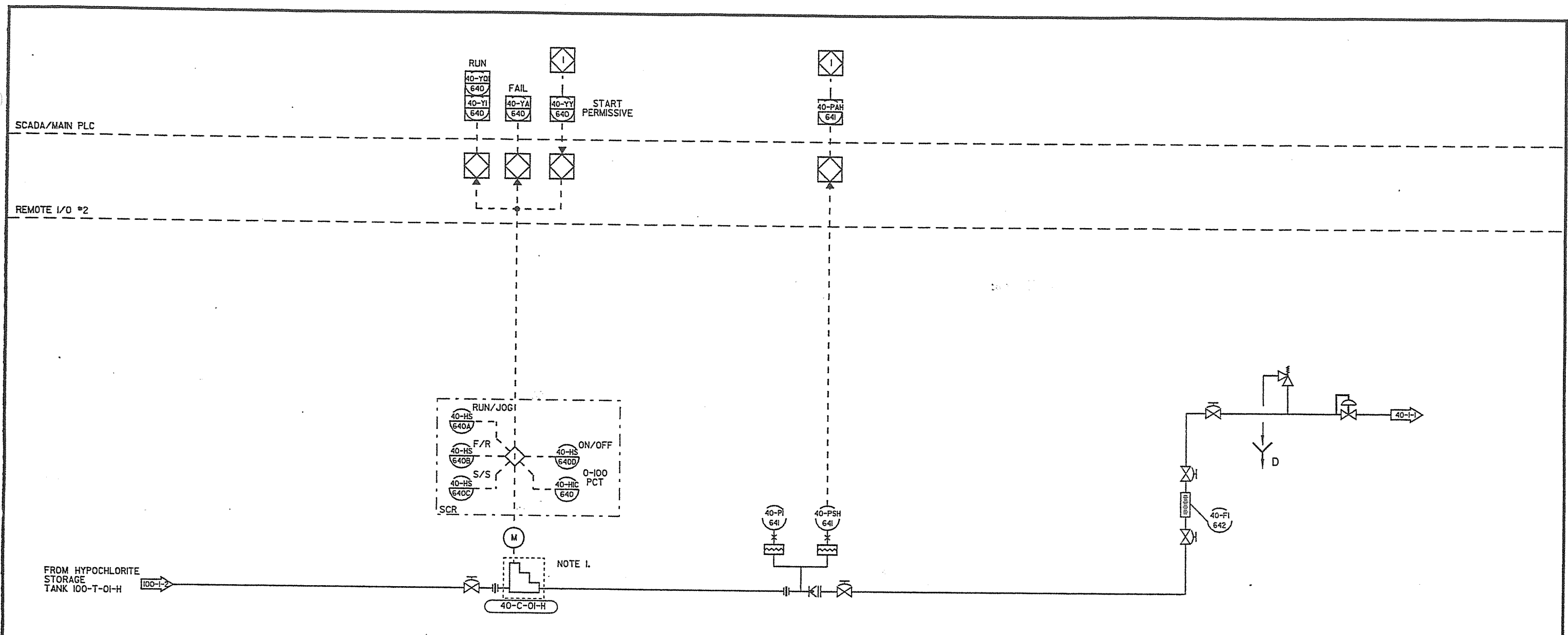
MONTGOMERY WATSON

Walnut Creek, California

CITY OF PACIFICA
CALERA CREEK WATER RECYCLING PLANT
FILTER ALUM FEED SYSTEM

SHEET
40-1-4

FILE No. H:\proj\pacifica\ccwrp\hns\pac-015.dgn
 TIME: 13:55
 JOB No. 114.0127



NOTES
 L FOR INSTALLATION DETAILS REFER TO 30-M-8/31-M-8 TYPICAL METERING PUMP INSTALLATION SCHEMATIC



REV	DATE	BY	DESCRIPTION
1	5/96	DRY	CONFORMED DRAWING

SCALE: NONE
 WARNING: IF THIS BAR DOES NOT MEASURE IF THEN DRAWING IS NOT TO SCALE.

DESIGNED D. WILCOXSON	SUBMITTED <i>D. Wilcoxson</i>	C 043548	5/17/96
DRAWN D. WILCOXSON	PROJECT ENGINEER	R. C. E. NO.	DATE
CHECKED B. GALIS	<i>B. Galis</i>	30393	5/17/96
	MONTGOMERY WATSON	R. C. E. NO.	DATE

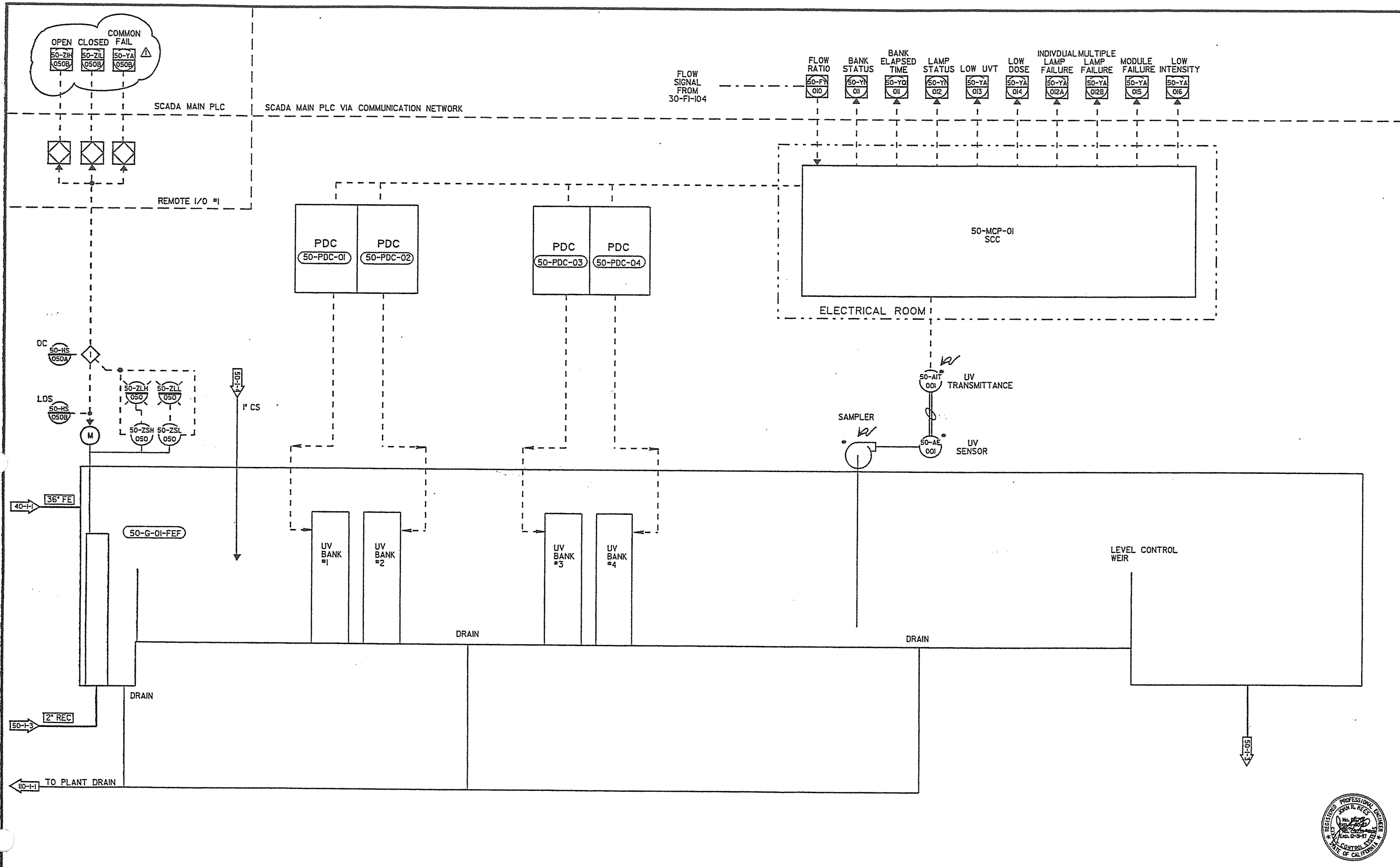


MONTGOMERY WATSON
 Walnut Creek, California

CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 FILTER HYPOCHLORITE FEED SYSTEM

SHEET
 40-1-5

FILE No. 4:\proj\pacifica\cwr\p\ins\pacu001.dgn
 TIME: 13:55
 DATE: 17-SEP-1998



REV	DATE	BY	DESCRIPTION
9/96	DRW		CONFORMED DRAWING
7/3/96	DRW		NUMBER CHANGE

SCALE: NONE
 WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

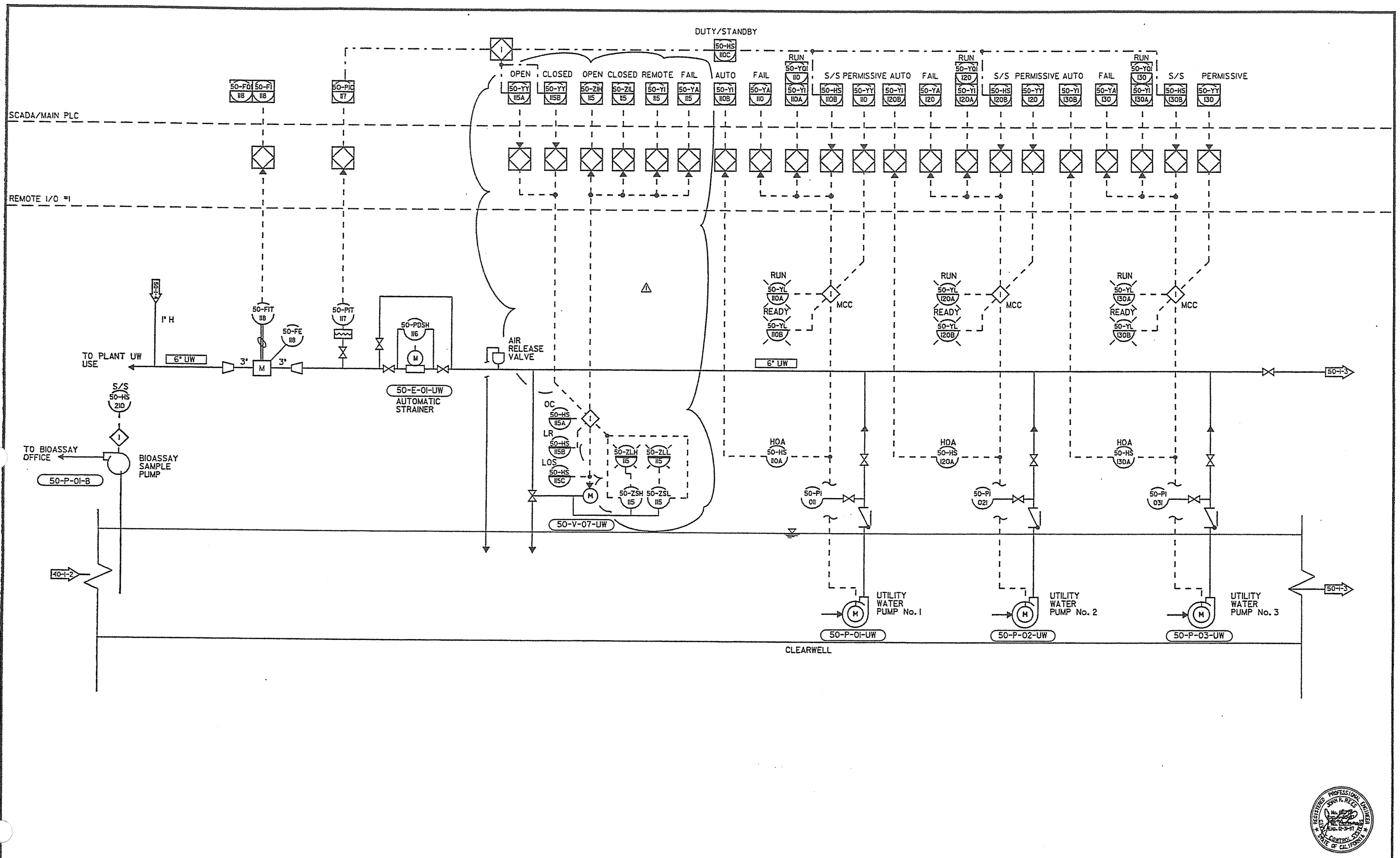
DESIGNED: D. WILCOXSON
 DRAWN: D. WILCOXSON
 CHECKED: B. GAUS
 SUBMITTED: *[Signature]*
 PROJECT ENGINEER
[Signature]
 MONTGOMERY/WATSON

C 043548 5/17/96
 R. C. E. NO. DATE
 30393 5/17/96
 R. C. E. NO. DATE
MONTGOMERY WATSON
 Walnut Creek, California

CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 UV DISINFECTION - P & ID

SHEET
 50-1-I

Job No. 1114.01, File No. 1114.01, Date: 12-SEP-1996, TIME: 13:55, Path: \\p01\proj\1114\cal\ce\1114\p01\1114.01.dgn



REV	DATE	BY	DESCRIPTION
9/96	DRW		CONFORMED DRAWING
11/3/96	DRW		ADD REMOTE AND FAIL CHANGE NUMBERING

SCALE: NONE

WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: D. WILCOXSON	SUBMITTED: <i>Joseph M. ...</i>	C 043548	5/17/96
DRAWN: D. WILCOXSON	PROJECT ENGINEER	R. C. E. NO.	DATE
CHECKED: B. GATTS	<i>Paul E. ...</i>	30393	5/17/96
	MONTGOMERY WATSON	R. C. E. NO.	DATE



MONTGOMERY WATSON

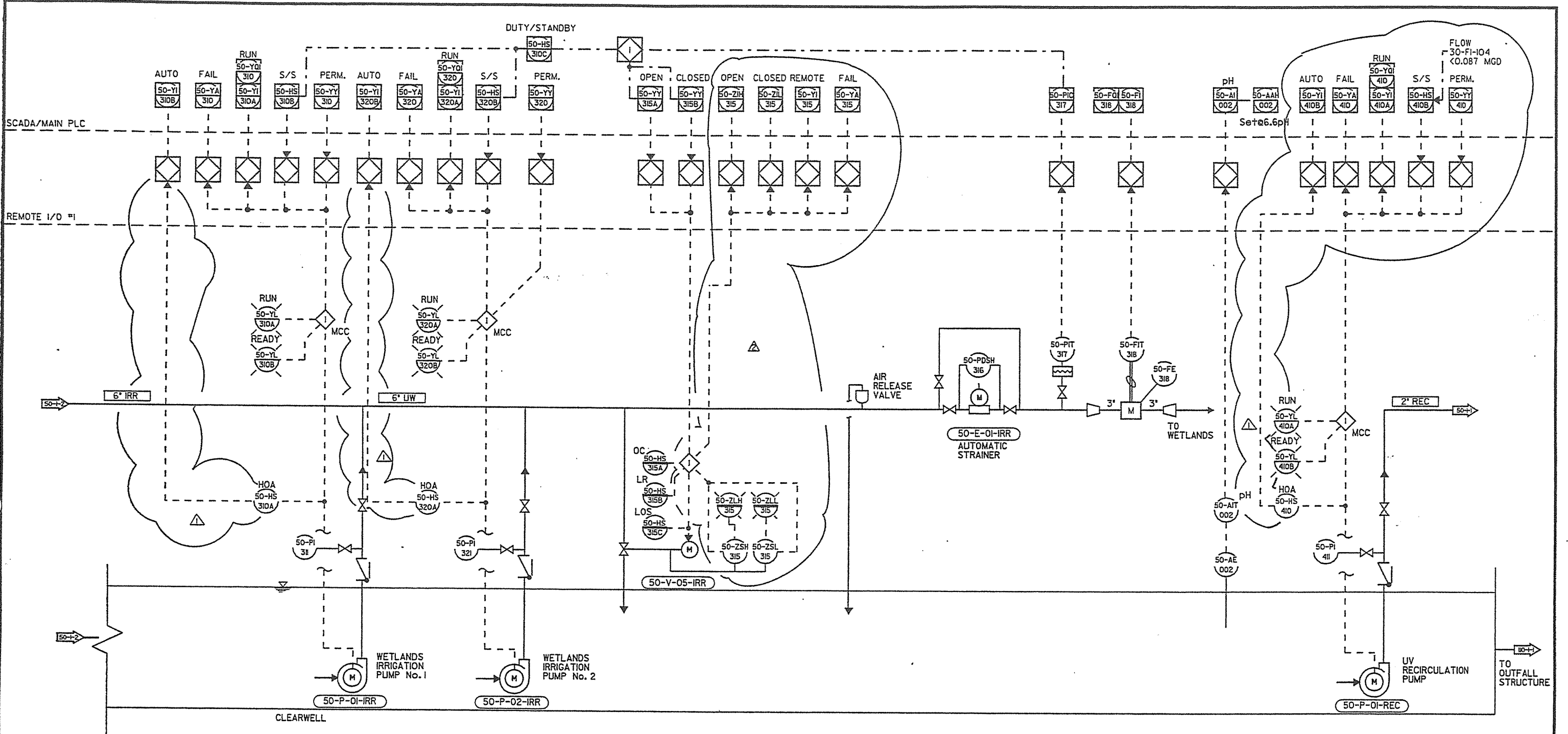
Walnut Creek, California

CITY OF PACIFICA
CALERA CREEK WATER RECYCLING PLANT
UTILITY WATER PUMPS P & ID

SHEET 50-1-2



Job No. 114.012 / FILE No. 41 (proj)\pacifica\ccwp\114.012.dgn TIME: 13:55 DATE: 17-SEP-1998



REV	DATE	BY	DESCRIPTION
3/96	DRW		CONFORMED DRAWING
1/3/96	DRW		ADD REMOTE AND FAIL
1/2/96	DRW		ADD CONTROLS AND AUTO STATUS

SCALE: NONE
 WARNING: IF THIS BAR DOES NOT MEASURE THEN DRAWING IS NOT TO SCALE.

DESIGNED: D. WILCOXSON	SUBMITTED: <i>[Signature]</i>	C-043546	5/17/96
DRAWN: D. WILCOXSON	PROJECT ENGINEER: <i>[Signature]</i>	R. C. E. NO.	DATE
CHECKED: B. GAUS	<i>[Signature]</i>	30393	5/17/96
	MONTGOMERY WATSON	R. C. E. NO.	DATE



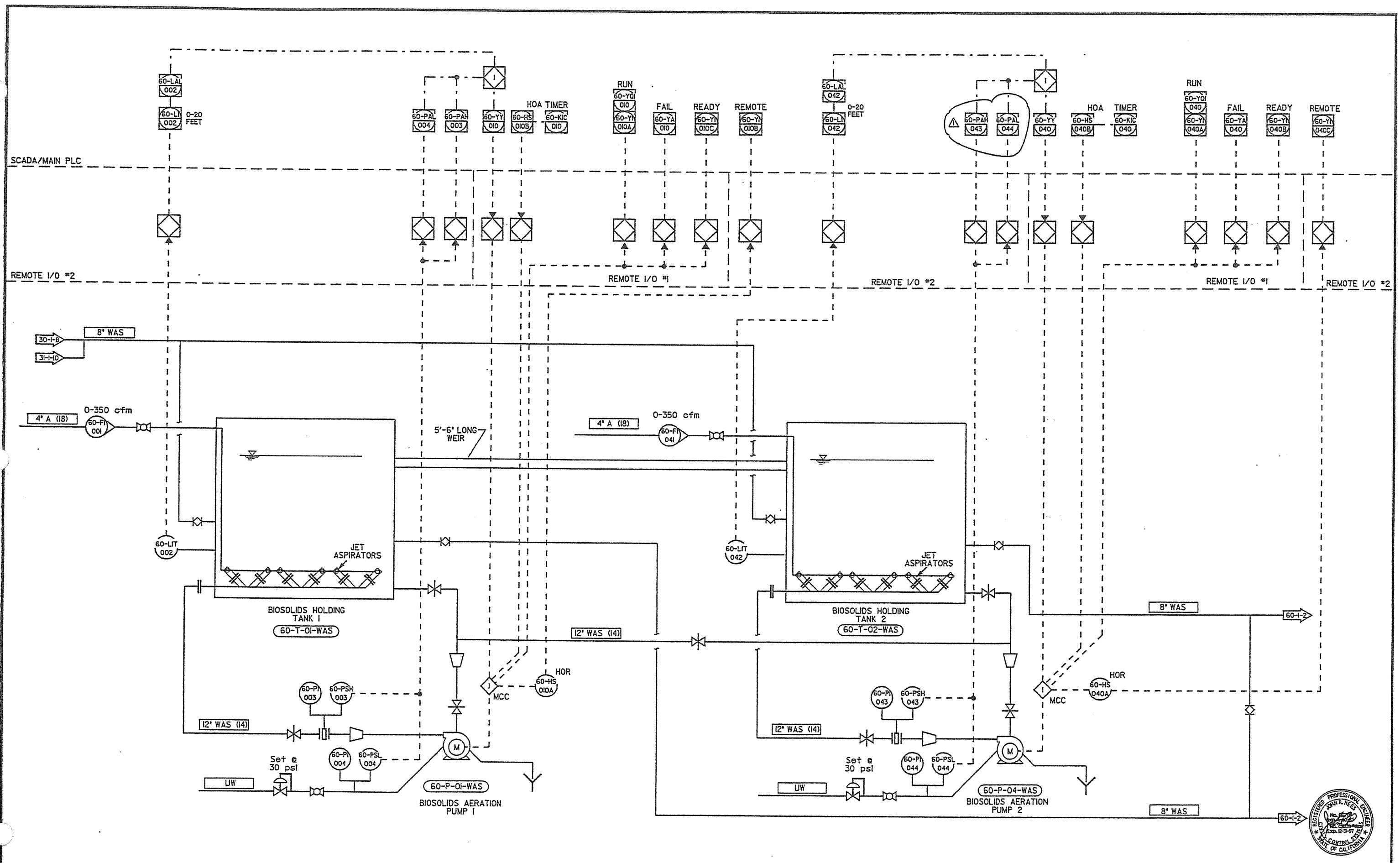
MONTGOMERY WATSON
 Walnut Creek, California

CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 WETLANDS IRRIGATION AND
 UV RECIRCULATION PUMPS P & ID

SHEET
 50-1-3



FILE No. 1114.011
 TIME: 15:45
 DATE: 17-SEP-1996



REV	DATE	BY	DESCRIPTION
9/96		DRW	CONFORMED DRAWING
7/3/96		DRW	NUMBER CHANGE

SCALE: NONE

WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: D. WILCOXSON
 DRAWN: D. WILCOXSON
 CHECKED: J. REES

SUBMITTED: *[Signature]*
 PROJECT ENGINEER
 C 043548
 R. C. E. NO. DATE
 5/17/96

30393
 R. C. E. NO. DATE
 5/17/96



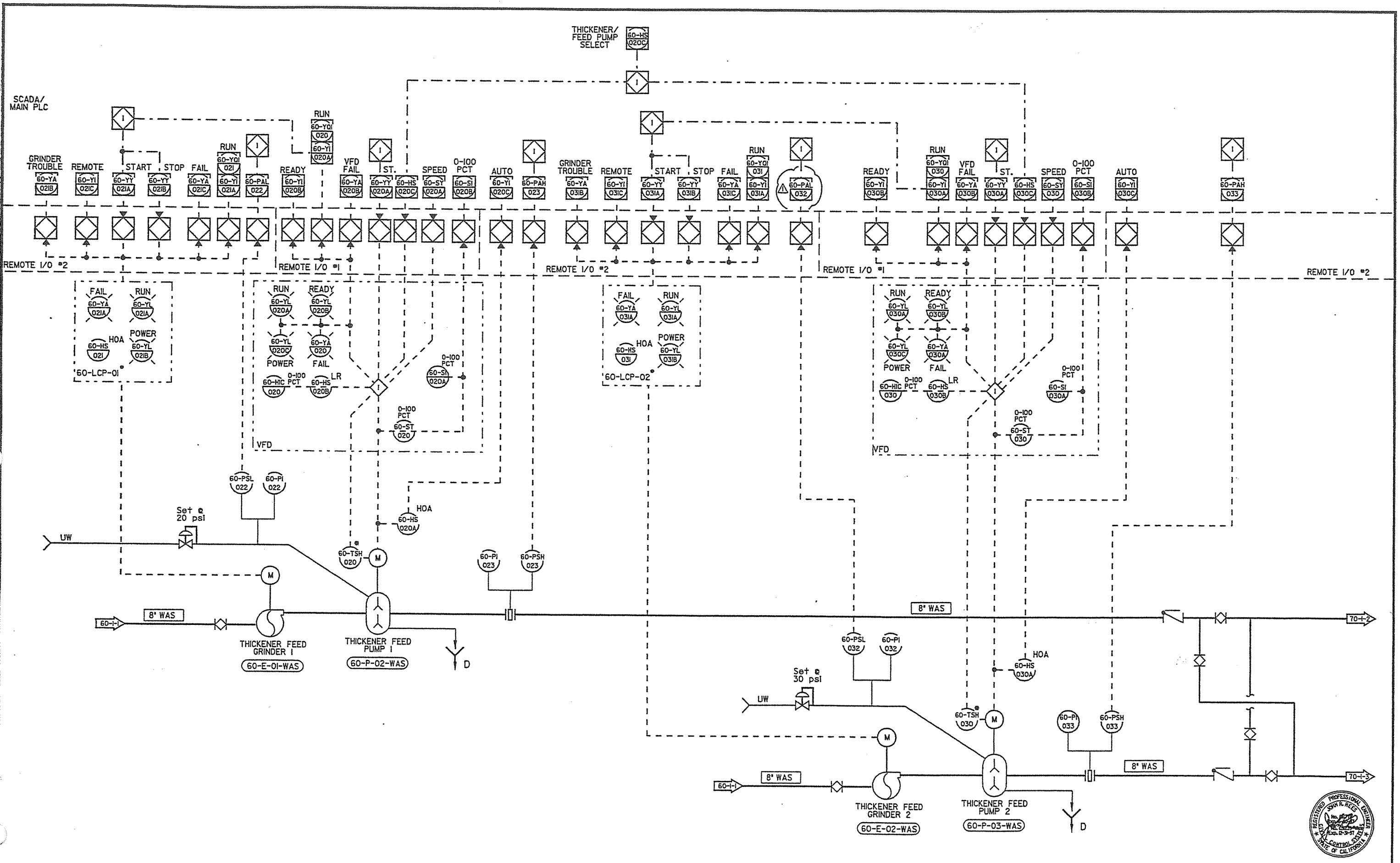
MONTGOMERY WATSON
 Walnut Creek, California

CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 BIOSOLIDS STORAGE P & ID

SHEET
 60-1-1



FILE No. 111A.0127
 TIME: 13:56
 9/17/96
 1/21/96
 1/21/96



REV	DATE	BY	DESCRIPTION
1	9/96	DRW	CONFORMED DRAWING
2	1/21/96	DRW	NUMBER CHANGE

SCALE: NONE
 WARNING: IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE.

DESIGNED: D. WILCOXSON
 DRAWN: D. WILCOXSON
 CHECKED: J. REES
 SUBMITTED: [Signature]
 PROJECT ENGINEER
 C 043548 5/17/96
 R. C. E. NO. DATE
 30393 5/17/96
 R. C. E. NO. DATE



MONTGOMERY WATSON
 Walnut Creek, California

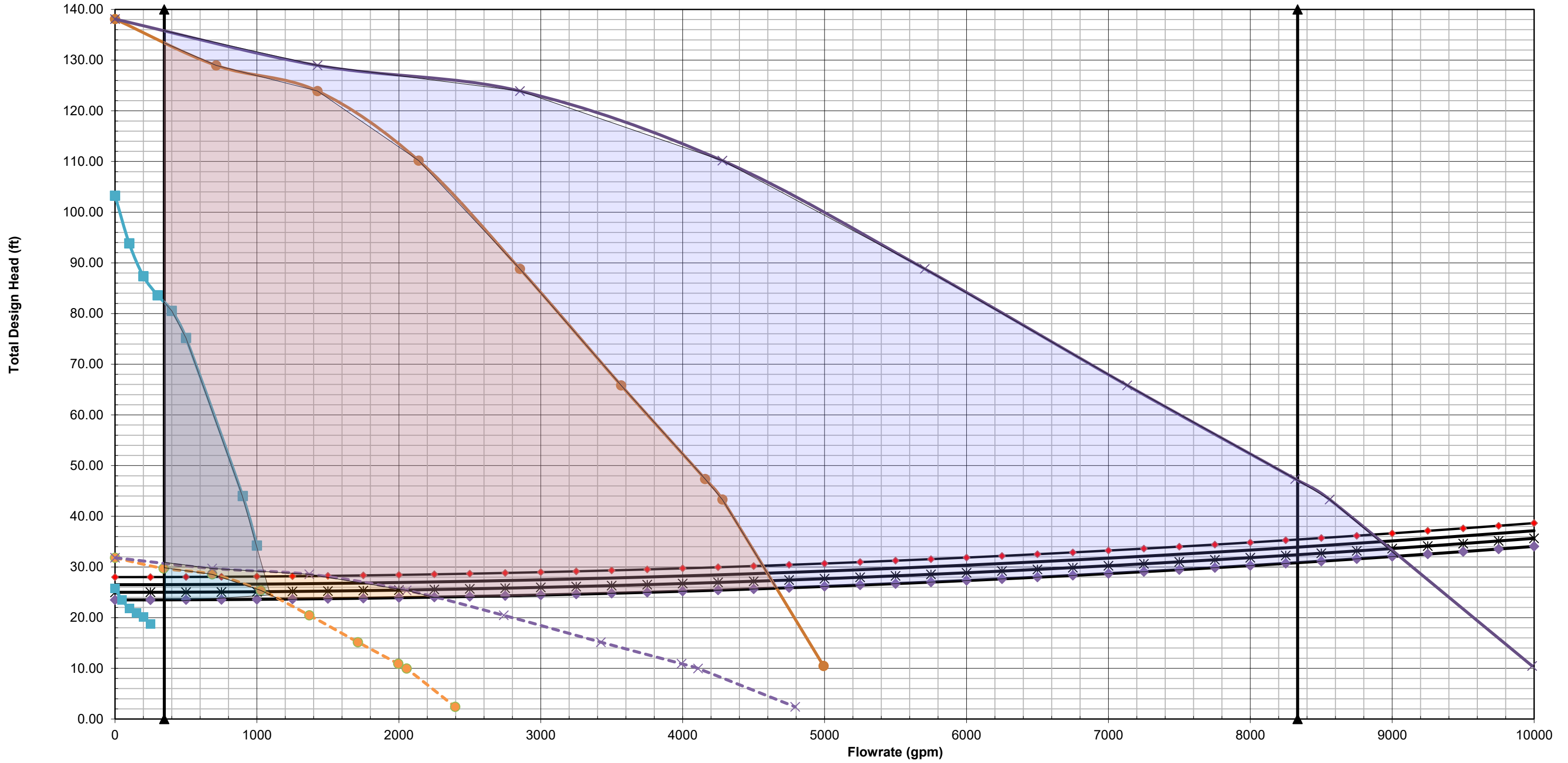
CITY OF PACIFICA
 CALERA CREEK WATER RECYCLING PLANT
 BIOSOLIDS THICKENING FEED P & ID

SHEET
 60-1-2

Attachment A2

TEMPORARY BYPASS PUMP SYSTEM-PUMP CURVES

Pacifica Bypass Pump System Curves

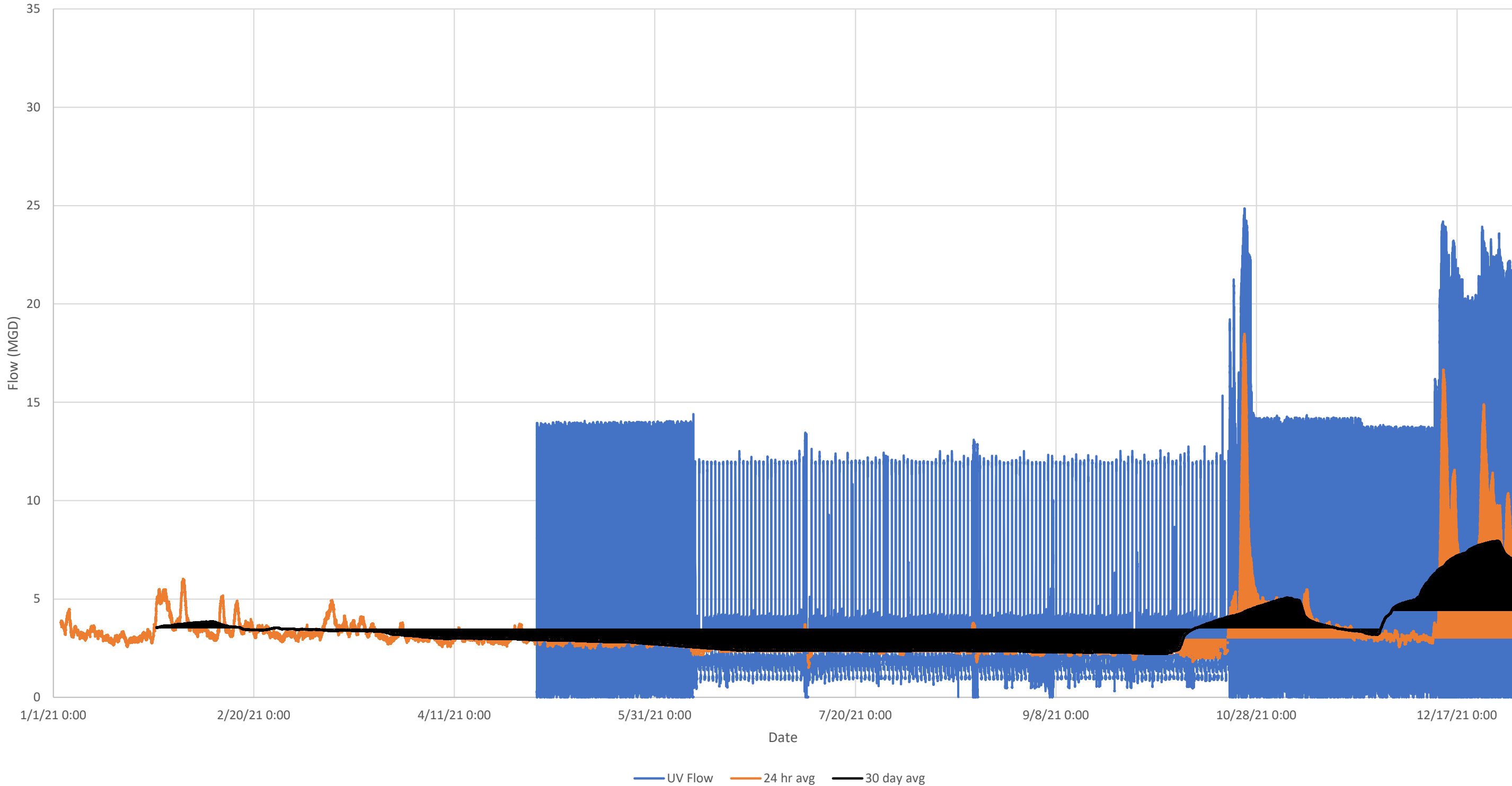


- System Curve - High Head
- System Curve - Average Head
- *— System Curve Low Head
- ◇— System Curve - Low Head (Box Mode)
- Pump Curve-Alt 1 Full Speed Single
- -●- - Pump Curve-Alt 1 Half Speed Single
- x— Pump Curve-Alt 1 Full Speed Double
- -x- - Pump Curve-Alt 1 Half Speed Double
- Jockey-Full Speed
- Jockey - 60% Speed

Attachment A3

2021 & 2022 PLANT FLOW DATA

2021 Plant Effluent Data



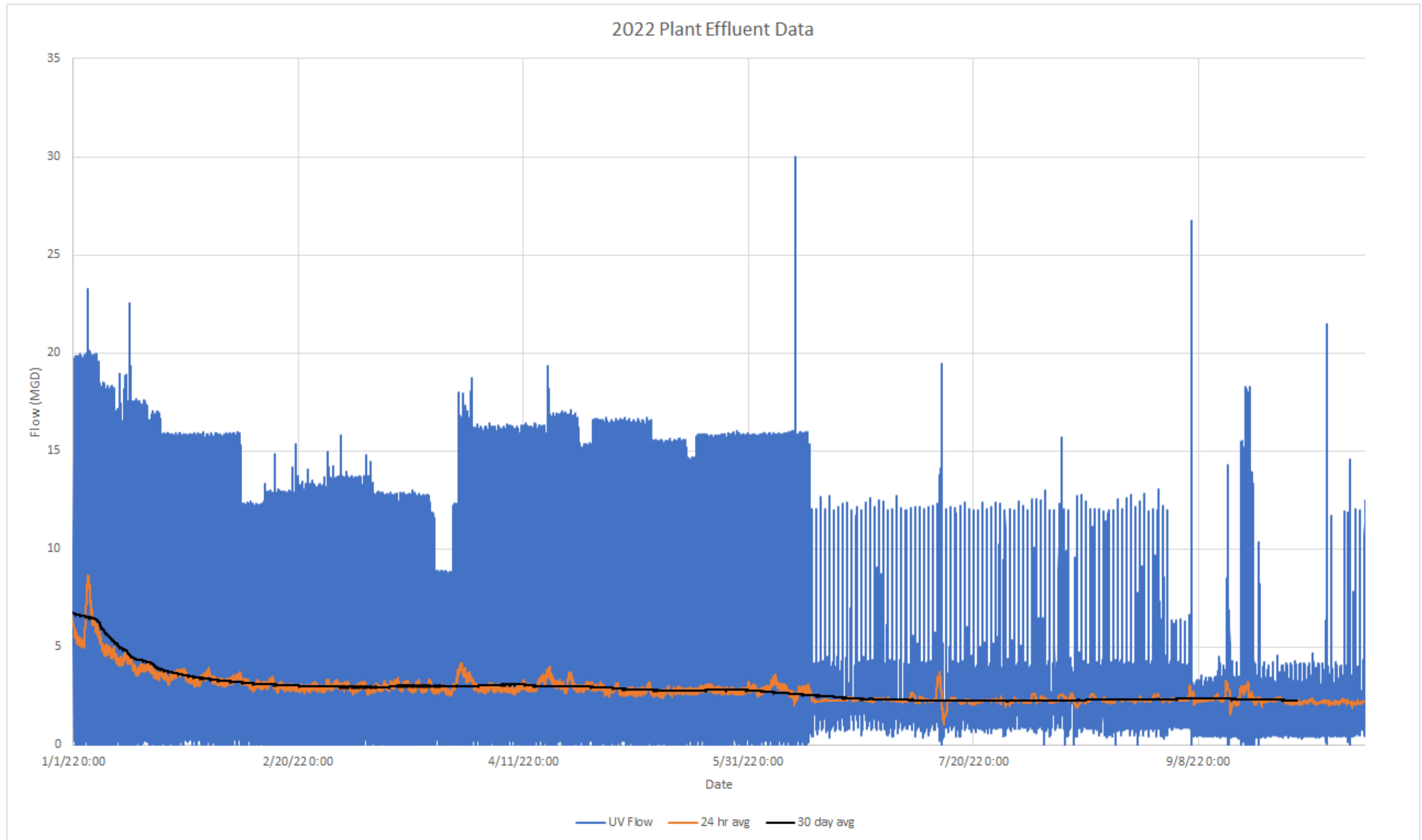
**CALERA CREEK WRP -
2021 EFFLUENT DATA**

Appendix A: Attachment 3

CITY OF PACIFICA, CALIFORNIA
CALERA CREEK WATER RECYCLING PLANT
PRELIMINARY DESIGN REPORT



2022 Plant Effluent Data



**CALERA CREEK WRP -
2022 EFFLUENT DATA**

Appendix A: Attachment 3

CITY OF PACIFICA, CALIFORNIA
CALERA CREEK WATER RECYCLING PLANT
PRELIMINARY DESIGN REPORT



Attachment A4

BYPASS RESPONSE TIMES

Table A4.1 Influent Box with Bypass Gate Closed

Flow (mgd)	Response Time from (EL 60.50 to EL 64.50) (minutes)
1	2.2
2	1.1
3	0.7
4	0.5
5	0.4
6	0.4
8	0.3
10	0.2
12	0.2

Table A4.2 Clear well and Influent Box with Bypass Gate Open

Flow (mgd)	Response Time from (EL 60.50 to EL 64.50) (minutes)
1	14.8
2	7.4
3	4.9
4	3.7
5	3.0
6	2.5
8	1.8
10	1.5
12	1.2

ATTACHMENT B - METHOD OF PROCEDURE (MOP)

**“METHOD OF PROCEDURE” (MOP)
Instructions and Forms**

Definition and Purpose

“Method of Procedure” (MOP) is a detailed document submitted by the Contractor to request process shutdown(s), utility tie-in(s), work in areas that may risk unanticipated outages, or flow diversions to accommodate site construction activities during a project. Such activities may include (but are not limited to) new tie-ins to utilities or structures, mechanical modifications to process piping or equipment, demolition, bulkhead installation, and cleaning processes.

The MOP provides a detailed plan to the Owner and Engineer that describes specific aspects of the work including purpose, time of execution, and anticipated impacts on treatment processes. The MOP also includes contingency measures and provisions for rapid closure in the event that shutdown or work progress difficulties are encountered. Information from relevant trades associated with the requested shutdown, diversion, or tie-in is also included.

The Owner should use the information within the MOP to define operational procedures and methods to safely and successfully assist the Contractor.

MOP Process Summary

WHO	STEP	TIMING
Contractor	1. Identify MOPs needed on MOP Log and Baseline Schedule.	No later than 7 days prior to Preconstruction Scheduling Meeting
Contractor, Owner, Engineer	2. Pre-MOP Meeting.	More than 28 days prior to work
Contractor	3. Submits MOP.	No later than 28 days prior to work
Owner	4. Reviews MOP.	
Owner	5. MOP finalized.	No later than 7 days prior to work
Contractor	6. Complete Readiness Checklist.	No later than 5 days prior to work
Contractor	7. Complete Safety Checklist.	Immediately prior to commencing work
Contractor	8. Complete Work.	
Contractor	9. Update MOP Log and Progress Schedules.	Monthly

MOP Process Detail

STEP 1. Identifies MOPs needed on MOP Log and Baseline Schedule.

Contractor submits a preliminary list of anticipated project MOPs on MOP Log. MOPs identified but not limited to those shutdowns, diversions, or tie-ins described in the Contract Documents. Incorporate MOPs as tasks in Baseline Schedule. Date scheduled MOPs to coincide with the appropriate construction activities.

STEP 2. Pre-MOP Meeting.

Contractor requests a Pre-MOP Meeting with the Owner and Engineer to discuss the nature of the shutdown, diversion, or tie-in, and to gather the information necessary to complete the MOP Form. The pre-MOP meeting may be waived by the Owner or Engineer if the work is deemed to be minor.

STEP 3. Submits MOP.

Contractor completes the MOP Form and submit 3 copies for approval to the Owner's Project Manager (OPM).

STEP 4. Reviews MOP.

OPM distributes MOP Form for review by the Owner's Construction Coordinator, O&M Representative, and Engineer's Project Representative. Review MOP Form for completeness, accuracy, compliance with both the construction schedule, constraints defined in contract documents, and to ensure that the requested work does not negatively impact plant operations or other concurrent project activities. Additional information may be requested to better understand the nature of and method for completing the Work.

STEP 5. MOP finalized.

Once the MOP is agreed to by all parties, the MOP will be finalized by signature. Copies are distributed to the Owner, Engineer, and Contractor.

STEP 6. Complete Readiness Checklist.

Contractor verifies everything is ready for the work.

STEP 7. Complete Safety Checklist.

Contractor ensures safety.

STEP 8. Complete work.

Contractor complete work.

STEP 9. Update MOP Log and Progress Schedules.

Contractor updates MOP Log weekly and distributes at the regularly scheduled construction progress meetings.

ATTACHMENT C - METHOD OF PROCEDURE (MOP) FORM



METHOD OF PROCEDURE (MOP) FORM

Owner: _____	Date: _____
Contractor: _____	Carollo Project No.: _____
Project Name: _____	Submittal No.: _____
Submittal Title: _____	Spec/Dwg. Reference: _____

MOP #	Task Title (<i>Provide <10 word title</i>):	Submittal Date: (<i>No later than 28 days prior to work</i>)
-------	--	--

SCHEDULE OF WORK ACTIVITY START: (Date/Time) _____ END: (Date/Time) _____

REQUESTOR: _____

PRIMARY POINT OF CONTACT: _____ PHONE/PAGER: _____

SECONDARY POINT OF CONTACT: _____ PHONE/PAGER: _____

NOTIFY Control Room, Phone Security, Phone

BUILDING: _____ LOCATION OF WORK FLOOR/LEVEL: _____

DESCRIPTION OF WORK: (*Provide sufficient details on process isolation, work sequencing, and safety (i.e., control of significant hazards unique to the work) to demonstrate an understanding of the work and how it will be completed within the constraints, and its impact on the processes and facility.*)

Task Summary: _____

Processes Affected: _____

Trades Affected: _____

WORK PLAN:

Work Sequencing: _____

Process Isolation: _____

Spill Prevention Plan: _____

Contingency Plans: _____

CRITICAL EQUIPMENT/TOOLS: (*pumps and discharge hoses with correct fittings, blind flanges and pipe plugs, no-hub fittings, properly sized electrical service components, generators, portable lighting, chlorine for potable water pipe breaks, etc.*)

<input type="checkbox"/>	Acoustic Ceiling/or Walls Access	<input type="checkbox"/>	Excavation Permit	<input type="checkbox"/>	Lock Out/Tag Out
<input type="checkbox"/>	Chemical Use Approval	<input type="checkbox"/>	Fire Sprinkler Impairment	<input type="checkbox"/>	Life Safety Systems
<input type="checkbox"/>	Confined Space Permit	<input type="checkbox"/>	Flammable Materials	<input type="checkbox"/>	Roof Protocol
<input type="checkbox"/>	Critical Lift Plan	<input type="checkbox"/>	Flush / Discharge	<input type="checkbox"/>	Work After Dark
<input type="checkbox"/>	Energized Electrical Work	<input type="checkbox"/>	High Pressure Test	<input type="checkbox"/>	
<input type="checkbox"/>	Elect. Panel Schedules	<input type="checkbox"/>	Hot Work/Open Flame	<input type="checkbox"/>	

EXISTING SERVICE(S) AT RISK:

<input type="checkbox"/>	Breathing Air	<input type="checkbox"/>	Elect Normal	<input type="checkbox"/>	Process Access	<input type="checkbox"/>	Telephones
<input type="checkbox"/>	Chemical Distribution	<input type="checkbox"/>	Fire Protection	<input type="checkbox"/>	Safety Showers	<input type="checkbox"/>	UPS
<input type="checkbox"/>	City Water	<input type="checkbox"/>	HVAC	<input type="checkbox"/>	SCADA	<input type="checkbox"/>	VAX/DATA
<input type="checkbox"/>	Communication	<input type="checkbox"/>	Inert Gas	<input type="checkbox"/>	Security	<input type="checkbox"/>	
<input type="checkbox"/>	Domestic Drain	<input type="checkbox"/>	Instrument - Air	<input type="checkbox"/>	Solvent Drain	<input type="checkbox"/>	

Work Restrictions

01_14_00-Attachment C-1

201447

March 2024

pw://Carollo/Documents/CA/Pacifica/201447-100000/04 Design/04 Specs/Carollo/01_14_00 (FS-100)

<input type="checkbox"/>	Elect-Bus Duct	<input type="checkbox"/>	Life Safety System	<input type="checkbox"/>	Specialty Gases	<input type="checkbox"/>	
<input type="checkbox"/>	Elect Emergency	<input type="checkbox"/>	Natural Gas	<input type="checkbox"/>	Storm Drain	<input type="checkbox"/>	

REVIEWER'S INSTRUCTIONS / COMMENTS:

PREJOB BRIEFING MUST BE COMPLETED PRIOR TO COMMENCING WORK:

	Full Name (printed)	Signature	Phone	Date
Submitted By				
System Owner				
Reviewer (if needed)				
Reviewer (if needed)				
Reviewer (if needed)				
Reviewer (if needed)				

ATTACHMENT D - READINESS CHECKLIST

READINESS CHECKLIST
(5 days prior to work)

Checklist provided as a guide but is not all inclusive.

1. Confirm all parts and materials are on site: _____

2. Review work plan: _____

3. Review contingency plan: _____

ATTACHMENT E - SAFETY CHECKLIST

SAFETY CHECKLIST
(Just prior to commencing work)

Checklist provided as a guide but is not all inclusive.

1. Location awareness:
 - a. Emergency exits: _____
 - b. Emergency shower and eyewash: _____
 - c. Telephones and phone numbers: _____
 - d. Shut-off valve: _____
 - e. Electrical disconnects: _____
2. Inspect work area:
 - a. Take time to survey the area you are working in. Ensure that what you want to do will work. Do you have enough clearance? Is your footing secure? Do you have adequate lighting and ventilation? Are surrounding utilities out of the way for you to perform your work?
3. SDS (Safety Data Sheets):
 - a. Understand the chemicals and substances in the area you are working in by reading the SDS.
4. Lockout/Tagout Procedure:
 - a. Lockout/tagout energy sources before beginning work.
 - b. Make sure all valves associated with the work are locked out and tagged out on each side of the penetration.
 - c. Make sure the lines are depressurized.
5. Overhead work:
 - a. Use appropriate personal protective equipment; i.e., safety harness, lifeline, etc.
 - b. Select appropriate tie-off points; i.e., structurally adequate, not a pipe or conduit, etc.
 - c. Spotter assigned and in position.
 - d. Pipe rack access; i.e., check design capacity, protective decking or scaffolding in place, exposed valves or electrical switches identified and protected.
6. Safety equipment:
 - a. Shepherd's hook.
 - b. ARC flash protection.
 - c. Fire extinguisher.
 - d. Other: _____
7. Accidents:
 - a. Should accidents occur, do not shut off and do not attempt to correct the situation, unless you are absolutely positive that your action will correct the problem and not adversely affect other people or equipment.
8. Review process start-up documents:
 - a. In the event the system is shutdown, the Control Center should have a working knowledge of the process start-up procedures in order to deal effectively with unforeseen events.
9. Evacuation procedures:
 - a. Do not obstruct evacuation routes.
 - b. Take time to survey the area for evacuation routes.

ATTACHMENT F - METHOD OF PROCEDURE (MOP) LOG

METHOD OF PROCEDURE (MOP) LOG
Sample

MOP Number	Task Title	Date Requested	Date Approved	Date Work Planned	Work Completed (yes/no)
001					
002					
003					

SECTION 01_20_20

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Procedures for measurement and payment of Work under this Contract for lump sum items and unit prices.

1.02 REFERENCES

- A. Occupational Safety and Health Administration (OSHA).

1.03 LUMP SUM ITEMS

- A. Item 1: Mobilization/Demobilization including Stormwater Pollution Prevention Plan (SWPPP):
 - 1. Measurement:
 - a. Includes work required for mobilization and demobilization, and storm water pollution prevention plan.
 - b. Measurement for payment shall be by percent complete.
 - c. Not to exceed 5 percent of Total Bid Price.
 - 2. Payment:
 - a. Lump sum.
- B. Item 2: Assignment of the Procurement Contract for Permanent and Temporary UV Disinfection Equipment and slide gates with Trojan Technologies.
 - 1. Measurement:
 - a. Owner has assigned the remaining Procurement Contract in Section 00_54_34 - Assignment of Procurement Contract. Includes the remaining pre-negotiated price in accordance with the assigned Contract.
 - 2. Payment:
 - a. According to the assigned Procurement Contract payment procedures and associated progress payments in Section 00_52_64 of the assigned Procurement Contract.
- C. Item 3: Pre-negotiated Temporary UV Disinfection Equipment with GLASCO UV letter dated 3/21/2024 included as Attachment A of Section 00_41_00 - Bid Form.
 - 1. Measurement:
 - a. Owner has assigned the pre-negotiated agreement.
 - b. Measurement for payment shall be by percent complete.
 - 2. Payment:
 - a. Lump sum.

- D. Item 4: Pre-negotiated SCADA System Programmer services per Telstar Instruments letter dated 2/23/2024 included as Attachment B of Section 00_41_00 - Bid Form.
1. Measurement:
 - a. Owner has assigned the pre-negotiated agreement.
 - b. Measurement for payment shall be by percent complete.
 2. Payment:
 - a. Lump sum.
- E. Item 5: Installation of permanent UV Equipment as specified in Section 46_66_85 - Ultraviolet Disinfection System including slide gates as specified in Section 40_05_59.20 of the assigned agreement (Section 00_54_34 - Assignment of Procurement Contract & Appendix D):
1. Measurement:
 - a. Includes all work associated with the final installation of all equipment provided under Item 2.
 - b. Measurement for payment shall be by percent complete.
 2. Payment:
 - a. Lump sum.
- F. Item 6: Installation, operation, and removal of Temporary Bypass Pumping and Disinfection system and all associated modifications and work with bypass activities:
1. Measurement:
 - a. Includes work required for installation and management including but not limited to temporary piping, protection of temporary piping, temporary power, temporary pumps, temporary UV equipment, secondary containment, monitoring of bypass pumps, installation of isolation structures and bulkheads, and coordination with the Owner and Engineer.
 - b. Measurement for payment shall be by percent complete.
 2. Payment:
 - a. Lump sum.
- G. Item 7: Installation of new duct bank and electrical conduit and conductors for new permanent electrical feed and communications to and from the main administrative and operations building:
1. Measurement:
 - a. Includes work required for installation of duct bank according to plans and specifications.
 - b. Measurement for payment shall be by percent complete.
 2. Payment:
 - a. Lump sum.
- H. Item 8: Subsurface utility confirmation along proposed duct bank alignment.
1. Measurement:
 - a. Includes pre-submittal investigation effort required to establish sufficient subsurface utility engineering information to clear the proposed duct bank alignment and/or identify obstructions.
 - b. Measurement for payment will be lump sum.
 2. Payment:
 - a. Lump sum.

- I. Item 9: Temporary Excavation Support:
 - 1. Measurement:
 - a. Sheet piling, shoring, and bracing, or equivalent method for the protection of life and limb in trenches and open excavation, in accordance with California Labor Code §6707.
 - b. Measurement for payment will be lump sum.
 - 2. Payment:
 - a. Lump sum.

- J. Item 10: All other costs required to complete all Work in the Contract Documents not covered by the other Items:
 - 1. Measurement:
 - a. Measurement for payment shall be by percent complete.
 - 2. Payment:
 - a. Lump sum.

1.04 UNIT PRICE ITEMS

- A. Measurement of quantities:
 - 1. Work paid at a unit price times number of units measured will be measured by Engineer in accordance with United States Standard Measures:
 - a. 1 ton shall consist of 2,000 pounds avoirdupois.
 - 2. Provide and pay for accurate scales:
 - a. Use platform scales of sufficient size and capacity to permit the entire vehicle or combination of vehicles to rest on the scale platform while being weighed.
 - b. Combination vehicles may be weighed as separate units provided they are disconnected while being weighed.
 - c. Have scales inspected and certified as often as necessary to ascertain accuracy.
 - d. Furnish weigh slips and daily summary weigh sheets to Engineer.
 - e. When material is shipped by rail, certified car weights will be acceptable, provided that not more than the actual weight of material will be paid, without consideration of minimum car weight used for assessing freight tariff.
 - f. Car weight will not be acceptable for materials passing through mixing plants.
 - g. Daily, or at shorter intervals when necessary to ensure accuracy, weigh empty trucks used to haul material paid by weight.
 - h. Provide such trucks with plain, unique, permanent, legible identification marks.
 - 3. Reinforcing steel, steel shapes, castings, and similar items paid by weight will be measured by handbook weights for the type and quantity indicated for the Work.

- B. Item 11: Type 1 Concrete Repairs:
 - 1. Measurement:
 - a. Includes work for concrete repairs, and other appurtenant work and materials.
 - b. Work to be defined by Drawing 40S01, Detail S204/TYP, and other associated drawings and specifications.

- c. Measurement for payment shall be square feet (S.F.).
 - 2. Payment:
 - a. Unit price.
- C. Item 12: Type 2 Concrete Repairs:
 - 1. Measurement:
 - a. Includes work for concrete repairs, and other appurtenant work and materials.
 - b. Work to be defined by Drawing 40S01, Detail S204/TYP, and other associated drawings and specifications.
 - c. Measurement for payment shall be square feet (S.F.).
 - 2. Payment:
 - a. Unit price.
- D. Item 13: Channel Preparation and Coating:
 - 1. Measurement:
 - a. Includes work for channel coating including preparation of the concrete, and other appurtenant work and materials.
 - b. Work to be defined by Drawing 40S01, Section 09_96_08 - Concrete Repair and Coating, and other associated drawings and specifications.
 - c. Measurement for payment shall be square feet (S.F.).
 - 2. Payment:
 - a. Unit price.
- E. Item 14: Pavement Replacement:
 - 1. Measurement:
 - a. Includes work for pavement demolition and replacement including base preparation and materials, and other appurtenant work and materials.
 - b. Work to be defined by Drawings C01 and E02, Section 32_12_17 – Asphaltic Concrete Paving (CA), and other associated Drawings and Specifications.
 - c. Measurement for payment shall be square yard (S.Y.).
 - 2. Payment:
 - a. Unit price.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_26_00

CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Administrative and procedural requirements for executing a change in the Work.

1.02 PRELIMINARY REQUIREMENTS

- A. Change Order Cost Basis Summary Form:
 - 1. Submit a sample to Engineer for review within 15 calendar days following Notice to Proceed.
 - a. Items will be reviewed and their value, percentage, or calculation method mutually agreed to by the Contractor and Owner prior to executing a Change Order on the Project.
 - 2. Used by the Contractor for pricing each Change Order required for additions, deletions, or revisions in the Work.
 - 3. Include the following information:
 - a. Agreed upon markups, percentages, and procedures for calculating all surcharges, etc. associated with the Cost of the Change Order Work.
 - b. References for unit price information and special unit price information.
 - c. Attachments with the following information:
 - 1) Certified labor rates breakdown.
 - 2) Equipment rates.
 - 3) Bond and insurance rates (PI&I).

1.03 REQUEST FOR INFORMATION OR INTERPRETATION (RFI)

- A. Contractor may issue RFIs to request interpretation of the documents or to request for information that may be missing.
- B. General Instructions:
 - 1. Number RFIs consecutively.
 - a. Add a consecutive letter to the RFI number on modified submittals of the same RFI (i.e., RFI 4B).
 - 2. Provide RFI for 1 item.
 - a. There may be exceptions when multiple items are so functionally related that expediency indicates review of the group of items as a whole.
 - b. RFIs with multiple items will be rejected without review.

3. Contractor sign and date RFIs indicating review and approval.
 - a. Contractor's signature indicates that they have satisfied RFI review responsibilities and constitutes Contractor's written approval of RFI.
 - b. RFIs without Contractor's signature will be returned to the Contractor unreviewed. Subsequent submittal of this information will be counted as the first resubmittal.
- C. Engineer will render a written clarification, interpretation, or decision on the issue submitted or initiate an amendment or supplement to the Contract within 21 days.
 1. In the event the Contractor identifies an RFI as critical to the progress of the project, Engineer will make every effort to reduce the RFI response time.

1.04 PRELIMINARY PROCEDURES

- A. Owner or Engineer may initiate changes by submitting a Request for Proposal (RFP) to Contractor including the following information:
 1. Detailed description of the Change, Products, and location of the change in the Project.
 2. Supplementary or revised drawings or specifications.
 3. Projected time span for making the change, and a specific statement if overtime work is authorized.
 4. A specific period of time during which the requested price will be considered valid.
 5. Such request is for information only, and is not an instruction to execute the changes, or to stop work in progress.
- B. Contractor may initiate changes by submitting a Change Proposal to Engineer containing the following:
 1. Description of proposed changes.
 2. Reason for making changes.
 3. Specific period of time during which requested price will be considered valid.
 4. Effect on Total Contract Cost and/or Contract Time.
 5. Documentation supporting any change in Total Contract Cost and/or Contract Time, as appropriate.

1.05 WORK CHANGE DIRECTIVE AUTHORIZATION

- A. In lieu of a Request for Proposal (RFP), Engineer may issue a Work Change Directive Authorization for Contractor to proceed with a change for subsequent inclusion in a Change Order.
- B. Authorization will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change and will designate method of determining any change in the Contract Sum and/or the Contract Time, as appropriate.
- C. Owner and Engineer will sign and date the Work Change Directive Authorization as authorization for the Contractor to proceed with the changes.
- D. Contractor may sign and date the Work Change Directive Authorization to indicate agreement with the terms.

1.06 DOCUMENTATION OF CHANGE PROPOSALS

- A. Change proposal:
 - 1. Support with sufficient substantiating data to allow Engineer to evaluate the quotation.
 - a. Lump sum.
 - b. Unit prices: Use previously established unit prices.
 - c. Time-and-material/force account basis:
 - 1) Name of the Owner's authorized agent who ordered the work, and date of the order.
 - 2) Dates and times work was performed, and by whom.
 - 3) Time record, summary of hours worked, and hourly rates paid.
 - 4) Receipts and invoices for:
 - a) Equipment used, listing dates and times of use.
 - b) Products used, listing of quantities.
 - c) Subcontracts.
 - 2. Provide additional data to support time and cost computations:
 - a. Labor required.
 - b. Equipment required.
 - c. Products required:
 - 1) Recommended source of purchase and unit cost.
 - 2) Quantities required.
 - d. Taxes, insurance, and bonds.
 - e. Credit for work deleted from Contract, similarly documented.
 - f. Overhead and profit.
 - g. Justification for change to Contract Time.

1.07 PREPARATION OF CHANGE ORDERS AND FIELD ORDERS

- A. Engineer will prepare each Change Order and Field Order.
- B. Change Orders:
 - 1. Will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.
 - 2. Will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.
 - 3. Recommendation of Change Proposal is indicated by Engineer's signature.
 - 4. Upon signature and execution by Owner, the Change Proposal becomes a Change Order altering the Contract Time and Total Contract Cost, as indicated.
 - a. Owner's Representative will transmit one signed copy each to Contractor and Engineer.
 - 5. Contractor may only request payment for changes in the Work against an approved Change Order.
 - 6. If either Engineer or Owner's Representative disapproves the Change Proposal, the reason for disapproval will be stated.
 - a. A request for a revised proposal or cancellation of the proposal will be shown.

- C. Field Orders:
 - 1. Order minor changes in the Work without changes in Contract Price or Contract Times.

1.08 LUMP-SUM/FIXED PRICE CHANGE ORDER

- A. Content of Change Orders will be based on, either:
 - 1. Engineer's Proposal Request and Contractor's responsive Change Proposal as mutually agreed between Owner and Contractor.
 - 2. Contractor's Change Proposal for a change, as recommended by Engineer.
- B. Owner and Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time and serve as authorization for the Contractor to proceed with the changes.
- C. Contractor will sign and date the Change Order to indicate agreement with the terms.

1.09 UNIT PRICE CHANGE ORDER

- A. Content of Change Orders will be based on, either:
 - 1. Engineer's definition of the scope of the required changes.
 - 2. Contractor's Change Proposal for a change, recommended by Engineer.
 - 3. Survey of completed work.
- B. The amounts of the unit prices to be:
 - 1. Those stated in the Contract.
 - 2. Those mutually agreed upon between Owner and Contractor.
- C. When quantities of each of the items affected by the Change Order can be determined prior to start of the work:
 - 1. Owner and Engineer will sign and date the Change Order as authorization for Contractor to proceed with the changes.
 - 2. Contractor will sign and date the Change Order to indicate agreement with the terms.
- D. When quantities of the items cannot be determined prior to start of the work:
 - 1. Engineer or Owner will issue a Work Change Directive authorization directing Contractor to proceed with the change on the basis of unit prices, and will cite the applicable unit prices.
 - 2. At completion of the change, Engineer will determine the cost of such work based on the unit prices and quantities used.
 - 3. Contractor shall submit documentation to establish the number of units of each item and any claims for a change in Contract Time.
- E. Owner and Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time and serve as authorization for the Contractor to proceed with the changes.
- F. Contractor will sign and date the Change Order to indicate their agreement with the terms.

1.10 TIME AND MATERIAL/FORCE ACCOUNT CHANGE ORDER/WORK CHANGE DIRECTIVE AUTHORIZATION

- A. Engineer will issue a Work Change Directive for the Owner's signature authorizing Contractor to proceed with the changes.
- B. At completion of the change, Contractor shall submit itemized accounting and supporting data as specified in this Section.
- C. Engineer will determine the allowable cost of such work, as provided in the Contract Documents.
- D. Owner and Engineer will sign and date the Change Order to establish the change in Contract Sum and in Contract Time and serve as authorization for the Contractor to proceed with the changes.
- E. Contractor will sign and date the Change Order to indicate their agreement.

1.11 CORRELATION WITH CONTRACTOR'S SUBMITTALS

- A. Periodically revise Schedule of Values and Applications for Payment forms to record each Change Order as a separate item of Work, and to record the adjusted Contract Sum.
- B. Periodically revise the Construction Schedule to reflect each change in Contract Time. Revise subschedules to show changes for other items of work affected by the changes.
- C. Upon completion of work under a Change Order, enter pertinent changes in Record Documents.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_29_73
SCHEDULE OF VALUES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements for preparation, format, and submittal of Schedule of Values.

1.02 PREPARATION

- A. Schedule of Values shall be a listing of all cost loaded, on-site construction activities from the progress schedule, listed in numerical order, showing that the sum total of all cost-loaded activities equal the Contract value.
- B. When the schedule is changed or revised to include added or deleted work, the Schedule of Values shall also be revised such that the sum total of all cost-loaded activities continuously equal the current Contract value.
 - 1. Equate the aggregate of these costs to the Lump Sum Contract Price.
- C. Prepare Schedule of Values identifying costs of Major Items of Work.

1.03 SUBMITTALS

- A. Submit Schedule of Values for the Preliminary Schedule as specified in, Section 01_32_21 - Schedules and Reports.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_29_77

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Procedures for preparation and submittal of Applications for Payment.

1.02 FORMAT

- A. Develop satisfactory spreadsheet-type form generated by downloading cost data from the Progress Schedule.
 - 1. Submit payment requests and attach spreadsheet with cost data related to Progress Schedule.
- B. Fill in information required on form provided or approved by Owner or CM.
- C. When Change Orders are executed, add Change Orders at end of listing of scheduled activities:
 - 1. Identify change order by number and description.
 - 2. Provide cost of change order in appropriate column.
- D. After completing, submit Application for Payment.
- E. Engineer will review application for accuracy. When accurate, Engineer will transmit application to Owner for processing of payment.
- F. Execute application with signature of responsible officer of Contractor.

1.03 SUBSTANTIATING DATA

- A. Provide Substantiating Data identifying:
 - 1. Project.
 - 2. Application number and date.
 - 3. Cost flow summary.
 - 4. Updated schedule of values.
 - 5. Progress schedule.
 - 6. Detailed list of enclosures.
 - 7. Stored products log.
 - 8. Equipment log.
 - 9. Submit "certified" payroll, if applicable.
 - 10. Record (as-built) documents.
 - 11. Photos and videos from current pay period.
 - 12. Applicable unconditional waiver and release on progress payment for previous payment made by Owner.

1.04 SUBMITTALS

- A. Submit Application for Payment and Substantiating Data with cover letter.

1.05 PAYMENT REQUESTS

- A. Prepare progress payment requests on a monthly basis. Base requests on the breakdowns of costs for each scheduled activity and the percentage of completion for each activity.
- B. Indicate total dollar amount of work planned for every month of the project. Equate sum of monthly amounts to Lump Sum Contract Price.
- C. Generate Progress Payment request forms by downloading cost data from the schedule information to a spreadsheet type format.
- D. Identify each activity on the Progress Schedule that has a cost associated with it, the cost for each activity, the estimated percent complete for each activity, and the value of work completed for both the payment period and job to date.
- E. Prepare summary of cost information for each Major Item of Work listed in the Schedule of Values. Identify the value of work completed for both the payment period and job to date.
- F. Payment period:
 - 1. Monthly Application for Payment period shall begin on the 1st day of each month, and end on the last day of each month.
 - 2. Submit Application for Payment to Engineer no later than the 5th day of each month for work completed the previous month.
 - 3. Engineer will finalize and submit recommendation for Application for Payment to Owner by the 15th day of each month to allow time for processing and approval.

1.06 COST SUMMARIES

- A. Prepare Summary of Cost Information for each Major Item of Work listed in the Schedule of Values. Identify the Value of Work Completed for both the payment period and job to date.
- B. Cash flow summary: Prepare cash flow summary, indicating total dollar amount of work planned for each month of the project. Equate sum of monthly amounts to Lump Sum contract price.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_31_19
PROJECT MEETINGS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements for conducting conferences and meetings for the purposes of addressing issues related to the Work, reviewing and coordinating progress of the Work and other matters of common interest, and includes the following:
1. Qualifications of Meeting Participants.
 2. Basic Meeting Requirements.
 3. Pre-construction Conference.
 4. Pre-construction Safety Conference.
 5. Pre-submittal Conference.
 6. Web Based Construction Document Management Software Training.
 7. Progress Meetings.
 8. Schedule Update Meetings.
 9. Quality Control Meetings.
 10. Pre-Installation Meetings.
 11. Maintenance Of Plant Operations (MOPO) Meetings.
 12. Commissioning Coordination Meetings.
 13. Instrumentation and Control Coordination Meetings.
 14. Close-out Meeting.
 15. Post Construction Meeting.

1.02 QUALIFICATIONS OF MEETING PARTICIPANTS

- A. Representatives of entities participating in meetings shall be qualified and authorized to act on behalf of entity each represents.

1.03 BASIC MEETING REQUIREMENTS

- A. Attendees:
1. Meeting leader shall require attendance of parties directly affecting, or affected by, Work being discussed at the meeting.
- B. Location:
1. In location convenient for most invitees and/or appropriate to support the meeting purpose.
- C. Notification:
1. Meeting leader shall notify attendees of meeting, including an agenda, a minimum of 7 days prior to meeting.

- D. Agenda:
 - 1. Meeting leader shall prepare copies of agenda for participants and distribute at the meeting.
 - 2. Minimum requirements:
 - a. Meeting purpose.
 - b. Review minutes of previous meeting.
 - c. Safety and security.
 - d. Discuss issues.
 - e. Action items.
 - f. Next meeting.
- E. Meeting minutes:
 - 1. Meeting leader shall provide draft minutes within 7 days of meeting and send to all attendees for comment within 7 days.
 - 2. Meeting leader shall incorporate comments from attendees and submit final meeting minutes to attendees within 7 days of receipt of comments.

1.04 PRE-CONSTRUCTION CONFERENCE

- A. Construction Manager leads the meeting.
- B. Timing:
 - 1. Upon issuance of Notice to Proceed, or earlier when mutually agreeable.
- C. Location: Calera Creek Water Recycling Plant Conference Room.
- D. Required attendees:
 - 1. Contractor's project manager and superintendent, Owner, Engineer, representatives of utilities, major subcontractors and others involved in performance of the Work, and others necessary to agenda.
- E. Agenda minimum requirements:
 - 1. Meeting purpose:
 - a. To establish working understanding between parties and to discuss Construction Schedule, shop drawing and other submittals, cost breakdown of major lump sum items, processing of submittals and applications for payment, and other subjects pertinent to execution of the Work.
 - 2. Adequacy of distribution of Contract Documents.
 - 3. Distribution and discussion of list of major subcontractors and suppliers.
 - 4. Proposed progress schedules and critical construction sequencing.
 - 5. Major equipment deliveries and priorities.
 - 6. Project coordination.
 - 7. Designation of responsible personnel.
 - 8. Procedures and processing of:
 - a. Field decisions.
 - b. Proposal requests.
 - c. Submittals - separate meeting.
 - d. Change Orders.
 - e. Request for Information/Interpretations.

- f. Applications for Payment.
- g. Record Documents.
- 9. Use of premises:
 - a. Office, construction, and storage areas.
 - b. Owner's requirements.
- 10. Construction facilities, controls, and construction aids.
- 11. Temporary utilities.
- 12. Safety and first aid procedures.
- 13. Security procedures.
- 14. Housekeeping procedures.
- 15. Safety and security.
- 16. Review proposed photographer submittal.
- 17. Action items.
- 18. Next meeting.

1.05 PRE-CONSTRUCTION SCHEDULING MEETING

- A. Construction Manager leads the meeting.
- B. Timing:
 - 1. Within 7 days of Notice to Proceed, or earlier when mutually agreeable.
- C. Location: Calera Creek Water Recycling Plant Conference Room.
- D. Required attendees:
 - 1. Contractor's project manager, superintendent, scheduler, Owner, Engineer, and others necessary to agenda.
- E. Agenda minimum requirements:
 - 1. Meeting purpose:
 - a. To establish the format and features of the Construction Schedule.
 - 2. Schedule preparation.
 - 3. Reporting requirements.
 - 4. Updates and revision procedures.
 - 5. Schedule delay analysis procedures.
 - 6. Schedule methodology.
 - 7. Planned sequence of operations.
 - 8. Cost and labor loading methodology.
 - 9. Proposed activity coding structure as specified in Section 01_32-21 - Schedules and Reports.
 - 10. Naming convention: Name schedule files with the year, month and day of the data date, revision identifier, and a description of the schedule.
 - a. Example 1: 2014_07_30 rev 1 draft baseline schedule.xer.
 - b. Example 2: 2014_09_30 rev 2 sep final update.xer.
 - 11. Action items.
 - 12. Next meeting.

1.06 PRE-CONSTRUCTION SAFETY CONFERENCE

- A. Construction Manager leads the meeting.

- B. Timing:
 1. Upon issuance of Notice to Proceed, or earlier when mutually agreeable.
- C. Location: Calera Creek Water Recycling Plant Conference Room.
- D. Required attendees:
 1. Contractor's project manager, safety representative, and superintendent; Owner, Engineer, representatives of utilities, major subcontractors and others involved in performance of the Work, and others necessary to agenda.
- E. Agenda minimum requirements:
 1. Meeting purpose:
 - a. To establish safety procedures and identify lead participants.
 2. Review minutes of previous meeting.
 3. Safety and first aid procedures.
 4. Review of Experience Modification Rating for Contractor and each subcontractor.
 5. Security procedures.
 6. Housekeeping procedures.
 7. Safety and security.
 8. Action items.
 9. Next meeting.

1.07 PRE-SUBMITTAL CONFERENCE

- A. Construction Manager leads the meeting.
- B. Timing:
 1. Prior to producing any submittals.
- C. Required attendees:
 1. Contractor's project manager and superintendent, Owner, Engineer, representatives of utilities, major subcontractors, individual equipment manufacturers furnishing major pieces of equipment, and others involved in performance of the Work, and others necessary to agenda.
- D. Agenda minimum requirements:
 1. Meeting purpose:
 - a. Reviewing the entire Project, equipment, schedules, and submittal requirements.
 - b. Review the entire Project, equipment, control philosophy, schedules, and submittal requirements.
 - c. Awareness of requirements by major subcontractors, major suppliers, and major equipment manufacturers.
 - d. Format and procedures for submittals.
 - e. Review of the master submittal schedule.
 2. Review equipment list.
 3. Review submittal schedule.
 4. Format of submittals.
 5. Procedures and processing of submittals.
 - a. Review turn-around time.

6. Discuss specific electrical and instrumentation and controls submittal requirements.
7. Safety and security.
8. Action items.
9. Next meeting.

1.08 WEB BASED CONSTRUCTION DOCUMENT MANAGEMENT SOFTWARE TRAINING

- A. Contractor can submit a written request to the Engineer to waive the training based on staff having sufficient familiarity with the software and its complete usage. Construction Manager will lead the meeting.
- B. Timing:
 1. Upon issuance of Notice to Proceed, or earlier when mutually agreeable.
 2. Duration minimum: 2 hours.
- C. Required attendees:
 1. Mandatory attendance.
 - a. Contractor's project manager.
 - b. Contractor's field superintendent.
 - c. Contractor's project engineer.
 2. Other attendees:
 - a. Owner, Engineer, Contractor's quality control manager, Contractor's project scheduler and any other persons involved with preparing and transmitting documents.
- D. Agenda minimum requirements:
 1. Meeting purpose:
 - a. Train construction team on the use of the web based document management system software.
 2. Safety.
 3. General Items.
 4. Contractor functions.
 5. Owner functions.
 6. Engineer functions.
 7. Action items.

1.09 PROGRESS MEETINGS

- A. Construction Manager will lead the meeting.
- B. Timing:
 1. Hold meetings during the Work:
 - a. During 2024 at maximum bi-weekly intervals.
 - b. During 2025 at maximum weekly intervals.
- C. Required attendees:
 1. Owner, Engineer, Contractor, Contractor's Project Manager, superintendent, quality control manager, project scheduler, major subcontractors and suppliers as appropriate to agenda topics for each meeting.

2. Additional invitees:
 - a. Owner utility companies when the Work affects their interests, and others necessary to agenda.
- D. Agenda minimum requirements:
 1. Meeting purpose:
 - a. Provide the status of the Work.
 2. Review minutes of previous meeting.
 3. Safety and security.
 4. Construction schedule summary.
 5. Review of 6 weeks schedule.
 - a. Contractor shall provide printed hard copies for each attendee.
 6. Review of off-site fabrication and delivery schedules.
 7. Review of submittals schedule and status of submittals.
 8. Request for information (RFI's) status.
 9. MOP's/shutdown coordination.
 10. Change order management status.
 11. Maintenance of quality standards (QA/QC).
 12. Field observations, problems, and conflicts.
 13. Commissioning.
 14. Partnering recognition status (optional).
 15. General Items.
 16. Action items.
 17. Next meeting.

1.10 SCHEDULE UPDATE MEETINGS

- A. Contractor leads the meeting.
- B. Timing:
 1. Hold meetings throughout progress of the Work at maximum monthly intervals.
- C. Required attendees:
 1. Owner, Engineer, Contractor, Contractor's Project Manager, General Superintendent, project scheduler, major subcontractors and suppliers as appropriate to agenda topics for each meeting.
 2. Additional invitees:
 - a. Owner utility companies when the Work affects their interests and others necessary to the agenda.
- D. Agenda minimum requirements:
 1. Meeting purpose:
 - a. Identify and troubleshoot scheduling issues in a collaborative environment.
 - b. Provide further detail on Work status.
 2. Review minutes of previous meeting.
 3. Review Monthly Schedule, (Actual Progress and Variance).
 - a. "Activities Started/Completed" this period.
 - b. "Activities Started/Completed" "Variance" Baseline vs. current.
 - c. "Added/Deleted Activities".

- d. "Revised Activity Descriptions".
- e. Any significant Proposed Logic Changes.
- 4. Review milestone "Substantial Completion" Schedule:
 - a. "Critical" Activities - "Critical Area, Float and Vital Statistics".
- 5. Review "Cumulative and Monthly Costs" graph.
- 6. Review "Budgeted Cost" indicating the Current Project Budgeted Cost.
- 7. Safety and security.
- 8. Action items.
- 9. Next meeting.

1.11 PRE-INSTALLATION MEETINGS

- A. Contractor leads the meeting.
- B. Timing:
 - 1. When specified in Technical Sections or requested by Engineer, before commencing Work of specific section.
- C. Required attendees:
 - 1. Owner, Engineer, Contractor, Contractor's Project Manager, General Superintendent, project scheduler, major subcontractors including electrical instrumentation, and suppliers as appropriate to agenda topics for each meeting.
 - 2. Additional invitees:
 - a. Owner utility companies when the Work affects their interests and others necessary to the agenda.
- D. Agenda minimum requirements:
 - 1. Meeting purpose:
 - a. Review conditions of installation, preparation and installation procedures.
 - b. Review coordination with related work.
 - 2. Review minutes of previous meeting.
 - 3. Safety and security.
 - 4. Action items.
 - 5. Next meeting.

1.12 PRE-SHUTDOWN MEETINGS

- A. Contractor leads the meeting.
- B. Timing:
 - 1. Short-term and longer-term shutdowns and other tie-ins that require an Owner approved MOP require a pre-shutdown meeting at Project site at least 3 working days prior to commencing shutdown for tie-in or modification of specific plant systems.
- C. Required attendees:
 - 1. Require attendance of parties directly affecting, or affected by shutdown, including Engineer, specific work crews, Owner's construction, operations, and maintenance staff.

- D. Agenda minimum requirements:
 - 1. Meeting purpose:
 - a. Review conditions of installation, preparation, and installation procedures.
 - b. Review coordination with related work.
 - 2. Review minutes of previous meeting.
 - 3. Review accepted Construction Method of Procedure (MOP), as specified in Attachment B of Section 01_14_00 - Work Restrictions, including conditions of shutdown, preparation, and installation procedures.
 - 4. Review timelines and sequences.
 - 5. Review responsibilities.
 - 6. Review dry run plan and schedule, as necessary.
 - 7. Review coordination with related work.
 - 8. Safety and security.
 - 9. Action items.
 - 10. Next meeting.

1.13 QUALITY CONTROL MEETINGS

- A. Contractor leads the meeting.
- B. Timing:
 - 1. Hold meetings throughout progress of the Work at maximum weekly intervals.
- C. Required attendees:
 - 1. Engineer, Construction Manager and staff, Contractor's Quality Control Manager, and staff.
- D. Agenda minimum requirements:
 - 1. Meeting purpose:
 - a. Update Contractor's efforts to comply with quality requirements in the Contract Documents.
 - 2. Review minutes of previous meeting.
 - 3. Review of Work progress and schedule.
 - 4. Review of out-of-compliance inspection or test results.
 - 5. Field observations, problems, and decisions.
 - 6. Review of offsite fabrication and delivery schedules.
 - 7. Planned progress during succeeding work period.
 - 8. Coordination of required inspections and tests.
 - 9. Review 6-week schedule report with upcoming inspections and special tests.
 - 10. Maintenance of quality and work standards.
 - 11. Other business relating to Work.
 - 12. Safety and security.
 - 13. Action items.
 - 14. Next meeting.

1.14 COMMISSIONING COORDINATION MEETINGS

- A. Contractor leads the meeting.

- B. Timing:
 - 1. Separate commissioning coordination meetings will be scheduled as required by Engineer.
- C. Required attendees:
 - 1. Require attendance of parties directly affecting, or affected by process start-up and testing, including Engineer, Commissioning Coordinator, specific work crews, Owner's operations, and maintenance staff.
- D. Agenda minimum requirements:
 - 1. Meeting purpose:
 - a. Coordinate commissioning activities.
 - 2. Review minutes of previous meeting.
 - 3. Review Commissioning Schedule.
 - 4. Review Owner Training Schedule.
 - 5. Review test plans.
 - 6. Review accepted Construction Method of Procedure (MOP), as specified in Attachment B of Section 01_14_00 - Work Restrictions.
 - 7. Owner makes final decision for commissioning GO or NO GO.
 - 8. Safety and security.
 - 9. Action items.
 - 10. Next meeting.

1.15 INSTRUMENTATION AND CONTROL COORDINATION MEETINGS

- A. Meetings and conferences as specified in Programming RFP Scope of Services and other Technical Specifications.

1.16 CLOSE-OUT MEETING

- A. Construction Manager leads the meeting.
- B. Timing:
 - 1. After punch list items are completed.
- C. Required attendees:
 - 1. Owner, Engineer, Contractor, Contractor's Project Manager, and Superintendent.
- D. Agenda minimum requirements:
 - 1. Meeting purpose:
 - a. Coordinate close-out activities.
 - 2. Review minutes of previous meeting.
 - 3. Review punch list completion.
 - 4. Transfer of record documents.
 - 5. Finalize payment.
 - 6. Safety and security.
 - 7. Action items.
 - 8. Next meeting.

1.17 POST CONSTRUCTION MEETING

- A. Construction Manager leads the meeting.
- B. Required attendees:
 - 1. Engineer, Contractor, appropriate manufacturers, and installers of major units of constructions, affected subcontractors, and Owner's operations and maintenance staff.
- C. Timing:
 - 1. About 11 months after date of Substantial Completion.
- D. Location:
 - 1. Meet in Owner's office or other mutually agreed upon place.
- E. Agenda minimum requirements:
 - 1. Meeting purpose:
 - a. Review project for compliance with Contract Documents.
 - 2. Inspect the Work and draft list of items to be completed or corrected.
 - 3. Review service and maintenance contracts and take appropriate corrective action when necessary.
 - 4. Complete or correct defective work and may extend correction period.
 - 5. Safety and security.
 - 6. Action items.
 - 7. Next meeting.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_32_21
SCHEDULES AND REPORTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Schedules and reports.

1.02 SUBMITTAL REQUIREMENTS

- A. Submit preliminary and baseline schedule.
- B. Submit preliminary and baseline schedule of values.
- C. Submit preliminary and baseline schedule of submittals.
- D. Submit, on a monthly basis, updated schedules as specified.
- E. Submit final schedule update as specified.
- F. Submit revised schedules and time impact analyses as specified.
- G. Submit schedules in the media and number of copies as follows:
 - 1. Provide each submittal in PDF format and in other formats specified in this Section.
 - 2. 3 sets of the CPM network and/or bar chart (as specified by the Owner) on 22-inch by 34-inch sheets.
 - a. Color-coding to be specified by the Owner.
 - 3. 3 sets of tabular reports listing all activities sorted numerically identifying duration, early start, late start, early finish, late finish, total float, and all predecessor/successor information.
 - 4. 2 sets of CPM Schedule data electronic files in a native backed-up file (.xer).

1.03 SCHEDULER

- A. Designate, in writing and within 5 calendar days after Notice of Award, the person responsible for preparation, maintenance, updating, and revision of all schedules.
- B. Scheduler shall have the authority to act on behalf of Contractor.
 - 1. A minimum of 5 years verifiable experience in preparation of construction schedules for projects of similar value, size, and complexity.
 - 2. Knowledge of critical path method (CPM) scheduling utilizing Primavera P6 Professional or Asta Powerproject software.
- C. References:
 - 1. Submit written reference of 3 project Owners who have personal experience with this scheduler on previous projects.
 - 2. Identify name, address, telephone number, project name, and cost.

1.04 SCHEDULING FORMAT

- A. Utilize critical path method (CPM) format.
- B. Provide a cost and labor loaded schedule.
- C. Engineer approval of the format is required.

1.05 PRE-CONSTRUCTION SCHEDULING MEETING

- A. As specified in Section 01_31_19 - Project Meetings.

1.06 REVIEW AND ACCEPTANCE OF SCHEDULES

- A. Engineer will review Baseline Schedule, Schedule Updates, Schedule Revisions and Time Impact Analyses to ascertain compliance with specified project constraints, compliance with milestone dates, durations and sequence, accurate inter-relationships, and completeness.
- B. Engineer and Owner will issue written comments following completion of review of Baseline Schedule within 21 calendar days after receipt.
- C. Written comments on review of Schedule Updates and Schedule Revisions and Time Impact Analyses will be returned to Contractor within 14 calendar days after receipt by Engineer.
- D. Revise and resubmit schedule in accordance with Engineer's comments within 7 calendar days after receipt of such comments or request joint meeting to resolve objections.
- E. If Engineer requests a meeting, the Contractor and all major subcontractors must participate in the meeting with Engineer.
 - 1. Revise and resubmit schedule within 7 calendar days after meeting.
- F. Use accepted schedule for planning, organizing, and directing the work and for reporting progress.
- G. Engineer's submittal review response:
 - 1. When schedule reflects Owner's and Contractor's agreement of project approach and sequence, schedule will be accepted by Owner.
 - 2. Engineer's submittal review response for schedule submittal will be "Receipt Acknowledged - Filed for Record" including applicable comments.
 - 3. Acceptance of the schedules by the Owner is for general conformance with the Contract Documents and for Owner's planning information and does not relieve the Contractor of sole responsibility for planning, coordinating, and executing the Work within the contract completion dates.
 - a. Omissions and errors in the accepted schedules shall not excuse performance less than that required by the Contract Documents.
 - b. Acceptance by the Owner in no way constitutes an evaluation or validation of the Contractor's plan, sequence or means, methods, and techniques of construction.

1.07 SCHEDULE UPDATES

- A. Any update:
 - 1. Prepare update using most recent accepted version of schedule including:
 - a. Actual start dates of activities that have been started.
 - b. Actual finish dates of activities that have been completed.
 - c. Percentage of completion of activities that have been started but not finished.
 - d. Actual dates on which milestones were achieved.
 - e. Update activities by inputting percent complete figures with actual dates.
 - f. Use retained logic in preparing Schedule Updates.
 - g. When necessary, input remaining durations for activities whose finish dates cannot be calculated accurately with a percent complete figure only.
 - h. Revisions to the schedule may be included that have been previously approved as specified in this Section under Revisions to Schedule.

- B. Monthly updates:
 - 1. Submit written narrative report in conjunction with each Schedule Update including descriptions of the following:
 - a. Activities added to or deleted from the schedule are to adhere to cost and other resource loading requirements.
 - 1) Identify added activities in manner distinctly different from original activity designations.
 - b. Changes in sequence or estimated duration of activities.
 - c. Current or anticipated problems and delays affecting progress, impact of these problems and delays and measures taken to mitigate impact.
 - d. Assumptions made and activities affected by incorporating change order work into the schedule.
 - 2. Submit updated schedule and materials specified under Submittal of Progress Schedules, 5 calendar days before the monthly schedule update meeting.
 - 3. Since Monthly Schedule Update is the application for progress payment required as specified in Section 01_29_77 - Applications for Payment, submittal and acceptance of the monthly Schedule Update is a condition precedent to the making of any progress payments.

- C. Weekly progress meeting:
 - 1. Update the schedule prior to weekly progress meeting.
 - a. Identify overall progress of each Major Item of Work in the Summary Schedule.
 - b. If there are significant changes to the schedule, submit a written report at the weekly progress meeting.
 - 2. Should monthly Schedule Update show project completion earlier than current Contract completion date, show early completion time as schedule activity, identified as "Project Float".
 - 3. Should monthly Schedule Update show project completion later than current Contract completion date, prepare and submit a Schedule Revision in accordance with the Revisions to Schedule.

1.08 REVISIONS TO SCHEDULE

- A. Submit Revised Schedule within 5 days:
 - 1. When delay in completion of any activity or group of activities indicates an overrun of the Contract Time or milestone dates by 20 working days or 5 percent of the remaining duration, whichever is less.
 - 2. When delays in submittals, deliveries, or work stoppages are encountered making necessary the replanning or rescheduling of activities.
 - 3. When the schedule does not represent the actual progress of activities.
 - 4. When any change to the sequence of activities, the completion date for major portions of the Work, or when changes occur which affect the critical path.
 - 5. When Contract modification necessitates schedule revision, submit schedule analysis of change order work with cost proposal.
- B. Create a separate submittal for Schedule Revisions.
 - 1. Comply with schedule updates as specified in this Section.
 - 2. Do not submit with Schedule Updates.
- C. Schedule Revisions will not be reflected in the schedule until after the revision is accepted by the Owner.
 - 1. This includes Schedule Revisions submitted for the purpose of mitigating a Contractor-caused project delay (Recovery Schedule).

1.09 ADJUSTMENT OF CONTRACT TIME OR PRICE

- A. Contract Time will be adjusted only for causes specified in Contract Documents.
 - 1. Non-excusable delay:
 - a. Non-excusable delays include actions or inactions of the Contractor, or events for which the Contractor has assumed contractual responsibility (including actions or inactions of subcontractors, suppliers, or material manufacturers at any tier) that would independently delay the completion of the Work beyond the current Contract completion date).
 - b. No time extensions will be granted for non-excusable delays.
 - 2. Excusable delay:
 - a. Events which are unforeseeable, outside the control of, and without the fault or negligence of either the Owner or the Contractor (or any party for whom either is responsible), which would independently delay the completion of the Work beyond the current Contract completion date.
 - b. The Contractor may be entitled to a time extension only.
 - c. No other damages will be approved.
 - 3. Compensable delay:
 - a. Actions or inactions of the Owner, or events for which the Owner has assumed contractual responsibility, which would independently delay the completion of the Work beyond the current Contract completion date.
 - b. The Contractor may be entitled to a time extension and delay damages.
 - 4. Concurrent delay:
 - a. Concurrent delay is any combination of the above 3 types of delay occurring on the same calendar date.
 - b. Exception to concurrent delay:
 - 1) Cases where the combination consists of 2 or more instances of the same type of delay occurring on the same calendar date.

- 2) When one cause of delay is Owner-caused or caused by an event which is beyond the control and without the fault or negligence of either the Owner or the Contractor and the other Contractor-caused, the Contractor may be entitled only to a time extension and no delay damages.

CONTRACTOR'S ELIGIBILITY FOR TIME AND/OR EXTENDED OVERHEAD				
DELAY TYPE	NONCONCURRENT DELAY	DELAY CONCURRENT WITH		
Nonexcusable	X	X	T	T
Compensable	TEO	T	TEO	T
Noncompensable	T	T	T	T
ELIGIBILITY				
X: No Time and No Extended Overhead T: Time EO: Extended Overhead				

- B. If the Contractor believes that the Owner has impacted its work, such that the project completion date will be delayed, the Contractor must submit proof demonstrating the delay to the critical path.
1. This proof, in the form of a Time Impact Analysis, may entitle the Contractor to an adjustment of Contract Time or Contract Price.
- C. Time Impact Analysis:
1. Use the accepted schedule update that is current relative to the time frame of the delay event (change order, third party delay, or other Owner-caused delay). Represent the delay event in the schedule by:
 - a. Inserting new activities associated with the delay event into the schedule.
 - b. Revising activity logic.
 - c. Revising activity durations.
 2. If the project schedule's critical path and completion date are impacted as a result of adding this delay event to the schedule, a time extension equal to the magnitude of the impact may be warranted.
 3. The Time Impact Analysis submittal must include the following information:
 - a. A fragment of the portion of the schedule affected by the delay event.
 - b. A narrative explanation of the delay issue and how it impacted the schedule.
 - c. A schedule file used to perform the Time Impact Analysis.
- D. When a delay to the project as a whole can be avoided by revising preferential sequencing or logic, and the Contractor chooses not to implement the revisions, the Contractor will be entitled to a time extension and no compensation for extended overhead.
- E. Indicate clearly that the Contractor has used, in full, all project float available for the Work involved in the request, including any float that may exist between the Contractor's planned completion date and the Contract completion date.
1. Utilize the latest version of the Schedule Update accepted at the time of the alleged delay, and all other relevant information, to determine the adjustment of the Contract Time.

- F. Adjustment of the Contract Times will be granted only when the Contract Float has been fully utilized and only when the revised date of completion of the Work has been pushed beyond the Contract completion date.
 - 1. Adjustment of the Contract Times will be made only for the number of days that the planned completion of the work has been extended.
- G. Actual delays in activities which do not affect the critical path Work or which do not move the Contractor's planned completion date beyond the Contract completion date will not be the basis for an adjustment to the Contract Time.
- H. If completion of the project occurs within the specified Contract Time, the Contractor is not entitled to job-site or home office overhead beyond the Contractor's originally planned occupancy of the site.
- I. Notify Engineer of a request for Contract Time adjustment.
 - 1. Submit request as specified in the Contract Documents.
 - 2. In cases where the Contractor does not submit a request for Contract Time adjustment for a specific change order, delay, or Contractor request within the specified period of time, then it is mutually agreed that the particular change order, delay, or Contractor request has no time impact on the Contract completion date and no time extension is required.
- J. The Engineer will, within 30 calendar days after receipt of a Contract Time adjustment, request any supporting evidence, review the facts, and advise the Contractor in writing.
 - 1. Include the new Progress Schedule data, if accepted by the Owner, in the next monthly Schedule Update.
 - 2. When the Owner has not yet made a final determination as to the adjustment of the Contract Time, and the parties are unable to agree as to the amount of the adjustment to be reflected in the Progress Schedule, reflect that amount of time adjustment in the Progress Schedule as the Engineer may accept as appropriate for such interim purpose.
 - 3. It is understood and agreed that any such interim acceptance by the Engineer shall not be binding and shall be made only for the purpose of continuing to schedule the Work, until such time as a final determination as to any adjustment of the Contract Time acceptable to the Engineer has been made.
 - 4. Revise the Progress Schedule prepared thereafter in accordance with the final decision.

1.10 SCHEDULE PREPARATION

- A. Preparation and submittal of Progress Schedule represents Contractor's intention to execute the Work within specified time and constraints.
- B. All costs associated with schedule requirements are included in the Contract Price.
- C. During preparation of the preliminary Progress Schedule, Engineer will facilitate Contractor's efforts by answer questions regarding sequencing issues, scheduling constraints, interface points, and dependency relationships.
- D. Prepare schedule utilizing Precedence Diagramming Method (PDM).

- E. Prepare schedule utilizing activity durations in terms of working days.
 - 1. Do not exceed 15 working day duration on activities except concrete curing, submittal review, and equipment fabrication and deliveries.
 - 2. Where duration of continuous work exceeds 15 working days, subdivide activities by location, stationing, or other sub-element of the Work.
 - 3. Coordinate holidays to be observed with the Owner and incorporate them into the schedule as non-working days.
 - a. Owner observed holidays include: New Years Day, Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Day After Thanksgiving, Christmas Eve, Christmas Day.
- F. Failure to include an activity required for execution of the Work does not excuse Contractor from completing the Work and portions thereof within specified times and at price specified in Contract.
 - 1. Contract requirements are not waived by failure of Contractor to include required schedule constraints, sequences, or milestones in schedule.
 - 2. Contract requirements are not waived by Owner's acceptance of the schedule. In event of conflict between accepted schedule and Contract requirements, terms of Contract govern at all times, unless requirements are waived in writing by the Owner.
- G. Reference schedule to working days with beginning of Contract Time as Day "1".
- H. Baseline Schedule and Project Completion:
 - 1. Should Contractor submit a Baseline Schedule showing project completion more than 20 working days prior to Contract completion date, Owner may issue Change Order, at no cost to Owner, revising time of performance of Work and Contract completion date to match Contractor's schedule completion date.
 - 2. Adjust accordingly any Contract milestone dates.
- I. Imposed dates and hidden logic are prohibited.
- J. Interim milestone dates, operational constraints:
 - 1. In event there are interim milestone dates and/or operational constraints set forth in Contract, show them on schedule.
 - 2. Do not use Zero Total Float constraint or Mandatory Finish Date on such Contract requirements.
- K. Contract float is for the mutual benefit of both Owner and Contractor.
 - 1. Changes to the project that can be accomplished within this available period of float may be made by Owner without extending the Contract Time, by utilizing float.
 - 2. Time extensions will not be granted nor delay damages owed until Work extends beyond currently accepted Contract completion date.
 - 3. Likewise, Contractor may utilize float to offset delays other than delays caused by Owner.

4. Mutual use of float can continue until all available float shown by schedule has been utilized by either Owner or Contractor, or both. At that time, extensions of the Contract Time will be granted by Owner for valid Owner-caused or third party-caused delays which affect the planned completion date and which have been properly documented and demonstrated by Contractor.
 5. Non-sequestering of float: Pursuant to float sharing requirements of Contract, schedule submittals can be rejected for, use of float suppression techniques such as preferential sequencing or logic, special lead or lag logic restraints, extended activity durations or imposed dates.
- L. Resource loading and leveling:
1. Input labor data on each schedule activity.
 2. Manpower data consists of the man-hours estimated to perform each task, categorized by trade.
 3. Provide leveled manpower requirements.
 - a. Availability of the resources drive activity duration.
- M. Cost loading: All schedules:
1. Only on-site construction activities.
 2. The sum total of all cost loaded activities equal to the current value of the Contract, including change orders, at all times.
 3. Payment for mobilization or payment for materials or equipment delivered to the site, not yet incorporated into the Work.
 4. Owner acceptance of the Baseline Schedule creates the Schedule of Values required as specified in Section 01_29_73 - Schedule of Values.
 5. Provide updated Schedule of Values as the monthly Payment Application as specified in Section 01_29_77 - Applications for Payment.
 6. Payments will not be made until updated Schedule of Values is accepted.
- N. Schedule logic:
1. Assembled to show order in which Contractor proposes to carry out Work, indicate restrictions of access, availability of Work areas, and availability and use of manpower, materials, and equipment.
 2. Form basis for assembly of schedule logic on the following criteria:
 - a. Which activities must be completed before subsequent activities can be started?
 - b. Which activities can be performed concurrently?
 - c. Which activities must be started immediately following completed activities?
 - d. What major facility, equipment, or manpower restrictions are required for sequencing these activities?
- O. Schedule windows for Owner-furnished, Contractor-installed equipment or materials:
1. Immediately after Award of Contract, obtain from Engineer anticipated delivery dates of Owner furnished equipment or materials.
 2. Show these dates in the schedule in same manner indicated by Engineer.
- P. Commissioning schedule:
1. Commissioning activities and milestones (As specified in Section 01_75_17 - Commissioning) shall be an integral part of the overall project schedule.

2. Commissioning activities and milestones shall be extracted from the main project schedule to provide a separate commissioning schedule that is submitted each time the project schedule is submitted.

1.11 NETWORK DETAILS AND GRAPHICAL OUTPUT

- A. Produce a clear, legible, and accurate calendar based, time scaled, and graphical network diagram.
 1. Group activities related to the same physical areas of the Work. Produce the network diagram based upon the early start of all activities.
- B. Include for each activity, the description, activity number, estimated duration in working days, total float, and all activity relationship lines.
- C. Illustrate order and interdependence of activities and sequence in which Work is planned to be accomplished.
 1. Incorporate the basic concept of the precedence diagram network method to show how the start of 1 activity is dependent upon the start or completion of preceding activities and its completion restricts the start of following activities.
- D. Provide schedule showing the critical path for the project.
 1. Critical Path is defined as a sequence of activities that has zero total float.
- E. Provide report of Near Critical Path activities for the project, when required by Engineer.
 1. Near Critical Path activities are those with 15 working days or less of float.
- F. Delineate the specified contract duration and identify the planned completion of the Work as a milestone.
 1. Show the time period between the planned and Contract completion dates, if any, as an activity identified as project float.
- G. Identify system shutdown dates, system tie-in dates, specified interim completion or milestone dates and contract completion date as milestones.
- H. Include, in addition to construction activities:
 1. Submission dates and review periods for major equipment submittals, shoring submittals, and indicator pile program:
 - a. Shoring reviews: Allow 4-week review period for each shoring submittal.
 - b. Pile indicator program: Allow 3-week review period for analysis of program.
 2. Any activity by the Owner or the Engineer that may affect progress or required completion dates.
 3. Equipment and long-lead material deliveries over 8 weeks.
 4. Approvals required by regulatory agencies or other third parties.
- I. Produce network diagram on 22-inch by 34-inch sheets with grid coordinate system on the border of all sheets utilizing alpha and numeric designations.
- J. Identify the execution of the following:
 1. Mobilization.

2. All critical path submittals and submittal review times showing 30 calendar day duration for such activities and equal amount of time for re-submittal reviews.
3. Equipment and materials procurement/fabrication/delivery.
4. Bypass design and submission of detailed bypass submittals. Identify submission as a milestone.
5. Bypass review, bypass materials procurement, bypass installation, and bypass removal.
6. Concrete, including installation of forms and reinforcement, placement of concrete, curing, stripping, finishing, and patching.
7. Tests for leakage of concrete structures intended to hold water.
8. Metal fastenings, framing, structures, and fabrications.
9. Finishes including coating and painting, flooring, ceiling, and wall covering.
10. Process equipment, including identification of ordering lead-time, factory testing, and installation.
11. Valves, gates, and operators, including identification of order lead-time, installation, and testing.
12. Electric transmission, service, and distribution equipment, including identification of ordering lead-time, and factory testing.
13. Other electrical work including lighting, heating and cooling, and special systems, including identification of ordering lead-time.
14. Instrumentation and controls, including identification of ordering lead-time.
15. Preliminary testing of equipment, instrumentation, and controls.
16. Commissioning Phase:
 - a. Source Testing.
 - b. Owner Training.
 - c. Installation Testing.
 - d. Functional Testing.
 - e. Clean Water Facility Testing.
17. Process Start-up Phase:
 - a. Process Start-up.
 - b. Process Operational Period.
 - c. Instrumentation and Controls Performance Testing.
18. Substantial completion.
19. Punch list work.
20. Demobilization.

1.12 WEATHER DAY ALLOWANCE

- A. Definition:
 1. Weather conditions that prevent or inhibit the Contractor's performance of the Work and affect the Critical Path indicated on the Schedule shall be referred to as a Weather Day.
 2. A Weather Day is defined as the Contractor being unable to perform at least 4 hours of work on the Critical Path.
- B. Allowance:
 1. Include as a separate identifiable activity on the critical path, an activity labeled "Weather Days Allowance".

- C. Actual weather day:
 - 1. Insert a weather delay activity in critical path to reflect actual weather day occurrences when weather days are experienced and accepted by Engineer.
 - 2. Reduce duration of Weather Days Allowance activity as weather delays are experienced and inserted into the Schedule. Remaining weather days in Weather Day Allowance at completion of project is considered float.
 - 3. The Contractor shall provide a written notice to the Engineer of the occurrence of a weather day within 2 days after the onset of such weather and shall describe in reasonable detail the type of weather encountered and the Work interfered with or interrupted.
 - a. A schedule update will not suffice as a written notice.
 - b. The Engineer will determine if the weather day constitutes a use of a portion of the Weather Day Allowance.
 - c. After use of all the Weather Day Allowance, the Engineer will determine if the Contractor is entitled to an extension of the Contract Time due to weather conditions.
 - d. Weather days are considered excusable delay as defined in this Section.

1.13 PRELIMINARY SCHEDULE

- A. Procedure:
 - 1. Submit proposed Preliminary Schedule within 14 calendar days after Notice to Proceed.
 - 2. Meet with Engineer within 7 calendar days after receipt of Preliminary Schedule to review and make necessary adjustments.
 - 3. Submit revised Preliminary Schedule within 5 calendar days after meeting.
 - 4. Update Preliminary Schedule monthly until the Baseline Schedule is accepted.
- B. Format:
 - 1. Simplified Gantt chart.
- C. Activities:
 - 1. Define activities to be completed in the first 90 calendar days of Work.
 - 2. Actualize activities performed during the first 90 days into the first monthly schedule update.

1.14 PRELIMINARY SCHEDULE OF VALUES

- A. Preliminary Schedule of Values as specified in Section 01_29_73 - Schedule of Values.
- B. Procedure:
 - 1. Submit proposed Preliminary Schedule of Values within 14 calendar days after Notice to Proceed.
 - 2. Meet with Engineer within 7 calendar days after receipt of Preliminary Schedule of Values to review and make necessary adjustments.
 - 3. Submit revised Preliminary Schedule of Values within 5 calendar days after meeting.

1.15 WORK WITHIN THE FIRST 90 DAYS

- A. Proceed with Work after Preliminary Schedule and Preliminary Schedule of Values have been accepted by Owner.
- B. Submittal and acceptance of Preliminary Schedule and Preliminary Schedule of Values is condition precedent to making of progress payments as specified in Section 01_29_77 - Applications for Payment and payments for mobilization costs otherwise provided for in the Contract.

1.16 SCHEDULE OF SUBMITTALS

- A. Schedule of Submittals shall include submittals required in the Contract Documents but not limited to test plans, training plans, test procedures, operation and maintenance manuals, shop drawings, samples, record documents, and specifically required certificates, warranties, and service agreements.
 - 1. Data for "Or Equals" or substitutions shall be submitted with the Schedule of Submittals.
- B. Preliminary Schedule of Submittals:
 - 1. Due date: After Preliminary Schedule has been submitted and accepted by Owner.
 - 2. Format:
 - a. Include submittals anticipated in the first 90 calendar days after award of contract using early start dates.
 - b. Indicate week and month anticipated for submittal to Engineer.
 - c. Indicate "Priority" submittals where review time can impact Contractor's schedule.
 - 1) "Priority" indication will not alter review times specified in Section 01_33_00 - Submittal Procedures.
 - 2) Engineer will endeavor to provide early review of "Priority" submittals where possible.
 - d. List of "Or Equals" or substitutions.
 - 3. Submittal of Preliminary Schedule of Submittals shall be a condition precedent to Owner making progress payments during the first 90 calendar days after award of contract.
- C. Final Schedule of Submittals:
 - 1. Due date: 30 days after Baseline Schedule has been submitted and accepted by Owner.
 - 2. Format:
 - a. Include submittals using early start dates.
 - b. Include all submittals, including those required in the Preliminary Schedule of Submittals.
 - c. Indicate week and month anticipated for submittal to Engineer.

- d. Indicate "Priority" submittals where review time can impact Contractor's schedule.
 - 1) "Priority" indication will not alter review times specified in Section 01_33_00 - Submittal Procedures.
 - 2) Engineer will endeavor to provide early review of "Priority" submittals where possible.
 - e. Data for "Or Equals" or substitutions.
 - 3. Submittal of Final Schedule of Submittals shall be a condition precedent to Owner making progress payments after the first 90 calendar days after Notice to Proceed.
- D. Provide updated Schedule of Submittals with updated schedules if schedule revisions change listing and timing of submittals.

1.17 BASELINE SCHEDULE AND BASELINE SCHEDULE OF VALUES

- A. Due date: No more than 45 calendar days after Notice to Proceed.
- B. Format:
 - 1. Schedule: Show sequence and interdependence of all activities required for complete performance of all Work, beginning with date of Notice to Proceed and concluding with date of final completion of Contract.
 - 2. Schedule of Values: As specified in Section 01_29_73 - Schedule of Values.
- C. Acceptance of the Baseline Schedule and Baseline Schedule of Values by the Owner is a condition precedent to making payments as specified in Section 01_29_77 - Applications for Payment after the first 90 calendar days after Notice to Proceed.

1.18 SUMMARY SCHEDULE

- A. Due date: At weekly progress meetings and after each Schedule Update or Schedule Revision.
- B. Format:
 - 1. Consolidate groups of activities associated with Major Items of Work shown on Baseline Schedule.
 - 2. intended to give an overall indication of the project schedule without a large amount of detail.

1.19 COST FLOW SUMMARY

- A. Due date: After Baseline Schedule has been submitted and accepted by the Owner, submit on a monthly basis as specified in Section 01_29_77 - Applications for Payment.
- B. Format:
 - 1. Tabular and graphic report showing anticipated earnings each month of the Contract period.
 - 2. Base tabulation on the summation of the cost-loaded activities each month.
 - 3. Show planned amounts.

4. Show actual earned amounts and anticipated remaining earnings.
5. Spreadsheet format of all schedule activities showing cost and percentage completion during the current month for which payment is sought.

1.20 PROGRESS SCHEDULE AND UPDATED SCHEDULE OF VALUES

- A. Due date: Submit on a monthly basis as specified in Section 01_29_77 - Applications for Payment.
- B. Format: Schedule of Values: As specified in Section 01_29_73 - Schedule of Values.

1.21 WEEKLY SCHEDULE

- A. Due date: At every weekly progress meeting.
- B. Format:
 1. Contractor and Engineer must agree on the format.
 2. 6-Week Schedule showing the activities completed during the previous week and the Contractor's schedule of activities for following 5 weeks.
 3. Use the logic and conform to the status of the current progress schedule when producing a Weekly Schedule in CPM schedule or a bar chart format.
 - a. In the event that the Weekly Schedule no longer conforms to the current schedule, Contractor may be required to revise the schedule as specified in this Section.
 4. The activity designations used in the Weekly Schedule must be consistent with those used in the Baseline Schedule and the monthly Schedule Updates.

1.22 LABOR HISTOGRAM (NOT USED)

1.23 COMMISSIONING SCHEDULE

- A. Proposed Commissioning Schedule:
 1. Schedule requirements: As specified in Section 01_75_17 - Commissioning.
 2. Submittal due date: Within 120 days prior to system commissioning.
 3. Engineer response due within 20 calendar days of receipt.
 4. Contractor responsible for updating schedule and resubmitting within 10 calendar days of receipt of Engineer and Owner comments.
- B. Construction Schedule can include the Commissioning Schedule after Engineer acceptance of the Proposed Commissioning Schedule.
 1. Capable of extracting a stand-alone Commissioning Schedule.
 2. Capable of extracting a stand-alone Owner Training Schedule.
- C. Monthly update requirements:
 1. Highlight percentages of completion, actual start and finish dates, and remaining durations, as applicable.
 2. Include activities not previously included in the previously accepted detail work plan Commissioning Schedule.

3. Change Order required for any change to contractual dates.
4. Reviews of these submittals by Engineer will not be construed to constitute acceptance within the time frames, durations, or sequence of work for each added activity.

1.24 FINAL SCHEDULE

- A. The final Schedule Update becomes the As-Built Schedule.
 1. The As-Built Schedule reflects the exact manner in which the project was constructed by reflecting actual start and completion dates for all activities accomplished on the project.
 2. Contractor's Project Manager and scheduler sign and certify the As-Built Schedule as being an accurate record of the way the project was actually constructed.
- B. Retainage will not be released until final Schedule Update is provided.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_32_34

PHOTOGRAPHIC AND VIDEOGRAPHIC DOCUMENTATION

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Requirements for photographs and videos.
- B. The purpose of the photographs and videos is to document the condition of the facilities prior to the Contractor beginning work at the Project site, the progress of the Work, and the Project site after Substantial Completion of the Work.
- C. The scope of the photographic and videographic documentation shall be the sole responsibility of the Contractor but shall be acceptable to the Engineer.

1.02 SUBMITTALS

- A. Photographer qualifications.
- B. Pre-construction photographs and videos: Submit prior to beginning work at the Project site or prior to the Preconstruction Conference specified in Section 01_31_19 - Project Meetings, whichever occurs earlier.
- C. Construction photographs and videos: Submit with each application for payment.
- D. Post-construction photographs and videos: Submit with project closeout documents as specified in Section 01_77_00 - Closeout Procedures.

1.03 PHOTOGRAPHER

- A. Photographer qualified and equipped to photograph either interior or exterior exposures, with lenses ranging from wide angle to telephoto.
- B. Submit example work of previous photographs and video recording meeting the requirements of this Section.
 - 1. Provide to Engineer no later than the pre-construction conference.
 - 2. Provide photographs used for site examination.
 - 3. Provide video of site examination.
 - 4. Provide samples that used same camera and lighting equipment proposed for the Work.
 - 5. Engineer will review work examples to determine if the quality of the images is acceptable.
 - 6. Contractor is responsible for modifications to equipment and/or inspection procedures to achieve report material of acceptable quality.
 - 7. Do not commence Work prior to approval of the material by the Engineer.
 - 8. Once accepted, the standard report material shall serve as a standard for the remaining work.

1.04 KEY PLAN

- A. Submit key plan of Project site with notation of vantage points marked for location and direction of each photograph.
- B. Include the same label information as the corresponding set of photographs.

1.05 PHOTOGRAPHS

- A. Provide prints of each photograph for each area of Work.
- B. Provide a digital copy of each photograph for each area of Work.
 - 1. Monthly: Indexed digital flash drive.
 - 2. Project record documents:
 - a. Catalog and index prints in chronological sequence.
 - b. Include typed table of contents.

1.06 PRE-CONSTRUCTION PHOTOGRAPHS AND VIDEOS

- A. Provide photographs and video of the condition entire site including each area of Work prior to the start of Work.
 - 1. Areas to be photographed and videoed shall include the site of the Work and all existing facilities, either on or adjoining the Project site, including the interior of existing structures that could be damaged as a result of the Contractor's Work.
 - 2. Include general condition, structures, vegetation, staging, storing, working, parking areas and excavation areas.

1.07 POST-CONSTRUCTION PHOTOGRAPHS AND VIDEOS

- A. Provide photographs of the entire site including each area of Work at the completion of Work.
 - 1. Include general condition, structures, vegetation, staging, storing, working, parking areas and excavation areas.
 - 2. Take photos and video from same points in same direction as pre-construction examination.
- B. Submittal of photos and videos is a condition of final payment.

PART 2 PRODUCTS

2.01 MEDIA

- A. Digital media:
 - 1. Flash drive compatible with current Microsoft Windows.
 - 2. Provide photos as individual, indexed JPG files with the following characteristics:
 - a. Compression shall be set to preserve quality over file size.
 - b. Highest resolution JPG images shall be submitted. Resizing to a smaller size when high resolution JPGs are available shall not be permitted.

- c. JPG image resolution shall be 5 megapixels at 2,400 by 1,800 or higher.
 - d. Images shall have rectangular, clean images. Artistic borders, beveling, drop shadows, etc., are not permitted.
 - 3. Identification: On photograph, provide the following information:
 - a. Name of project.
 - b. Date stamp: Unless otherwise indicated, date and time stamp each photograph as it is being taken so stamp is integral to photograph.
 - c. Description of vantage point, indicating location and direction by compass point.
- B. Videos:
 - 1. Video quality shall be 720p HD or greater in MPG, AVCHD, AVI, or MP4 format.
 - 2. Digital color video format.
 - 3. Provide audio portion of the composite video sufficiently free from electrical interference and background noise to provide complete intelligibility of oral report.
 - 4. Identification: On each copy provide a label with the following information:
 - a. Name of project.
 - b. Date video was recorded.
 - 5. Submit 1 copy of each video within 7 days of recording.
 - 6. Display continuous running time.
 - 7. At start of each video recording, record weather conditions from local newspaper or television and the actual temperature reading at Project site.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_33_00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Requirements and procedures for submittals to confirm compliance with Contract Documents.

1.02 GENERAL INSTRUCTIONS

- A. Contractor is responsible to determine and verify field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and check and coordinate each item with other applicable approved shop drawings and Contract Document requirements.
- B. Provide submittals:
 - 1. That are specified or reasonably required for construction, operation, and maintenance of the Work.
 - 2. That demonstrate compliance with the Contract Documents.
- C. Where multiple submittals are required, provide a separate submittal for each specification section.
 - 1. In order to expedite construction, the Contractor may make more than 1 submittal per specification section, but a single submittal may not cover more than 1 specification section:
 - a. The only exception to this requirement is when 1 specification section covers the requirements for a component of equipment specified in another section.
 - b. For example, circuit breakers are a component of switchgear. The switchgear submittal must also contain data for the associated circuit breakers, even though they are covered in a different specification section.
- D. Prepare submittals in the English language. Do not include information in other languages.
- E. Present measurements in customary American units (feet, inches, pounds, etc.).
- F. Must be clear and legible, and of sufficient size for presentation of information.
- G. Page size other than drawings:
 - 1. Minimum page size will be 8 1/2 inches by 11 inches.
 - 2. Maximum page size will be 11 inches by 17 inches.

- H. Drawing sheet size:
 - 1. Maximum sheets size: 22-inch by 34-inch.
 - a. Minimum plan scale: 1/8-inch equals 1 foot-0 inches.
 - b. Minimum font size: 1/8 inch minimum.
 - 2. 11-inch by 17-inch sheet:
 - a. Minimum plan scale: 1/8-inch equals 1 foot-0 inches.
 - b. Minimum font size: 1/8 inch minimum.
- I. Show dimensions, construction details, wiring diagrams, controls, manufacturers, catalog numbers, and all other pertinent details.
- J. Provide submittal information from only 1 manufacturer for a specified product. Submittals with multiple manufacturers for 1 product will be rejected without review.

1.03 SUBMITTAL ORGANIZATION

- A. Organize submittals in exactly the same order as the items are referenced, listed, and/or organized in the specification section.
- B. For submittals that cover multiple devices used in different areas under the same specification section, the submittal for the individual devices must list the area where the device is used.
- C. Bookmarks:
 - 1. Bookmarks shall match the table of contents.
 - 2. Bookmark each section (tab) and heading.
 - 3. Drawings: Bookmark at a minimum, each discipline, area designation, or appropriate division.
 - 4. At file opening, display all levels of bookmarks as expanded.
- D. Where applicable (i.e., except for drawings, figures, etc.) submittal content shall be electronically searchable utilizing the PDF file as submitted.
- E. Thumbnails optimized for fast web viewing.
- F. Sequentially number pages within the tabbed sections:
 - 1. Submittals that are not fully indexed and tabbed with sequentially numbered pages, or are otherwise unacceptable, will be returned without review.
- G. Attachments:
 - 1. Specification section: Include with each submittal a copy of the relevant specification section.
 - a. Indicate in the left margin, next to each pertinent paragraph, either compliance with a check (√) or deviation with a consecutive number (1, 2, 3).
 - b. Provide a list of all numbered deviations with a clear explanation and reason for the deviation.
 - 2. Drawings: Include with each submittal a copy of the relevant Drawing, including relevant addendum updates.
 - a. Indicate either compliance with a check (√) or deviation with a consecutive number (1, 2, 3).

- b. Provide a list of all numbered deviations with a clear explanation and reason for the deviation.
 - c. Provide field dimensions and relationship to adjacent or critical features of the Work or materials.

- H. Contractor: Prepare submittal information in sufficient detail to show compliance with specified requirements.
 - 1. Determine and verify quantities, field dimensions, product dimensions, specified design and performance criteria, materials, catalog numbers, and similar data.
 - 2. Coordinate submittal with other submittals and with the requirements of the Contract Documents.
 - 3. Check, verify, and revise submittals as necessary to bring them into conformance with Contract Documents and actual field conditions.

- I. Contractor: Prepare "Or Equal" submittal information.
 - 1. Provide standard submittal requirements.
 - a. In addition, provide in sufficient detail to show reason for variance from specified product and impacts.
 - 2. Provide reason the specified product is not being provided.
 - 3. Explain the benefits to the Owner for accepting the "Or Equal".
 - 4. Itemized comparison of the proposed "Or Equal" with product specified including a list of significant variations:
 - a. Design features.
 - b. Design dimensions.
 - c. Installation requirements.
 - d. Operations and maintenance requirements.
 - e. Availability of maintenance services and sources of replacement materials.
 - 5. Reference projects where the product has been successfully used:
 - a. Name and address of project.
 - b. Year of installation.
 - c. Year placed in operation.
 - d. Name of product installed.
 - e. Point of contact: Name and phone number.
 - 6. Define impacts:
 - a. Impacts to other contracts.
 - b. Impacts to other work or products.
 - 7. Contractor represents the following:
 - a. Contractor bears the burden of proof of the equivalency of the proposed "Or Equal".
 - b. Proposed "Or Equal" is equal or superior to the specified product.
 - c. Contractor will provide the warranties or bonds that would be provided on the specified product on the proposed "Or Equal", unless Owner requires a Special Warranty.
 - d. Contractor will coordinate installation of accepted "Or Equal" into the Work and will be responsible for the costs to make changes as required to the Work.
 - e. Contractor waives rights to claim additional costs caused by proposed "Or Equal" which may subsequently become apparent.

- J. Contractor: Prepare substitution submittal information.
1. Provide standard submittal requirements.
 - a. In addition, provide in sufficient detail to show reason for variance from specified product and impacts.
 2. Provide reason the specified product is not being provided.
 3. Explain the benefits to the Owner for accepting the substitution.
 4. Itemized comparison of the proposed substitution with product specified including a list of significant variations:
 - a. Design features.
 - b. Design dimensions.
 - c. Installation requirements.
 - d. Operations and maintenance requirements.
 - e. Availability of maintenance services and sources of replacement materials.
 5. Reference projects where the product has been successfully used:
 - a. Name and address of project.
 - b. Year of installation.
 - c. Year placed in operation.
 - d. Name of product installed.
 - e. Point of contact: Name and phone number.
 6. Define impacts:
 - a. Impacts to Contract Price.
 - 1) Required license fees or royalties.
 - 2) Do not include costs under separate contracts.
 - 3) Do not include Engineer's costs for redesign or revision of Contract Documents.
 - b. Impacts to Contract Time.
 - c. Impacts to Contract Scope.
 - d. Impacts to other contracts.
 - e. Impacts to other work or products.
 7. Contractor represents the following:
 - a. Contractor shall pay associated costs for Engineer to evaluate the substitution.
 - b. Contractor bears the burden of proof of the equivalency of the proposed substitution.
 - c. Proposed substitution does not change the design intent and will have equal performance to the specified product.
 - d. Proposed substitution is equal or superior to the specified product.
 - e. Contractor will provide the warranties or bonds that would be provided on the specified product on the proposed substitution, unless Owner requires a Special Warranty.
 - f. Contractor will coordinate installation of accepted substitution into the Work and will be responsible for the costs to make changes as required to the Work.
 - g. Contractor waives rights to claim additional costs caused by proposed substitution which may subsequently become apparent.

1.04 SUBMITTAL IDENTIFICATION NUMBERING

A. Number each submittal using the format defined below:

	Spec Section Number	Dash	Initial Submittal - Sequential Number	Decimal Point	Subsequent Submittal Revisions Sequential Number
<i>Example 1 Description</i>	<i>Cast-In-Place Concrete</i>		<i>8th initial submittal</i>		
	00_30_30	-	0008		
<i>Example 2 Description</i>	<i>Cast-In-Place Concrete</i>		<i>8th initial submittal</i>		<i>First revision to the 8th initial submittal</i>
	00_30_30	-	0008	.	1

1.05 SUBMITTALS IN ELECTRONIC MEDIA FORMAT

- A. General: Provide all information in PC-compatible format using Windows® operating system as utilized by the Owner and Engineer.
- B. Text: Provide text documents and manufacturer's literature in Portable Document Format (PDF).
- C. Graphics: Provide graphic submittals (drawings, diagrams, figures, etc.) utilizing Portable Document Format (PDF).

1.06 SUBMITTAL PROCEDURE

- A. Engineer: Review submittal and provide response:
 - 1. Review description:
 - a. Engineer will be entitled to rely upon the accuracy or completeness of designs, calculations, or certifications made by licensed professionals accompanying a particular submittal whether or not a stamp or seal is required by Contract Documents or Laws and Regulations.
 - b. Engineer's review of submittals shall not release Contractor from Contractor's responsibility for performance of requirements of Contract Documents. Neither shall Engineer's review release Contractor from fulfilling purpose of installation nor from Contractor's liability to replace defective work.
 - c. Engineer's review of shop drawings, samples, or test procedures will be only for conformance with design concepts and for compliance with information given in Contract Documents.
 - d. Engineer's review does not extend to:
 - 1) Accuracy of dimensions, quantities, or performance of equipment and systems designed by Contractor.

- 2) Contractor's means, methods, techniques, sequences, or procedures except when specified, indicated on the Drawings, or required by Contract Documents.
 - 3) Safety precautions or programs related to safety which shall remain the sole responsibility of the Contractor.
 - e. Engineer can Approve or Not Approve any exception at their sole discretion.
- 2. Review timeframe:
 - a. Except as may be provided in technical specifications, a submittal will be returned within 30 days.
 - b. When a submittal cannot be returned within the specified period, Engineer will, within a reasonable time after receipt of the submittal, give notice of the date by which that submittal will be returned.
 - c. Engineer's acceptance of progress schedule containing submittal review times less than those specified or agreed to in writing by Engineer will not constitute Engineer's acceptance of review times.
 - d. Critical submittals:
 - 1) Contractor will notify Engineer in writing that timely review of a submittal is critical to the progress of Work.
- 3. Schedule delays:
 - a. No adjustment of Contract Times or Contract Price will be allowed due to Engineer's review of submittals, unless all of the following criteria are met:
 - 1) Engineer has failed to review and return first submission within the agreed upon time frame.
 - 2) Contractor demonstrates that delay in progress of Work is directly attributable to Engineer's failure to return submittal within time indicated and accepted by Engineer.
- 4. Review response will be returned to Contractor with one of the following dispositions:
 - a. Approved:
 - 1) No Exceptions:
 - a) There are no notations or comments on the submittal and the Contractor may release the equipment for production.
 - 2) Make Corrections Noted - See Comments:
 - a) The Contractor may proceed with the Work, however, all notations and comments must be incorporated into the final product.
 - b) Resubmittal not required.
 - 3) Make Corrections Noted - Confirm:
 - a) The Contractor may proceed with the Work, however, all notations and comments must be incorporated into the final product.
 - b) Submit confirmation specifically addressing each notation or comment to the Engineer within 15 calendar days of the date of the Engineer's transmittal requiring the confirmation.
 - b. Not approved:
 - 1) Correct and resubmit:
 - a) Contractor may not proceed with the Work described in the submittal.

- b) Contractor assumes responsibility for proceeding without approval.
 - c) Resubmittal of complete submittal package is required within 30 calendar days of the date of the Engineer's submittal review response.
 - 2) Rejected - See Remarks:
 - a) Contractor may not proceed with the Work described in the submittal.
 - b) The submittal does not meet the intent of the Contract Documents. Resubmittal of complete submittal package is required with materials, equipment, methods, etc. that meet the requirements of the Contract Documents.
 - c. Receipt acknowledged - Filed for record:
 - 1) This is used in acknowledging receipt of informational submittals that address means and methods of construction such as schedules and work plans, conformance test reports, health and safety plans, etc.
 - d. Receipt acknowledged with comments - Resubmit:
 - 1) This is used in acknowledging receipt of informational submittals that address means and methods of construction such as schedules and work plans, conformance test reports, health and safety plans, etc. Feedback regarding missing information, conflicting information, or other information that makes it incomplete can be made with comments.
- B. Contractor: Prepare resubmittal, if applicable:
 - 1. Clearly identify each correction or change made.
 - 2. Include a response in writing to each of the Engineer's comments or questions for submittal packages that are resubmitted in the order that the comments or questions were presented from the 1st and subsequent submittals and numbered consistent with the Engineer's numbering.
 - a. Acceptable responses to Engineer's comments are listed below:
 - 1) "Incorporated" Engineer's comment or change is accepted and appropriate changes are made.
 - 2) "Response" Engineer's comment not incorporated. Explain why comment is not accepted or requested change is not made. Explain how requirement will be satisfied in lieu of comment or change requested by Engineer.
 - b. Reviews and resubmittals:
 - 1) Contractor shall provide resubmittals which include responses to all submittal review comments separately and at a level of detail commensurate with each comment.
 - 2) Contractor responses shall indicate how the Contractor resolved the issue pertaining to each review comment.
 - a) Responses such as "acknowledged" or "noted" are not acceptable.
 - 3) Resubmittals which do not comply with this requirement may be rejected and returned without review.
 - 4) Contractor shall be allowed no extensions of any kind to any part of their contract due to the rejection of non-compliant submittals.
 - 5) Submittal review comments not addressed by the Contractor in resubmittals shall continue to apply whether restated or not in

subsequent reviews until adequately addressed by the Contractor to the satisfaction of the reviewing and approving authority.

- c. Any resubmittal that does not contain responses to the Engineer's previous comments shall be returned for Revision and Resubmittal. No further review by the Engineer will be performed until a response for previous comments has been received.
3. Resubmittal timeframe:
 - a. Contractor shall provide resubmittal within 15 days.
 - b. When a resubmittal cannot be returned within the specified period, Contractor shall notify Engineer in writing.
4. Review costs:
 - a. Costs incurred by Owner as a result of additional reviews of a particular submittal after the second time it has been reviewed shall be borne by Contractor.
 - b. Reimbursement to Owner will be made by deducting such costs from Contractor's subsequent progress payments.

1.07 PRODUCT DATA

- A. Edit submittals so that the submittal specifically applies to only the product furnished.
- B. Neatly cross out all extraneous text, options, models, etc. that do not apply to the product being furnished, so that the information remaining is only applicable to the product being furnished.

1.08 SHOP DRAWINGS

- A. Contractor to field verify elevation, coordinates, and pipe material for pipe tie-in to pipeline or structure prior to the preparation of shop drawings.
- B. Indicate project designated equipment tag numbers for submittal of devices, equipment, and assemblies.

1.09 SAMPLES

- A. Details:
 1. Submit labeled samples.
 2. Samples will not be returned.
 3. Provide number of sample submittals as below:
 - a. Total: 3 minimum.
 - 1) Owner: 1.
 - 2) Engineer: 2.
 - 3) Contractor: None.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

ATTACHMENT A - CONTRACTOR SUBMITTAL TRANSMITTAL FORM

CONTRACTOR SUBMITTAL TRANSMITTAL FORM

Owner: Click here to enter text. **Date:** MM/DD/YYYY
Contractor: Click here to enter text. **Project No.:** XXXXX.XX
Project Name: Click here to enter text. **Submittal Number:** 000
Submittal Title: Click here to enter text.
To: Click here to enter text.
From: Click here to enter text. Click here to enter text.
Click here to enter text. Click here to enter text.

Specification No. and Subject of Submittal / Equipment Supplier			
Spec ##:	Spec ##.	Subject:	Click here to enter text.
Authored By:	Click here to enter text.	Date Submitted:	XX/XX/XXXX

Submittal Certification
Check Either (A) or (B):
<input type="checkbox"/> (A) We have verified that the equipment or material contained in this submittal meets all the requirements specified in the project manual or shown on the contract drawings with no exceptions.
<input type="checkbox"/> (B) We have verified that the equipment or material contained in this submittal meets all the requirements specified in the project manual or shown on the contract drawings except for the deviations listed.
Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements.
General Contractor's Reviewer's Signature:
Printed Name:
In the event, Contractor believes the Submittal response does or will cause a change to the requirements of the Contract, Contractor shall immediately give written notice stating that Contractor considers the response to be a Change Order.
Firm: Click here to enter text. Signature: Date Returned: XX/XX/XXXX

PM/CM Office Use
Date Received GC to PM/CM: _____
Date Received PM/CM to Reviewer: _____
Date Received Reviewer to PM/CM: _____
Date Sent PM/CM to GC: _____

SECTION 01_35_21

SELECTIVE ALTERATIONS AND DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Cutting or modifying of existing and new work.
 - 2. Partial demolition of structures.
 - 3. In-place abandonment of pipe.
 - 4. Disposal of mercury-containing lamps.

1.02 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. A10.6 - Safety and Health Program Requirements for Demolition Operations.
- B. California Code of Regulations (CCR):
 - 1. Title 8: Industrial Relations.
 - 2. Title 22 Chapter 23: Standards for Universal Waste Management.
- C. California Occupational Safety and Health Administration (Cal-OSHA).
- D. International Concrete Repair Institute (ICRI):
 - 1. Guideline No. 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.
 - 2. Guideline No. 310.3R - Guide for the Preparation of Concrete Surfaces for Repair Using Hydrodemolition Methods.
- E. Occupational Safety and Health Administration (OSHA).
- F. United States Code of Federal Regulation (CFR):
 - 1. Title 40 - Protection of Environment:
 - a. 273 – Standards for Universal Waste Management.

1.03 DEFINITIONS

- A. Chipping hammer: A hand-operated electrical or pneumatic demolition device for removal of hardened concrete or masonry materials having a weight of less than 15 pounds and an impact frequency of greater than 2,000 blows/minute.
- B. Concrete breaker: A hand-operated electrical or pneumatic demolition device for removal of hardened concrete or masonry materials having a weight greater or impact frequency less than the limits defined for a chipping hammer.
- C. Coring equipment: Non-impact rotary drill with diamond cutting edges.

- D. Heavy abrasive blast: Cleaning procedure by which various abrasives materials, or steel shot, are forcibly propelled by high pressure against a surface to remove loose material and produce a concrete surface roughened to ICRI Surface Profile CSP-7, or higher, as specified in ICRI 301.3R.
- E. Salvage material: Materials removed from existing facilities and stored for Owner's future reuse.

1.04 DESCRIPTION OF WORK

- A. The work includes partial demolition, cutting, and modifying of existing facilities, utilities, and/or structures.
- B. These facilities may be occupied and/or operational. Satisfactory completion of the work will require that the Contractor plan activities carefully to work around unavoidable obstacles and to maintain overall stability of structures and structural elements. It will further require restoration of existing facilities, utilities, and structures that are to remain in place and that are damaged by demolition or removal operations.

1.05 SUBMITTALS

- A. General:
 - 1. Submit specified in Section 01_33_00 - Submittal Procedures.
- B. Shop drawings: Include:
 - 1. The location of all embedded items shall be documented using diagrams and/or other media that clearly show dimensions and locations of existing structural elements, existing embedded items and any new embedded items and their relationship to each other.
- C. Submittals for information only:
 - 1. Permits and notices authorizing demolition.
 - 2. Certificates of severance of utility services.
 - 3. Permit for transport and disposal of debris.
 - 4. Selective Demolition Plan.
- D. Quality assurance submittals:
 - 1. Qualifications of non-destructive testing agency/agencies.
- E. Project record documents.
- F. Drawings and/or other media documenting locations of service lines and capped utilities.
- G. Documentation of final disposition/receipt of broken mercury-containing lamps with a regulated hazardous waste facility permitted to treat, dispose of, or recycle mercury-containing universal waste. Documentation shall include final count of lamps received.

1.06 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Assign relocation, removal, cutting, coring and patching to trades and workers qualified to perform the Work in manner that causes the least damage and that provides means of returning surfaces to an appearance at least equal to that of the surrounding areas unaffected by the Work.
 - 2. Non-destructive testing agencies: Minimum of 5 years' experience performing non-destructive testing for location of steel reinforcement in existing concrete under conditions similar to that required for this Work.

1.07 SEQUENCING

- A. Perform Work in sequences and within times specified in Section 01_14_00 - Work Restrictions.
- B. If the facility or utility to be modified cannot be removed from service, perform the Work while the facility is in operation using procedures and equipment that do not jeopardize operation or materially reduce the efficiency of that facility.
- C. Coordinate the Work with operation of the facility:
 - 1. Do not begin alterations of designated portions of the Work until specific permission for activities in each area has been granted by Owner in writing.
 - 2. Complete Work as quickly and with as little delay as possible.
- D. Operational functions of the facility that are required to be performed to facilitate the Work will be performed by facility personnel only.
- E. Owner will cooperate to assist in expediting the Work.
- F. When necessary for the proper operation or maintenance of portions of the facility, reschedule operations so the Work will not conflict with required operations or maintenance.

1.08 REGULATORY REQUIREMENTS

- A. Dispose of debris and universal waste in accordance with governing regulatory agencies.
- B. Comply with applicable air pollution control regulations.
- C. Obtain permits for building demolition, transportation of debris to disposal site and dust control.
- D. Disposal of universal waste shall be with a regulated hazardous waste facility.

1.09 PREPARATION

- A. Non-destructive evaluation of existing concrete:
 - 1. Prior to cutting, drilling, coring, and/or any other procedure that penetrates existing concrete, retain and pay for the services of a qualified non-destructive testing agency to perform investigations to determine the location of existing steel reinforcement, plumbing, conduit, and/or other embedments in the concrete.
 - 2. Submit documentation of the investigations to the Engineer for review and approval as specified in Section 01_33_00 - Submittal Procedures, before any work involving penetration of existing concrete is initiated.

1.10 PROJECT CONDITIONS

- A. Do not interfere with use of adjacent structures and elements of the facility not subject to the Work described in this Section. Maintain free and safe passage to and from such facilities.
- B. Provide, erect, and maintain barricades, lighting, guardrails, and protective devices as required to protect building occupants, general public, workers, and adjoining property:
 - 1. Do not close or obstruct roadways without permits.
 - 2. Conduct operations with minimum interference to public or private roadways.
- C. Prevent movement, settlement, or collapse of:
 - 1. Provide and place bracing or shoring.
 - 2. Cease operations and notify Engineer immediately when safety of structures appears to be endangered. Take precautions to properly support structure. Do not resume operations until safety is restored.
 - 3. Assume liability for movement, settlement, or collapse. Promptly repair damage.
- D. Arrange and pay for capping and plugging utility services. Disconnect and stub off.
 - 1. Notify affected utility company in advance and obtain approval before starting demolition.
 - 2. Place markers to indicate location of disconnected services.
- E. Unknown conditions:
 - 1. The drawings may not represent all conditions at the site and adjoining areas. Compare actual conditions with drawings before commencement of Work.
 - 2. Existing utilities and drainage systems below grade are located from existing documents and from surface facilities such as manholes, valve boxes, area drains, and other surface fixtures.
 - 3. If existing active services encountered are not indicated or otherwise made known to the Contractor and interfere with the permanent facilities under construction, notify the Engineer in writing, requesting instructions on their disposition. Take immediate steps to ensure that the service provided is not interrupted, and do not proceed with the Work until written instructions are received from the Engineer.

PART 2 PRODUCTS

2.01 SALVAGE MATERIALS

- A. Materials designated for salvage:
 - 1. Stainless steel components from the existing Trojan4000Plus system. City to identify.

- B. Handling and storage:
 - 1. Prevent damage to salvaged materials during removal, handling, and transportation.
 - 2. Salvage material to be turned over to the City on the Plant site. City to direct Contractor to storage location.

- C. Pay costs associated with salvaging materials, including handling, and transporting.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Prior to beginning selective demolition operations, perform a thorough inspection of the facility and site.
 - 1. Report to the Engineer defects, structural damage, and deterioration of existing construction to remain in place.

- B. Examine areas affected by the Work and verify the following conditions prior to commencing demolition:
 - 1. Disconnection of utilities as required.
 - 2. Verify that utilities serving occupied or active portions of surrounding facilities will not be disturbed, except as otherwise indicated.

- C. If unsatisfactory conditions exist, notify the Engineer, and do not begin demolition operations until such conditions have been corrected.

3.02 PREPARATION

- A. Plan and organize Work to minimize inconvenience to adjacent buildings and to plant operations.

- B. Selective Demolition Plan:
 - 1. Prepare and submit a comprehensive selective demolition plan for the Work including the following elements, at a minimum:
 - a. Proposed sequence, methods, temporary support, and equipment for demolition, removal, and disposal of portions of structure(s).
 - b. Provisions and procedures for salvage and delivery to Owner of salvaged items, if required.
 - 2. Submit plan a minimum 4 weeks before demolition is scheduled to begin.

- C. Protection:
1. Erect weatherproof closures to protect the interior of facilities and elements or equipment that are not designed for exposure to the weather.
 2. Provide temporary heat, cooling, and humidity control as necessary to prevent damage to existing and new equipment and construction.
 3. Maintain existing exiting paths and/or provide new paths in compliance with Building Code requirements.
 4. Erect and maintain dustproof partitions as required to prevent spread of dust, to other parts of building. Maintain negative pressure in the area where the Work is being performed to prevent the accidental spread of dust and to minimize the spread of fumes related to the Work.
 5. Upon completion of Work, remove weatherproof closures and dustproof partitions.
 6. Repair damaged surfaces to match adjacent surfaces.
 7. Provide and maintain protective devices to prevent injury from falling objects.
 8. Locate guardrails in stairwells and around open shafts to protect workers. Post clearly visible warning signs.
 9. Protect the following from damage or displacement during Work.
 - a. Benchmarks and survey points.
 - b. Existing construction that will remain in place.
 - c. Trees and landscaping designated to remain in place.
 10. Carefully remove designated materials and equipment to be salvaged by Owner or reinstalled.
 11. Store and protect materials and equipment to be reinstalled.
- D. Layout:
1. The limits of selective demolition are indicated on the Drawings. Confine demolition operations within the limits indicated on the Drawings.
 2. Lay out demolition and removal work at the site and coordinate with related Work for which demolition and removal is required.
 3. Clearly mark the extent of structural elements to be removed on the actual surfaces that will be removed.
 4. Arrange for Engineer's inspection of the lay out extents.
 5. Do not begin demolition/removal operations until the lay out markings have been reviewed by the Engineer.

3.03 DEMOLITION

- A. General:
1. Perform demolition work in accordance with ANSI A10.6.
 2. Demolish designated portions of structures and appurtenances in orderly and careful manner in accordance with the Selective Demolition Plan.
 3. Conduct demolition and removal work in a manner that will minimize dust and flying particles.
 - a. Use water or dust palliative when necessary to prevent airborne dust.
 - b. Provide and maintain hoses and connections to water main or hydrant.
 4. Remove materials carefully, to the extent indicated and as required.
 - a. Provide neat and orderly junctions between existing and new materials.
 - b. Use methods that terminate surfaces in straight lines at natural points of division.

5. Do not remove anything beyond the limits of Work indicated without prior written authorization from the Engineer.
 - a. If in doubt about whether to remove an item, obtain written authorization from the Engineer prior to proceeding.
 6. Perform work so as to provide the least interference and most protection to existing facilities to remain.
 7. Demolished materials:
 - a. Assume possession of materials unless otherwise indicated on the Drawings or specified.
 - b. Owner claims the following materials:
 - 1) Stainless steel components from the existing Trojan4000Plus system. Owner to identify components prior to demolition.
 - c. Remove demolished materials from site at least daily unless otherwise authorized by the Owner and dispose of them in accordance with Laws and Regulations.
 - d. Do not burn or bury materials on site.
 8. Handle all mercury-containing lamps to avoid breakage.
 - a. Report breakage of any lamps immediately to the Owner.
- B. Demolition of concrete and masonry:
1. Demolish concrete and masonry in small sections.
 - a. Perform demolition with small tools as much as possible.
 - b. Blasting with explosive charges is not permitted.
 2. Sawcut concrete to establish the edges of demolition, wherever possible.
 - a. Do not use a concrete breaker within 6 inches of reinforcing or structural metals that are designated to remain in place.
 - b. At edges that are not sawcut, remove the final 6 inches of material with a chipping hammer as defined herein. At surfaces where material is removed with a chipping hammer, follow with a heavy abrasive blast to remove all loose material and microcracking.
 - c. Alternate techniques to remove concrete may be used if acceptable to the Engineer; however, techniques other than those deemed by ICRI Guideline No. 310.2R to provide a low risk of introducing microcracking will require a subsequent procedure to remove loose material and microcracked.
 - d. Provide final surface preparation for repairs as specified in Section 03_35_29 - Tooled Concrete Finishing.
 3. At locations indicated on the Drawings where the existing reinforcing is to be preserved, remove concrete using methods that do not damage the reinforcing. Use one of the following techniques:
 - a. Hydrodemolition techniques as outlined in ICRI Guideline No. 310.3R.
 - b. Chipping hammer, as defined herein, followed by heavy abrasive blast to remove all loose material and microcracking at remaining surfaces impacted by the chipping hammer.
 - c. Alternate methods may be used, only when accepted in advance by the Engineer.
 - d. For all methods, provide a small completed area for Engineer's review and acceptance. If the proposed method, in the opinion of the Engineer, damages the reinforcing, revise the removal method to remove the concrete with a less aggressive technique to protect the reinforcing.

- C. Sizing of openings in existing concrete or masonry:
 - 1. Make openings large enough to permit final alignment of pipe and fittings without deflections, but without oversizing.
 - 2. Allow adequate space for packing around pipes and conduit to ensure watertightness.
 - 3. If the Engineer deems the opening to be insufficient in size to accomplish this criteria, remove additional material using the procedures outlined in this Section.

- D. Cutting openings in existing concrete or masonry:
 - 1. Do not allow saw cuts to extend beyond limits of openings.
 - 2. Create openings by the following method or other means acceptable to the Engineer that prevents over-cutting of member at corners:
 - a. Core-drill through slab or wall at corners, being careful not to damage materials beyond the area to be removed.
 - b. Saw cut completely through the member, between the core holes at the corners.
 - c. As an alternate to sawcutting through the member, score the edges of the opening with a saw to a 1-inch depth.
 - 1) Provide score on both surfaces (when accessible).
 - 2) Remove concrete or masonry to within 6 inches of material to remain with a concrete breaker.
 - 3) Remove the remaining material with a chipping hammer.
 - d. Remove the remaining material at the corners left by the core-drilling with a chipping hammer.
 - 2. Prevent debris from falling into adjacent tanks or channels in service or from damaging existing equipment and other facilities.

- E. Removal of mercury-containing lamps (lamps):
 - 1. Contractor shall remove mercury-containing lamps in accordance with manufacturer's instructions and place them in containers in a location designated by the Owner.
 - 2. The Owner will arrange for shipping lamps to Trojan Technologies in accordance with their current lamp return agreement.
 - 3. Only unbroken lamps may be shipped back to Trojan in accordance with the procedures outlined above.
 - 4. Any broken lamps and released mercury must be cleaned up, remediated (as applicable), and disposed of by the Contractor at the Contractor's cost. Final disposition of broken lamps must be documented and submitted for the Owner's records. Contractor must report any lamp breakage immediately.

- F. Immediately upon discovery, remove and dispose of contaminated, vermin-infested, or dangerous materials using safe means that will not endanger health of workers and public.

- G. Remove demolished materials, tools, and equipment upon completion of demolition.

3.04 RESTORATION

A. General:

1. Repair damage caused by demolition to conditions equal to those that existed prior to beginning of demolition.
 - a. Patch and replace portions of existing finished surfaces that are damaged, lifted, and discolored. Refinish patched portion surfaces in a manner which produces uniform color and texture to entire surface, and that matches color and texture of adjacent surfaces.
 - b. When existing finish cannot be matched, refinish entire surface to nearest change of plane where angle of change exceeds 45 degrees.
2. The cost of repairs shall be at the Contractor's expense at no increase in the Contract Price.
3. When new construction abuts or finishes flush with existing construction, make smooth transitions. Match finish of existing construction.
4. Where partitions are removed, patch floors, walls, and ceilings with finish materials that match existing materials.
5. Where removal of partitions results in adjacent spaces becoming one, rework floors, walls, and ceilings to provide smooth planes without breaks, steps, or bulkheads.
 - a. Where change of plane between adjacent surfaces exceeds 2 inches, request and obtain instructions for making transition from Engineer.
 - 1) Refinish door surfaces and edges as necessary.
6. Trim existing doors as necessary to clear new floors.
7. Match patched construction with adjacent construction in texture and appearance so that patch or transition is invisible at 5-foot distance.
8. When finished surfaces are cut so that smooth transition is impossible, terminate existing surface in neat manner along straight line at natural line of division and provide appropriate trim.

B. Restore existing concrete reinforcement as follows:

1. Where existing reinforcement is to be incorporated into the new Work, protect, clean, and extend into new concrete.
2. Where existing reinforcement is not to be retained, cut off as follows:
 - a. Where new concrete joins existing concrete at the removal line, cut reinforcement flush with concrete surface at the removal line.
 - b. Where concrete surface at the removal line will become the finished surface, cut reinforcement 2 inches below the surface, paint ends with epoxy, and patch holes with dry pack mortar.

C. Restore areas affected by removal of existing equipment, equipment pads and bases, piping, supports, electrical panels, electric devices, conduits, and fasteners so little or no evidence of the previous installation remains:

1. After removal of piping, conduit, fasteners, and other construction, fill areas in existing concrete and masonry floors, walls, and ceilings with non-shrink grout and finish smooth.
2. Remove concrete bases for equipment and supports by:
 - a. Saw cutting clean, straight lines with a depth equal to the concrete cover over reinforcement minus 1/2 inch below finished surface.
 - 1) Do not cut existing reinforcement in slab.
 - b. Chip concrete within scored lines.

- c. Cut exposed reinforcing steel and anchor bolts that will project above the repaired surface.
- d. Patch with non-shrink grout to match adjacent grade and finish.
- 3. Terminate abandoned piping and conduits with blind flanges, caps, or plugs.
- 4. Where existing fasteners are not to be retained, cut off as follows:
 - a. Where new concrete joins existing concrete at the removal line, cut fasteners flush with concrete surface at the removal line.
 - b. Where concrete surface at the removal line will become the finished surface, cut fasteners 1 inch below the surface, paint ends with epoxy, and patch holes with epoxy grout.

3.05 FIELD QUALITY CONTROL

- A. Do not proceed with demolition without Engineer's inspection of lay out.
- B. Do not deviate from the submitted demolition plan without notifying the Engineer prior to Work.

END OF SECTION

SECTION 01_35_73

DELEGATED DESIGN PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Delegated Design Procedures.

1.02 CONTRACTOR'S PROFESSIONAL ENGINEER

- A. Contractor or Subcontractor shall retain a licensed professional engineer to perform Delegated Design.
- B. Qualifications:
 - 1. Holding a current license to perform the specified design in the same jurisdiction as the Project site.
 - 2. Experienced in designing similar systems of similar complexity.
- C. Insurance:
 - 1. Provide Contractor's Professional Engineer's Professional Liability Insurance as specified Section 00_73_00 - Supplementary Conditions.
- D. Responsibilities:
 - 1. Review and design in accordance with system performance and design criteria stated in the Contract Documents.
 - a. Prepare written requests for clarifications or interpretations of performance or design criteria for submittal to Engineer by Contractor.
 - 2. Sign and seal design reports, calculations, design drawings and specifications, and other design Submittals for the Delegated Design Work.
 - 3. Review and submit written approval of submittals related to the Delegated Design Work.
 - 4. Design modifications to the Delegated Design Work as required.
 - 5. Visit the Site, as required, to verify that installation of the Delegated Design Work is in conformance with the Delegated Design drawings and specifications.
 - 6. Submit through Contractor to Engineer written, signed, and sealed certification that the installed Delegated Design Work complies with Contractor's professional engineer's design.

1.03 SUBMITTALS

- A. Prior to the start of Delegated Design:
 - 1. Contractor's Professional Engineer's qualifications:
 - a. Experience for the Delegated Design.
 - b. Evidence of professional engineering license.
 - 2. Contractor's Professional Engineer Professional Liability Insurance certificate.

- B. Delegated Design:
 - 1. Product data:
 - a. Details related to the Delegated Design as specified in technical sections to completely describe the system.
 - 2. Design documents with signature and seal from the Contractor's Professional Engineer.
 - a. Design documents include but are not limited to drawings, calculations, specifications, inspection reports, and certifications.
 - 3. Lists and schedules:
 - a. Prepare and submit lists or schedules of items where delegated design is required by the Contract Documents.
 - b. Group items by location in the Work.
 - 1) When "Area Numbers" are indicated on the Contract Drawings, group lists in accordance with those "areas."
 - 2) For work without area numbers, group using logical divisions acceptable to Engineer.
 - 3) Group items within each "area" as follows:
 - a) Systems.
 - b) Components.
 - c) Supports.
 - d) Anchorage.
 - e) Bracing.
- C. Construction services:
 - 1. Contractor's Professional Engineer's comments on submittals.
 - 2. Other construction documents, as required.

1.04 ENGINEER RESPONSE TO DELEGATED DESIGN SUBMITTALS

- A. The Engineer response will be either of the following:
 - 1. Approved. Make Corrections Noted - See Comments:
 - a. The Contractor may proceed with the Work, however, all notations and comments must be incorporated into the final product.
 - b. The review was for the limited purpose of determining that the document was stamped by a Professional Engineer and that such design is generally consistent with and will not negatively affect the design concept presented in the Contract Documents.
 - 2. Rejected - See Remarks:
 - a. Contractor may not proceed with the Work described in the submittal.
 - b. The submittal does not meet the intent of the Contract Documents.
 - c. Resubmittal of complete submittal package is required with materials, equipment, methods, etc. that meet the requirements of the Contract Documents.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_41_00

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Regulatory authorities and codes.

1.02 AUTHORITIES HAVING JURISDICTION (AHJ)

- A. Also referred to as the permitting agency.
- B. Building Department: City of Pacifica.
- C. Fire Department: North County Fire Agency.

1.03 APPLICABLE CODES

- A. California Code of Regulations (CCR), California Building Standards Code, CCR Title 24:
 - 1. Building code:
 - a. California Building Code (CBC), Title 24, Part 2 – 2022.
 - 2. Electrical code:
 - a. California Electrical Code (CEC), Title 24, Part 3 – 2022.
 - 3. Mechanical code:
 - a. California Mechanical Code (CMC), Title 24, Part 4 – 2022.
 - 4. Plumbing code:
 - a. California Plumbing Code (CPC), Title 24, Part 5 – 2022.
 - 5. Energy code:
 - a. California Energy Code (CEC), Title 24, Part 6 – 2022.
 - 6. Historical building code:
 - a. California Historical Building Code (CHBC), Title 24, Part 8 – 2022.
 - 7. Fire code:
 - a. California Fire Code (CFC), Title 24, Part 9 – 2022.
 - 8. Existing building code:
 - a. California Existing Building Code (CEBC), Title 24, Part 10 – 2022.
 - 9. Green building standards code:
 - a. California Green Building Standards Code (CALGreen), Title 24, Part 11 – 2022.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_45_00

QUALITY CONTROL

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Quality control and control of installation.
 - 2. Tolerances.
 - 3. References.
 - 4. Mock-up requirements.
 - 5. Authority and duties of Owner's representative or inspector.
 - 6. Sampling and testing.
 - 7. Testing and inspection services.
 - 8. Contractor's responsibilities.

1.02 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
- H. When specified, products will be tested and inspected either at point of origin or at Work site:
 - 1. Notify Engineer in writing well in advance of when products will be ready for testing and inspection at point of origin.
 - 2. Do not construe that satisfactory tests and inspections at point of origin is final acceptance of products. Satisfactory tests or inspections at point of origin do not preclude retesting or re-inspection at Work site.
- I. Do not ship products which require testing and inspection at point of origin prior to testing and inspection.

1.03 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. When Manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.04 REFERENCES

- A. ASTM International (ASTM):
 - 1. E329 - Standard for Agencies Engaged in Construction Inspection, Testing or Special Inspection.
- B. National Institute of Standards and Technology (NIST).

1.05 PRODUCT REQUIREMENTS

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents, except where specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. When specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

1.06 MOCK-UP REQUIREMENTS

- A. Tests will be performed under provisions identified in this Section and identified in respective product specification sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups shall be comparison standard for remaining Work.
- D. Where mock-up has been accepted by Engineer and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by Engineer.

1.07 AUTHORITY AND DUTIES OF OWNER'S REPRESENTATIVE OR INSPECTOR

- A. Owner's Project Representative employed or retained by Owner is authorized to inspect the Work.

- B. Inspections may extend to entire or part of the Work and to preparation, fabrication, and manufacture of products for the Work.
- C. Deficiencies or defects in the Work which have been observed will be called to Contractor's attention.
- D. Inspector will not:
 - 1. Alter or waive provisions of Contract Documents.
 - 2. Inspect Contractor's means, methods, techniques, sequences, or procedures for construction.
 - 3. Accept portions of the Work, issue instructions contrary to intent of Contract Documents, or act as foreman for Contractor. Supervise, control, or direct Contractor's safety precautions or programs; or inspect for safety conditions on Work site, or of persons thereon, whether Contractor's employees or others.
- E. Inspector will:
 - 1. Conduct on-site observations of the Work in progress to assist Engineer in determining when the Work is, in general, proceeding in accordance with Contract Documents.
 - 2. Report to Engineer whenever Inspector believes that Work is faulty, defective, does not conform to Contract Documents, or has been damaged; or whenever there is defective material or equipment; or whenever Inspector believes the Work should be uncovered for observation or requires special procedures.

1.08 SAMPLING AND TESTING

- A. General:
 - 1. Prior to delivery and incorporation in the Work, submit listing of sources of materials, when specified in sections where materials are specified.
 - 2. When specified in sections where products are specified:
 - a. Submit sufficient quantities of representative samples of character and quality required of materials to be used in the Work for testing or examination.
 - b. Test materials in accordance with standards of national technical organizations.
- B. Sampling:
 - 1. Furnish specimens of materials when requested.
 - 2. Do not use materials which are required to be tested until testing indicates satisfactory compliance with specified requirements.
 - 3. Specimens of materials will be taken for testing whenever necessary to determine quality of material.
 - 4. Assist Engineer in preparation of test specimens at site of work, such as soil samples and concrete test cylinders.

1.09 TESTING AND INSPECTION SERVICES

- A. Contractor will employ and pay for specified services of an independent firm to perform Contractor quality control testing as required in the technical specifications for various work and materials.

- B. Owner will employ and pay for specified services of an “Owner’s independent testing firm” certified to perform testing and inspection as required in the technical specifications for various work and materials or stipulated in Section 01_45_24 - Regulatory Quality Assurance to confirm Contractor’s compliance with Contract Documents.
- C. The Owner’s independent testing firm will perform tests, inspections and other services specified in individual specification sections and as required by Owner and requested by the Engineer.
- D. The qualifications of laboratory that will perform the testing, contracted by the Owner or by the Contractor, shall be as follows:
 - 1. Has authorization to operate in the state where the project is located.
 - 2. Meets “Recommended Requirements for Independent Laboratory Qualification,” published by American Council of Independent Laboratories.
 - 3. Meets requirements of ASTM E329.
 - 4. Laboratory Staff: Maintain full time specialist on staff to review services.
 - 5. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to NIST or accepted values of natural physical constants.
 - 6. Will submit copy of report of inspection of facilities made by Materials Reference Laboratory of NIST during most recent tour of inspection, with memorandum of remedies of deficiencies reported by inspection.
- E. Testing, inspections, and source quality control may occur on or off project site. Perform off-site testing inspections and source quality control as required by Engineer or Owner.
- F. Contractor shall cooperate with Owner’s independent testing firm, furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Engineer and Owner’s independent testing firm 48 hours prior to expected time for operations requiring testing.
 - 2. Make arrangements with Owner’s independent testing firm and pay for additional samples and tests required for Contractor’s use.
- G. Limitations of authority of testing Laboratory: Owner’s independent testing firm or Laboratory is not authorized to:
 - 1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency or laboratory may not approve or accept any portion of the Work.
 - 3. Agency or laboratory may not assume duties of Contractor.
 - 4. Agency or laboratory has no authority to stop the Work.
- H. Testing and employment of an Owner’s independent testing firm or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- I. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same Owner’s independent testing firm on instructions by Engineer. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

- J. The Owner's independent testing firm responsibilities will include:
 - 1. Test samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or products.
 - 6. Perform additional tests required by Engineer.
 - 7. Attend preconstruction meetings and progress meetings when requested.

- K. Owner's independent testing firm individual test reports:
 - 1. After each test, Owner's independent testing firm will promptly submit electronically report to Engineer and to Contractor.
 - 2. Test reports shall include at least the following information:
 - a. Date issued.
 - b. Project title and number.
 - c. Name of inspector.
 - d. Date and time of sampling or inspection.
 - e. Identification of product and specifications section.
 - f. Location in Project.
 - g. Type of inspection or test.
 - h. Date of test.
 - i. Certified test results stamped and signed by a registered Engineer in the state where the project is located.
 - j. Summary of conformance with Contract Documents.
 - k. When requested by Engineer, the Owner's independent testing firm will provide interpretation of test results.

1.10 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with Owner's independent testing firm or laboratory personnel and provide access to construction and manufacturing operations.

- B. Secure and deliver to Owner's independent testing firm or laboratory adequate quantities of representative samples of materials proposed to be used and which require testing.

- C. Provide to Owner's independent testing firm or laboratory and Engineer preliminary mix design proposed to be used for concrete, and other materials mixes which require control by testing laboratory.

- D. Submit product test reports electronically.

- E. Furnish incidental labor and facilities:
 - 1. To provide access to construction to be tested.
 - 2. To obtain and handle samples at Work site or at source of product to be tested.

3. To facilitate inspections and tests.
 4. For storage and curing of test samples.
- F. Notify Owner's independent testing firm or laboratory 48 hours in advance of when observations, inspections and testing is needed for laboratory to schedule and perform in accordance with their notice of response time.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_45_17

CONTRACTOR QUALITY CONTROL PLAN

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Contractor Quality Control Plan.

1.02 SUBMITTALS

- A. Qualifications of the Contractor's Quality Control (CQC) Plan Manager.
- B. Contractor's Daily Quality Control Report:
 - 1. Submit to Construction Manager within 1 day of completion of each inspection using the approved form.
- C. Daily Inspection Report:
 - 1. Submit to Construction Manager at the end of each working day or no later than prior to the beginning of the next working day using the approved form.

1.03 CONTRACTOR'S INSPECTION OF THE WORK

- A. Work performed by Contractor shall be inspected by the Contractor's CQC Plan Manager. Non-conforming Work and any safety hazards in the Work area shall be noted and promptly corrected.
- B. No materials or equipment shall be used in Work without inspection and acceptance by Contractor's CQC Plan Manager.

1.04 QUALIFICATIONS

- A. Contractor's CQC Plan Manager: Demonstrate having performed similar CQC functions on similar type projects. Submit records of personnel experience, training, and qualifying registrations.
- B. Minimum qualifications: Candidate must have a minimum of 10 years of experience on projects of similar type and size.

1.05 COVERING WORK

- A. Whenever Contractor intends to backfill, bury, cast in concrete, or otherwise cover any Work, notify Construction Manager not less than 24 hours in advance to request inspection before beginning any such Work of covering. Failure of Contractor to notify Construction Manager in accordance with this requirement shall be resolved according to Article 14 of the General Conditions.

1.06 CONTRACTOR'S QUALITY CONTROL PROGRAM

- A. General: Establish and execute a Quality Control (CQC) Plan for Work. The plan shall establish adequate measures for verification and conformance to defined requirements by Contractor personnel and lower-tier Subcontractors (including Fabricators, Suppliers, and Subcontractors). This program shall be described in a Plan responsive to this Section.

- B. CQC personnel:
 - 1. Contractor's CQC Plan Manager shall report to a Senior Project Manager of the Contractor and shall have no supervisory or managerial responsibility over the workforce.
 - 2. The Contractor CQC Plan Manager shall be on-site as often as necessary, but not less than the daily working hours specified in the Contract Documents to remedy and demonstrate that Work is being performed properly and to make multiple observations of Work in progress.
 - 3. The Contractor is to furnish personnel with assigned CQC functions reporting to the CQC Manager. Persons performing CQC functions shall have sufficient qualifications, authority, and organizational freedom to identify quality problems and to initiate and recommend solutions.

- C. CQC Plan:
 - 1. Contractor's CQC Plan shall include a statement by the Senior Project Manager designating the CQC Plan Manager and specifying the authority delegated to the CQC Plan Manager to direct cessation or removal and replacement of defective Work.
 - 2. Describe the CQC program and include procedures, work instructions, and records. Describe methods relating to areas that require special testing and procedures as required by the specifications.
 - 3. Include specific instructions defining procedures for observing Work in process and comparing this Work with the Contract requirements (organized by specifications section).
 - 4. Describe procedures to ensure that equipment or materials that have been accepted at the Site are properly stored, identified, installed and tested.
 - 5. Include procedures to verify that procured products and services conform to the requirements of the Specifications. Requirements of these procedures shall be applied, as appropriate, to lower-tier Suppliers and/or Subcontractors.
 - 6. Commissioning quality control: Include procedures to verify that the commissioning requirements of the Contract Documents are integrated into the Contractor's CQC Plan and conform to the requirements of the Specifications. Requirements of these procedures shall be applied, as appropriate, to the Contractor and the lower-tier Suppliers and/or Subcontractors.
 - 7. Include instructions for recording inspections and requirements for demonstrating through the Daily Inspection Reports that Work inspected was in compliance or a deficiency was noted and action to be taken.
 - 8. Procedures to preclude the covering of deficient or rejected Work.
 - 9. Procedures for halting or rejecting Work.

10. Procedures for resolution of differences between the CQC Plan Manager and the production personnel.
 11. Identify contractual hold/inspection points as well as any Contractor-imposed hold/inspection points.
- D. Daily Inspection Report: Include, at a minimum:
1. Inspection of specific work.
 2. Quality characteristics in compliance.
 3. Quality characteristics not in compliance.
 4. Corrective/remedial actions taken.
 5. Statement of certification.
 6. CQC Manager's signature, electronic signature is acceptable.
 7. Information provided on the daily report shall not constitute notice of delay or any other notice required by the Contract Documents.
- E. Deficient and Non-conforming Work and Corrective Action: Include procedures for handling deficiencies and non-conforming Work. Deficiencies and non-conforming Work are defined as documentation, drawings, material, equipment, or Work not conforming to the indicated requirements or procedures. The procedure shall prevent non-conformances by identification, documentation, evaluation, separation, disposition, and corrective action to prevent reoccurrence. Conditions having adverse effects on quality shall be promptly identified and reported to the senior level management. The cause of conditions adverse to quality shall be determined and documents and measures implemented to prevent recurrence. In addition, at a minimum, this procedure shall address:
1. Personnel responsible for identifying deficient and non-complying items within Work.
 2. How and by whom deficient and non-compliant items are documented "in the field."
 3. The personnel and process utilized for logging deficient and non-compliant Work at the end of each day onto a deficiency log.
 4. Tracking processes and tracking documentation for deficient and non-conforming Work.
 5. Personnel responsible for achieving resolution of outstanding deficiencies.
 6. Include detailed procedures for the performance and control of special process (e.g., welding, soldering, heat treating, cleaning, plating, nondestructive examination, etc.).
- F. Audits: The CQC program shall provide for regularly scheduled documented audits to verify that CQC procedures are being fully implemented by Contractor and its Subcontractors. Audit records shall be made available to Construction Manager upon request.
- G. Documented control/quality records:
1. Establish methods for control of Contract Documents that describe how Drawings and Specifications are received and distributed to ensure the correct issue of the document being used. Describe how record document/drawing data are documented and furnished to Construction Manager.
 2. Maintain evidence of activities affecting quality. Including operating logs, records of inspection, audit reports, personnel qualification and certification records, procedures, and document review records.

3. Maintain quality records in a manner that provides for timely retrieval and traceability. Protect quality records from deterioration, damage and destruction.
 4. Develop a list of specific records as required by the Contract Documents that will be furnished to Construction Manager at the completion of activities.
- H. Acceptance of CQC Plan: Construction Manager's acceptance of the CQC Plan shall not relieve Contractor from any of its obligations for performance of Work. Contractor's CQC staffing is subject to Construction Manager's review and continued acceptance. Owner, at its sole discretion, and without cause, may direct Contractor to remove and replace the CQC Plan Manager.
1. Acceptance of the CQC Plan by the Construction Manager is required prior to the start of construction. Acceptance is conditional and will be predicated on satisfactory performance during the construction.
 2. After acceptance of the CQC Plan, notify the Construction Manager in writing of any proposed change. Proposed changes are subject to acceptance by the Construction Manager.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_45_24

REGULATORY QUALITY ASSURANCE

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: This Section describes project regulatory requirements for quality assurance that includes special inspections, special certification, and structural observation.

1.02 REFERENCES

- A. American Concrete Institute (ACI):
 - 1. 318 - Building Code Requirements for Structural Concrete.
 - 2. 530 - Building Code Requirements for Masonry Structures.
 - 3. 530.1 - Specification for Masonry Structures.
- B. American Institute of Steel Construction (AISC):
 - 1. 360 - Specification for Structural Steel Buildings.
- C. American Society of Civil Engineers (ASCE):
 - 1. 7 - Minimum Design Loads for Buildings and Other Structures.
- D. American Welding Society (AWS):
 - 1. D1.3 - Structural Welding Code - Sheet Steel.
 - 2. D1.4 - Structural Welding Code - Reinforcing Steel.
- E. ASTM International (ASTM):
 - 1. A706 - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
 - 2. C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
 - 3. C172 - Standard Practice for Sampling Freshly Mixed Concrete.
 - 4. C1611 - Standard Test Method for Slump Flow of Self-Consolidating Concrete.
- F. California Building Code - 2022.
- G. The Masonry Society (TMS):
 - 1. 402 - Building Code for Masonry Structures.
 - 2. 602 - Specifications for Masonry Structures.

1.03 DEFINITIONS

- A. Special Certification: Certification for designated seismic systems that demonstrates compliance with performance requirements.

- B. Special Inspection: Inspection of the materials, installation, fabrication, erection, or placement of components and connections requiring special expertise to ensure compliance with approved construction documents and referenced standards.
- C. Special Inspection, Continuous: The full-time observation of work requiring special inspection by an approved special inspector who is present in the area where the work is being performed.
- D. Special Inspection, Periodic: The part-time, or intermittent observation of work requiring special inspection by an approved special inspector who is present in the area where the work is being performed and at the completion of the work.
- E. Structural Observation: The visual observation of the structural system by a registered design professional for general conformance to the approved construction documents at significant construction stages and at completion of the structural system.

1.04 DESCRIPTION

- A. This Section describes special inspections, special certification and structural observation of structural assemblies and components to be performed in compliance with the building code specified in Section 01_41_00 - Regulatory Requirements.
- B. The special certification and special inspections specified in this Section are in addition to the requirements specified in Section 01_45_00 - Quality Control, and by the individual Sections.

1.05 SUBMITTALS

- A. Contractor shall submit special certifications for designated seismic systems.
- B. Contractor shall schedule and coordinate the submittal of Special Inspection reports and test results prepared by others.

1.06 SPECIAL INSPECTION

- A. Owner will employ 1 or more special inspectors who will provide special inspections during construction.
- B. Special inspector(s) shall be qualified for inspection of the particular type of materials or operations requiring special inspection.
- C. Testing laboratory: Testing that is required to satisfy the requirements of special inspection will be performed by the Owner's testing laboratory as specified in Section 01_45_00 - Quality Control.

- D. Duties of Special Inspector:
 - 1. General: Required duties of the special inspector(s) shall be as described in Chapter 17 of the building code specified in Section 01_41_00 - Regulatory Requirements.
 - 2. Reporting: Special inspector(s) shall provide reports of each inspection to the Owner and shall distribute copies of inspection reports to the Engineer and Contractor as required.
 - a. Reports shall, at a minimum, include the following items:
 - 1) Date and time of inspection, and name(s) of individual(s) performing the inspection.
 - 2) Structures and areas of the structure where work or testing was observed.
 - 3) Discrepancies between the requirements of the Contract Documents and the work or testing observed.
 - 4) Other areas of deficiency in the Work.
- E. Special inspections shall not be construed as fulfilling the requirements for structural observation.
- F. Owner or special inspector are responsible to select materials for special inspection.
 - 1. It is not acceptable for Contractor to select materials for special inspection.

1.07 SPECIAL CERTIFICATION

- A. Contractor shall be responsible for providing equipment that meets the special certification requirements of the building code specified in Section 01_41_00 - Regulatory Requirements.
- B. The following designated seismic systems shall be subject to the testing and qualification requirements of the regulatory building code, as specified in Section 01_41_00 - Regulatory Requirements and shall require special certification as set forth in ASCE 7, Section 13.2:
 - 1. Mechanical equipment that is assigned an importance factor of 1.50 as specified in Section 01_81_50 - Design Criteria.
 - 2. All electrical equipment.
- C. Special certification requirements for designated seismic systems:
 - 1. Submittals for mechanical and electrical equipment identified in this Section as designated seismic systems shall include certification that the equipment is seismically qualified. Certifications shall be subject to review and acceptance by Owner.
 - 2. Certifications may be at least 1 of the following in accordance with ASCE 7, Section 13.2:
 - a. Analysis.
 - b. Testing.
 - c. Experience data.

1.08 STRUCTURAL OBSERVATION

- A. Owner will employ 1 or more registered design professionals who will provide structural observation(s) during construction.
 - 1. Registered design professional shall be a civil or structural engineer currently licensed as such in the state where the project is located and regularly engaged in structural design equivalent to or similar to those indicated on the Drawings.
- B. Structural observations shall not be construed as fulfilling the requirements for special inspections.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SPECIAL INSPECTIONS

- A. The Owner will provide special inspection of following types of work as described in the building code as specified in Section 01_41_00 - Regulatory Requirements wherever such work occurs unless otherwise specified.
 - 1. Attachment A - Concrete Special Inspection Schedule.
 - 2. Attachment B - Architectural, Mechanical, and Electrical Components - Special Inspection Schedule.
 - 3. Attachment C - Structural Steel Special Inspection Schedule.
 - 4. Attachment D - Structural Steel Bolting Special Inspection Schedule.

3.02 SPECIAL CERTIFICATION

- A. Special inspector shall examine the designated seismic system(s) specified and determine whether the designated system components, including anchorage, are consistent with the evidence of compliance submitted for special certification.

3.03 STRUCTURAL OBSERVATION

- A. The following work requires structural observation in accordance with Section 1704 of the building code specified in Section 01_41_00 - Regulatory Requirements.
 - 1. All structures in all areas:
 - a. Elevated slabs.

3.04 SCHEDULE

- A. Contractor shall allow time necessary for special inspections and structural observation specified herein.
- B. Sufficient notice shall be given so that the special inspections and structural observations can be performed. Contractor shall allow time for individuals performing special inspection and structural observation to travel to the site.

3.05 PROCEDURE

- A. The special inspector will immediately notify the Engineer of any corrections required and follow notification with appropriate documentation.
- B. Contractor shall not proceed until the work is satisfactory to the Engineer.

END OF SECTION

ATTACHMENT A - CONCRETE SPECIAL INSPECTION SCHEDULE

CONCRETE SPECIAL INSPECTION SCHEDULE
(Includes: cast-in-place, precast, prestressed, precast-prestressed, and shotcrete.)

Verification and Inspection	Reference Standard ACI 318-14 AWS D1.4-18 IBC 2018	Frequency of Inspection ⁽¹⁾ (During Task Listed)	
		Continuous	Periodic
1. Inspect reinforcement, including prestressing tendons, and verify placement.	ACI 318: 20, 25.2, 25.3, 26.6.1-26.6.3 IBC: 1908.4		●
2. Reinforcing bar welding:			
a. Verify weldability of reinforcing bars other than ASTM A706;	AWS D1.4 ACI 318: 26.6.4		●
b. Inspect single-pass fillet welds, maximum 5/16"; and	AWS D1.4 ACI 318: 26.6.4		●
c. Inspect all other welds.	AWS D1.4 ACI 318: 26.6.4	●	
3. Inspect anchors cast in concrete.	ACI 318: 17.8.2		●
4. Inspect anchors post-installed in hardened concrete members.			
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	ACI 318: 17.8.2.4	●	
b. Mechanical anchors and adhesive anchors not defined in 4.a.	ACI 318: 17.8.2		●
5. Verify use of required design mix.	ACI 318: 19, 26.4.3, 26.4.4 IBC: 1904.1, 1904.2, 1908.2, 1908.3		●
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	ASTM C172 ASTM C31 ACI 318: 26.5, 26.12 IBC: 1908.10	●	
7. Inspect concrete placement for proper application techniques.	ACI 318: 26.5 IBC: 1908.6, 1908.7, 1908.8	●	

Verification and Inspection	Reference Standard ACI 318-14 AWS D1.4-18 IBC 2018	Frequency of Inspection ⁽¹⁾ (During Task Listed)	
		Continuous	Periodic
8. Verify maintenance of specified curing temperature and techniques.	ACI 318: 26.5.3-26.5.5 IBC: 1908.9		●
10. Inspect erection of precast concrete members.	ACI 318: 26.9		●
11. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	ACI 318: 26.11.2		●
12. Inspect formwork for shape, location and dimensions of the concrete member being formed.	ACI 318: 26.11.1.2.(b)		●
Notes: (1) The "●" represents a required inspection activity for the project where it occurs.			

**ATTACHMENT B - ARCHITECTURAL, MECHANICAL AND ELECTRICAL COMPONENTS
SPECIAL INSPECTION SCHEDULE**

**ARCHITECTURAL, MECHANICAL AND ELECTRICAL COMPONENTS
SPECIAL INSPECTION SCHEDULE**

Verification and Inspection	Reference Standard IBC 2018	Frequency of Inspection⁽¹⁾ (During Task Listed)	
		Continuous	Periodic
1. Plumbing, mechanical, and electrical components:			
a. Anchorage of electrical equipment for emergency and standby power systems.	IBC: 1705.12.6.1		●
b. Anchorage of other electrical and mechanical equipment over 400 lb. on floors or roofs.	IBC: 1705.12.6.2		●
c. Installation and anchorage of pipelines carrying hazardous chemicals and their associated mechanical units.	IBC: 1705.12.6.3		●
d. Installation and anchorage of pipelines greater than 8 inches in diameter.			●
e. Installation and anchorage of ductwork designed to carry hazardous materials.	IBC: 1705.12.6.4		●
f. Installation and anchorage of ductwork greater than 6 sf in cross section.			●
g. Installation and anchorage of vibration isolation systems where contract documents require nominal clearance of 1/4 inch or less between the equipment support frame and its support/restraint.	IBC: 1705.12.6.5		●
h. Installation of mechanical and electrical equipment, including duct work, piping systems and their structural supports, where automatic fire sprinkler systems are installed.	IBC: 1705.12.6.6		●
2. Fire-resistance elements:			
a. Sprayed fire-resistant coatings:	IBC: 1705.14		
b. Mastic and intumescent coatings:	IBC: 1705.15		
c. Fire-resistant penetrations and joint systems:	IBC: 1705.17,		
3. Smoke control systems:	IBC: 1705.18		
Notes:			
(1) The "●" represents a required inspection activity for the project where it occurs.			

ATTACHMENT C - STRUCTURAL STEEL SPECIAL INSPECTION SCHEDULE

STRUCTURAL STEEL SPECIAL INSPECTION SCHEDULE

Verification and Inspection	Referenced Standard AISC 360-10	Frequency of Inspection ⁽¹⁾ (During Task Listed)	
		Continuous	Periodic
Inspection Tasks Prior to Welding	AISC 360, Table N5.4-1		
1. Welding procedure specifications (WPSs) available.		●	
2. Manufacturer certifications for welding consumables available.		●	
3. Material identification (type/grade).			●
4. Welder identification system.			●
5. Fit-up groove welds (including joint geometry): <ul style="list-style-type: none"> • Joint preparation. • Dimensions (alignment, root opening, root face, bevel). • Cleanliness (condition of steel surfaces). • Tacking (tack weld quality and location). • Backing type and fit (if applicable). 		●	
5. Configuration and finish of access holes.			●
6. Fit-up of fillet welds: <ul style="list-style-type: none"> • Dimensions (alignment, gaps at root). • Cleanliness (condition of steel surfaces). • Tacking (tack weld quality and location). 		●	
7. Check welding equipment.			●
Inspection Tasks During Welding	AISC 360, Table N5.4-2		
8. Use of qualified welders.			●
9. Control and handling of welding consumables: <ul style="list-style-type: none"> • Packaging. • Exposure control. 			●
10. No welding over cracked tack welds.			●
11. Environmental conditions: <ul style="list-style-type: none"> • Wind speed within limits. • Precipitation and temperature. 			●

Verification and Inspection	Referenced Standard AISC 360-10	Frequency of Inspection ⁽¹⁾ (During Task Listed)	
		Continuous	Periodic
12. WPS followed: <ul style="list-style-type: none"> • Settings on welding equipment. • Travel speed. • Selected welding materials. • Shielding gas type/flow rate. • Preheat applied. • Interpass temperature maintained (min/max). • Proper position (F, V, H, OH). 			•
13. Welding techniques: <ul style="list-style-type: none"> • Interpass and final cleaning. • Each pass within profile limitations. • Each pass meets quality requirements. 			•
Inspection Tasks After Welding	AISC 360, Table N5.4-3		
14. Welds cleaned.			•
15. Size, length, and location of welds.		•	
16. Welds meet visual acceptance criteria: <ul style="list-style-type: none"> • Crack prohibition. • Weld/base-metal fusion. • Crater cross section. • Weld profiles. • Weld size. • Undercut. • Porosity. 		•	
17. Arc strikes.		•	
18. k-area.		•	
19. Backing removed and weld tabs removed (if required).		•	
20. Repair activities.		•	
21. Document acceptance or rejection of welded joint or member.		•	
Notes: (1) The "•" represents a required inspection activity for the project where it occurs.			

ATTACHMENT D - STRUCTURAL STEEL BOLTING SPECIAL INSPECTION SCHEDULE

STRUCTURAL STEEL BOLTING SPECIAL INSPECTION SCHEDULE

Verification and Inspection	Referenced Standard	Frequency of Inspection ⁽¹⁾ (During Task Listed)	
		Continuous	Periodic
Inspection Tasks Prior to Bolting	ASIC 360-10		
	AISC 360, Table N5.6-1		
1. Manufacturer's certifications available for fastener materials.		●	
2. Fasteners marked in accordance with ASTM requirements.			●
3. Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane).			●
4. Proper bolting procedure selected for joint detail.			●
5. Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements.			●
6. Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used.			●
7. Proper storage provided for bolts, nuts, washers and other fastener components.			●
Inspection Tasks During Bolting	AISC 360, Table N5.6-2		
8. Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required.			●
9. Joint brought to the snug-tight condition prior to the pretensioning operation.			●
10. Fastener component not turned by the wrench prevented from rotating.			●
11. Fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point toward the free edges.			●
Inspection Tasks After Bolting	AISC 360, Table N5.6-3		
12. Document acceptance or rejection of bolted connections.		●	
Notes:			
(1) The "●" represents a required inspection activity for the project where it occurs.			

SECTION 01_50_00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Furnishing, maintaining, and removing construction facilities and temporary controls, including temporary utilities, construction aids, barriers and enclosures, security, access roads, temporary controls, project sign, field offices and sheds, and removal after construction.

1.02 REFERENCE

- A. American National Standards Institute (ANSI).
- B. Occupational Safety and Health Administration (OSHA).

1.03 SUBMITTALS

- A. Submit as specified in Section 01_33_00 - Submittal Procedures.

1.04 TEMPORARY UTILITIES

- A. Temporary electrical power:
 - 1. Temporary system power shall be derived from existing ultraviolet disinfection (UV) main supply feeder conductors presently routed from the existing switchboard SB-UV (located in the main structure electrical room) to temporary 480-volt panelboards PNL-TEMP1 and PNL-TEMP2 specified in Section 26_00_10 - Electrical Requirements and as indicated on the Drawings.
 - a. Temporary electrical power is available at the following locations:
 - Temporary 480-volt panelboards PNL-TEMP1 and PNL-TEMP2 provided in Filter and UV Building.
 - b. The Contractor is responsible for providing temporary 480-volt panelboards, breakers, switches, transformers, splices to existing main feeder conductors and temporary conductors and cables required to obtain temporary power from these location(s).
 - c. The Owner will pay charges for construction power obtained from these locations.
 - d. During the course of the Work at each location, it will be necessary to de-energize existing panelboards which supply power to area lighting and receptacles. During such panelboard outages, the Contractor shall be responsible for providing temporary power for tools and equipment and also providing temporary lighting necessary for performing the Work.

- Pending City written approval, the Contractor may be permitted to obtain temporary power from alternate locations within the treatment plant.
2. Provide and maintain adequate jobsite power distribution facilities conforming to applicable Laws and Regulations.
- B. Temporary electrical lighting:
1. In work areas, provide temporary lighting sufficient to maintain lighting levels during working hours not less than lighting levels required by OSHA and state agency which administers OSHA regulations where Project is located.
 2. When available, permanent lighting facilities may be used in lieu of temporary facilities:
 - a. Prior to Substantial Completion of the Work, replace bulbs, lamps, or tubes used by Contractor for lighting if requested by Owner.
- C. Temporary heating, cooling, and ventilating:
1. Heat and ventilate work areas to protect the Work from damage by freezing, high temperatures, weather, and to provide safe environment for workers.
 2. Permanent heating system may be utilized when sufficiently completed to allow safe operation.
- D. Temporary water:
1. Pay for and construct facilities necessary to furnish potable water for human consumption and non-potable water for use during construction.
 2. Remove temporary piping and connections and restore affected portions of the facility to original condition before Substantial Completion.
 3. Pay for water used for construction prior to Substantial Completion.
 4. Development of non-potable water supply:
 - a. Post ample signs throughout the work area warning that plant water is not potable.
 - b. Non-potable water is available from hydrants or hose valves within plant without cost. When combined demand of the Work and plant exceeds plant supply capacity, provide additional temporary supply capacity.
- E. Temporary sanitary facilities:
1. Provide suitable and adequate sanitary facilities that are in compliance with applicable Laws and Regulations.
 2. Existing facility use is not allowed.
 3. At completion of the Work, remove sanitary facilities and leave site in neat and sanitary condition.
- F. Temporary fire protection:
1. Provide fire protection required to protect the Work and ancillary facilities.
- G. First aid: Post first aid facilities and information posters conforming to requirements of OSHA and other applicable Laws and Regulations in readily accessible locations.
- H. Utilities in existing facilities: As specified in Section 01_14_00 - Work Restrictions.
- I. Temporary piping systems:
1. Submit layout drawings showing proposed routing of piping, including proposed pipe support and pipe restraint locations.

2. Submit product data for piping, fittings, appurtenances, restraints, supports, and other components of the temporary piping system.
 3. Submit information at least 28 days prior to when each temporary piping system is scheduled to be installed and allow 14 days for review and comment.
- J. Temporary pumping systems:
1. Submit pump data, performance curves, and other operating information as specified in Section 33_05_12 - Temporary Bypass Pumping.
 2. Submit sketches showing layout of temporary pumping system, including pump quantity, configuration in wet well, and proposed piping layout specified in this Section and Section 33_05_12 - Temporary Bypass Pumping.
 3. Submit piping headloss calculations based on proposed temporary piping system layout.
 4. Submit information at least 28 days prior to when the temporary pumping system is scheduled to be installed and allow 14 days for review and comment.
- K. Temporary disinfection systems:
1. Submit sketches showing layout of the following temporary disinfection systems, including pump configuration and location, chemical storage and containment, and proposed piping layout specified in this Section and on the Drawings.
 - a. UV disinfection to creek discharge.
 - 1) Two temporary UV disinfection units are associated with the temporary bypass. Coordination of the pumping and disinfection submittals is required. The schedule requirements for submittal and operation of the bypass systems are outlined in Section 01_14_00 - Work Restrictions. The information for the temporary UV disinfection systems is summarized as follows:
 - (1) The temporary UV disinfection system from Trojan Technologies was prepurchased, and the contract is assigned to the Contractor according to Section 00_54_34 - Assignment of Procurement Contract. The current submittal from Trojan Technologies is Attachment B3 of Section 46_66_85 - Ultraviolet Disinfection System.
 - (2) The preselection agreement for the temporary UV disinfection system from Glasco UV is assigned to the Contractor according to Section 00_41_00 - Bid Form. The preselected proposal is included as an attachment in Section 00_41_00 - Bid Form.
 - b. UV disinfection for IRR water.
 - 1) Owner to furnish temporary irrigation UV disinfection unit per Section 01_11_00 - Summary of Work.
 - 2) Contractor to install the temporary UV disinfection unit per contract documents. Plant staff will operate the unit.
 - c. Sodium hypochlorite solution (CLS) feed system to provide the following dose to UW system:
 - 1) Operator adjustable dose of 3-10 milligrams per liter (mg/L) chlorine for UW flows between 50 and 400 gallons per minute (gpm).

- 2) Residual sampling during startup will be required to establish desired dose during temporary chlorination.
 - 3) Hypochlorite feed skid shall be provided, installed, and commissioned by the contractor. Plant staff shall operate the chemical feed system and manage the chemical delivery and operation.
2. Submit headloss calculations and chemical feed range based on proposed temporary piping system layout for each system.
 3. Submit information at least 45 days prior to when the temporary disinfection system is scheduled to be installed (to permit resubmittal if required) and allow 14 days for review and comment.

1.05 CONSTRUCTION AIDS

- A. Provide railings, kick plates, enclosures, safety devices, and controls required by Laws and Regulations and as required for adequate protection of life and property.
- B. Use construction hoists, elevators, scaffolds, stages, shoring, and similar temporary facilities of ample size and capacity to adequately support and move loads.
- C. Design temporary supports with adequate safety factor to ensure adequate load bearing capability:
 1. When requested, submit design calculations by professional registered engineer prior to application of loads.
 2. Submitted design calculations are for information and record purposes only.
- D. Accident prevention:
 1. Exercise precautions throughout construction for protection of persons and property.
 2. Observe safety provisions of applicable Laws and Regulations.
 3. Guard machinery and equipment and eliminate other hazards.
 4. Make reports required by authorities having jurisdiction, and permit safety inspections of the Work.
 5. Before commencing construction work, take necessary action to comply with provisions for safety and accident prevention.
- E. Barricades:
 1. Place barriers at ends of excavations and along excavations to warn pedestrian and vehicular traffic of excavations.
 2. Provide barriers with flashing lights after dark.
 3. Keep barriers in place until excavations are entirely backfilled and compacted.
 4. Barricade excavations to prevent persons from entering excavated areas in streets, roadways, parking lots, treatment plants, or other public or private areas.
- F. Warning devices and barricades: Adequately identify and guard hazardous areas and conditions by visual warning devices and, where necessary, physical barriers:
 1. Provide devices in accordance with minimum requirements of OSHA and State agency which administers OSHA regulations where Project is located.

- G. Hazards in public right-of-way:
 - 1. Comply with local jurisdiction standards and requirements for right-of-way barricades and other safety devices.
 - 2. Mark at reasonable intervals, trenches, and other continuous excavations in public right-of-way, running parallel to general flow of traffic, with traffic cones, barricades, or other suitable visual markers during daylight hours:
 - a. During hours of darkness, provide markers with torches, flashers, or other adequate lights.
 - 3. At intersections or for pits and similar excavations, where traffic may reasonably be expected to approach head on, protect excavations by continuous barricades:
 - a. During hours of darkness, provide warning lights at close intervals.
- H. Hazards in protected areas: Mark or guard excavations in areas from which public is excluded, in manner appropriate for hazard.
- I. Above grade protection: On multi-level structures, provide safety protection that meets requirements of OSHA and State agency which administers OSHA regulations where Project is located.
- J. Protect existing structures, trees, shrubs, and other items to be preserved on Project site from injury, damage, or destruction by vehicles, equipment, worker or other agents with substantial barricades or other devices commensurate with hazards.

1.06 SECURITY

- A. Make adequate provision for protection of the work area against fire, theft, and vandalism, and for protection of public against exposure to injury.

1.07 ACCESS ROADS

- A. General:
 - 1. Build and maintain access roads to and on site of the Work to provide for delivery of material and for access to existing and operating plant facilities on site.
 - 2. Build and maintain dust free roads which are suitable for travel at 20 miles per hour.
- B. Off-site access roads:
 - 1. Build and maintain graded earth roads.
 - 2. Build roads only in public right-of-way or easements obtained by Owner.
 - 3. Obtain rights-of-way or easements when electing to build along other alignment.
- C. On-site access roads:
 - 1. Maintain access roads to storage areas and other areas to which frequent access is required.
 - 2. Maintain similar roads to existing facilities on site of the Work to provide access for maintenance and operation.

3. Protect buried vulnerable utilities under temporary roads with steel plates, wood planking, or bridges.
4. Maintain on-site access roads free of mud.
5. Provide controls to prevent vehicles leaving the site from tracking mud off the site onto the public right-of-way.

1.08 TEMPORARY CONTROLS

- A. Dust control:
 1. Prevent dust nuisance caused by operations, unpaved roads, excavation, backfilling, demolition, or other activities.
 2. Control dust by sprinkling with water, use of dust palliatives, modification of operations, or other means acceptable to agencies having jurisdiction.
- B. Noise control:
 1. Comply with noise and work hours regulations by local jurisdiction.
 2. In or near inhabited areas, particularly residential, perform operations in manner to minimize noise.
 3. In residential areas, take special measures to suppress noise during night hours.
- C. Mud control:
 1. Prevent mud nuisance caused by construction operations, unpaved roads, excavation, backfilling, demolition, or other activities.

1.09 CONTRACTOR FIELD OFFICES AND SHEDS

- A. Maintain on Project Site weather tight space in which to keep copies of Contract Documents, progress schedule, shop drawings, and other relevant documents.
- B. Provide field enclosure or office with adequate space to examine documents and provide lighting in that space.
- C. Contractor may use designated space on Drawings for any offices or trailer, but the Owner will not provide any temporary utilities unless specified in this section. The Contractor will need to provide all temporary utilities and sanitary facilities.

1.10 REMOVAL

- A. Remove temporary facilities and controls before inspection for Substantial Completion or when directed.
- B. Clean and repair damage caused by installation or use of temporary facilities.
- C. Remove underground installations to minimum depth of 24 inches and grade to match surrounding conditions.
- D. Restore existing facilities used during construction to specified or original condition.

1.11 TEMPORARY PROCESS PIPING SYSTEMS

- A. Provide piping, appurtenances, and other materials as required to provide temporary piping systems as specified in this Section, as indicated on the Drawings and Specifications, and as needed to perform the Work.
- B. Provide field route piping as needed and as field conditions dictate, unless otherwise indicated on the Drawings, and determine appropriate lengths of piping and quantity/type of pipe fittings needed to construct temporary piping system. Do not block access points such as stairs, doors, and walkways to existing facilities unless approved in writing by the Owner.
- C. Restrain piping at valves and at fittings where piping changes direction, changes sizes, and at ends:
 - 1. When piping is buried, use concrete thrust block or mechanical restraints.
 - 2. When piping is exposed or under water, use mechanical or structural restraints.
 - 3. Determine thrust forces by multiplying the nominal cross-sectional area of the piping by the operating pressure of the piping.
- D. Install temporary piping systems in a manner that will not damage existing or new facilities.
- E. Piping material, including gaskets: Suitable for the process fluid requiring temporary piping, unless indicated otherwise.
- F. Temporary piping includes but may not be limited to piping required in Section 33_05_12 - Temporary Bypass Pumping.
- G. All temporary piping shall be tested according to requirements in Section 33_05_12 - Temporary Bypass Pumping whether associated with bypass piping or not.
- H. After temporary piping system is no longer required:
 - 1. Remove temporary piping system.
 - 2. Clean and repair damage caused by installation or use of temporary piping system.
 - 3. Restore existing facilities to original condition.

1.12 TEMPORARY PROCESS PUMPING SYSTEMS

- A. Provide temporary pumping system to pump flow from the UV Influent Box to Temporary Clearwell as described in detail in Section 33_05_12 - Temporary Bypass Pumping and on the Drawings.
- B. Providing temporary piping systems as specified in this Section and other Specifications.
- C. Temporary pumping of other process flows is not allowed unless approved in writing by the Owner.

- D. After temporary process pumping system is no longer required:
 - 1. Remove temporary process pumping system.
 - 2. Clean and repair damage caused by installation or use of temporary process pumping system.
 - 3. Restore existing facilities to original condition.

1.13 TEMPORARY STRUCTURES

- A. Delegated Design is required for all temporary structures and bulkheads. Prepare and submit designs as specified in Section 01_35_73 - Delegated Design Procedures.
- B. Temporary isolation structures and bulkheads:
 - 1. Submit shop drawings and calculations for temporary hydraulic isolation structures and bulkheads. Shop drawings and calculations must be signed by a professional engineer registered in the state in which the Work is being performed.
 - 2. Submit installation plan and sequence for isolation structures.
- C. Temporary isolation structures and bulkheads shall be hydrostatically tested for a minimum of 1 hour to the design retaining elevation shown on the Drawings or submitted by the Contractor and approved. The allowable leakage rate shall not exceed the allowable leakage in the latest revision of AWWA C561 (currently 0.1 gpm/ft of sealing perimeter). Process water may be used for testing but must be treated according to the level required in normal Plant operations prior to discharge. or pumped, by the Contractor, to the head of the plant.
- D. Contractor is responsible for dewatering and management of leakage.
- E. Testing and repairs may require plant shutdowns. Contractor may be responsible for cost to the Owner to facilitate unplanned shutdowns according to the Contract Documents.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_60_00
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Requirements for tangible materials, raw or manufactured, that become part of the project.

1.02 REFERENCES

- A. International Organization for Standardization (ISO):
 - 1. 9001 - Quality Management Systems - Requirements.
- B. NSF International (NSF).
- C. Underwriters Laboratories, Inc. (UL).

1.03 TERMINOLOGY

- A. The words and terms listed below, are not defined terms that require initial capital letters, but, when used in this Section have the indicated meaning.
 - 1. Calculations:
 - a. Documentation of the process of transforming the design and prescriptive criteria into a design meeting the performance criteria.
 - 2. Certificates:
 - a. An official document that attests a fact is in accordance with the Contract Documents.
 - 3. Manufacturer's instructions:
 - a. Stipulations, directions, and/or recommendations issued by the manufacturer of the product addressing handling, installation, erection, and/or application of the product.
 - 4. Products:
 - a. Raw materials, finished goods, equipment, systems, and shop fabrications that will become part of the Work.
 - 5. Product data:
 - a. Public information about the product which is found in the manufacturer's catalogs or on their web site including catalog pages, data sheets, bulletins, layout drawings, exploded views, and brochures.
 - 6. Samples:
 - a. As defined in the General Conditions and Supplementary Conditions.
 - b. Full-size actual products or pieces of products intended to illustrate the products to be incorporated into the project. Sample submittals are often necessary for such characteristics as colors, textures, and other appearance issues.

7. Schedules:
 - a. Product parts and materials lists.
8. Shop Drawings:
 - a. As defined in the General Conditions and Supplementary Conditions.
 - b. Shop Drawings are prepared specifically for the project to illustrate details, dimensions, and other data necessary for satisfactory fabrication or construction that are not shown completely in the Drawings.
 - c. Shop Drawings could include graphic line-type drawings and single-line diagrams.
9. Spare parts and materials:
 - a. Duplicate parts necessary to replace a damaged or worn part of the product.
 - b. Consumables such as operating fluids.
10. Special tools:
 - a. Special wrenches, gauges, circuit setters, and other similar devices required for the proper operation or maintenance of a system that would not normally be in the Owner's tool kit and that have been specifically made for use on a product for assembly, disassembly, repair, or maintenance.
11. Submittals:
 - a. As defined in the General Conditions and Supplementary Conditions.
 - b. Samples, product data, Shop Drawings, and others that demonstrate how Contractor intends to conform to the Contract Documents.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Provide products as Engineer has approved by the Submittal process or by other written documents.
- B. Provide products by same manufacturer when units are of similar nature, unless otherwise specified.
- C. Provide like parts of duplicate units that are interchangeable.
- D. Provide equipment or product that has not been in service prior to delivery, except as required by tests.
- E. Provide products produced by manufacturers regularly engaged in the production of these products.
- F. Provide products that bear approvals and labels as specified such as Factory Mutual (FM), Underwriters Laboratory (UL), or National Sanitation Foundation (NSF International).

2.02 MATERIAL

- A. Dissimilar metals:
 - 1. Separate contacting surfaces with dielectric material.
 - 2. Neoprene, bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators or washers, or other materials as specified.
- B. Edge grinding:
 - 1. Sharp projections of cut or sheared edges of ferrous metals which are not to be welded shall be ground to a radius required to ensure satisfactory paint adherence.
- C. Use anti-galling compound on threads of stainless steel fasteners during factory assembly.
- D. Provide anti-galling compound with stainless steel fasteners shipped for field assembly.
- E. Aluminum in contact with concrete or masonry: Apply epoxy mastic as specified in Section 09_96_01 - High-Performance Coatings, coating system EPX-M-5.
- F. Pipes:
 - 1. Provide new pipe manufactured for the project, not from manufacturer's inventory, under the following conditions:
 - a. Pipes 24-inch diameter and larger.
 - b. Except steel pipes 6-inch diameter and larger.
 - 2. Provide pipe manufactured more than 6 months prior to delivery if the pipe material or its coating is subject to ultraviolet (UV) degradation.
 - 3. Provide ductile iron pipe with cement-mortar lining manufactured more than 6 months prior to delivery to the project.
 - 4. Mark each length of pipe in accordance with applicable standards.

2.03 PRODUCT SELECTION

- A. When products are specified without named manufacturers, provide products that meet or exceed the Specifications.
- B. When products are specified with names of manufacturers but no model numbers or catalog designations, provide products by one of named manufacturers that meet or exceed specifications.
- C. When products are specified with names of manufacturers and model numbers or catalog designations, provide products with model numbers or catalog designations by one of the named manufacturers.
- D. When products are specified with names of manufacturers, but with brand or trade names, model numbers, or catalog designations by one manufacturer only, provide:
 - 1. Products specified by brand or trade name, model number, or catalog designation.
 - 2. Products by another named manufacturers proven, in accordance with requirements for an "or equal", including Engineer's approval, to meet or

exceed quality, appearance and performance of specified brand or trade name, model number, or catalog designation.

- E. When products are specified with only one manufacturer followed by “or Equal,” provide:
 - 1. Products meeting or exceeding Specifications by specified manufacturer.
 - 2. Engineer deemed “or equal” evidenced by an approved Shop Drawing or other written communication.

- F. When products are specified by naming 2 or more manufacturers with 1 manufacturer as a “Basis of Design”:
 - 1. Any of the named manufacturers can be submitted.
 - 2. If the product submitted is not by the named “Basis of Design” product and requires a change in the scope (dimensions, configuration, physical properties, etc.), schedule (longer lead time), or budget, the Contractor must submit a substitution request.

2.04 SPARE PARTS, MAINTENANCE PRODUCTS, AND SPECIAL TOOLS

- A. Provide spare parts and maintenance products as required by Technical Sections.
 - 1. Submit completed Attachment A - Spare Parts, Maintenance Products, and Special Tools Inventory List.

- B. Provide one set of special tools required to install or service the equipment.

- C. Box, tag, and clearly mark items.

- D. Contractor is responsible for spare parts, maintenance products, and special tools until acceptance by Owner.

PART 3 EXECUTION

3.01 SHIPMENT

- A. Requirements prior to shipment of equipment:
 - 1. Engineer approved Submittals or other written documentation.
 - 2. Engineer approved Manufacturer’s Certificate of Source Testing as specified in the Technical Sections.
 - 3. Draft operations and maintenance manuals, as specified in Section 01_78_24 - Operation and Maintenance Manuals as specified in the Technical Sections.

- B. Transport products by methods that avoid product damage.

- C. Deliver products in undamaged condition in manufacturer's unopened containers or packaging.

3.02 DELIVERY AND HANDLING

- A. Handle equipment in accordance with manufacturer's instructions.
- B. Deliver products in undamaged condition in manufacturer's unopened containers or packaging.
- C. Provide construction equipment and personnel to handle products by methods in accordance with manufacturer's instructions.
- D. Upon delivery, promptly inspect shipments:
 - 1. Verify compliance with Contract Documents, correct quantities, and undamaged condition of products.
 - 2. Acceptance of shipment does not constitute final acceptance of equipment.
- E. Spare parts, maintenance products, special tools.
 - 1. Immediately store in accordance with the manufacturer's instructions.
 - 2. Store spare parts, maintenance products, and special tools in enclosed, weather-proof, and lighted facility during the construction period.
 - a. Protect parts subject to deterioration, such as ferrous metal items and electrical components with appropriate lubricants, desiccants, or hermetic sealing.
 - 3. With Owner's written request for advanced delivery of spare parts, maintenance products, and special tools.
 - a. Deliver requested items and deduct them from the inventory list.
 - b. Provide transmittal documentation.
 - 4. Store large items individually:
 - a. Weight: Greater than 50 pounds.
 - b. Size: Greater than 24 inches wide by 18 inches high by 36 inches long.
 - c. Clearly labeled:
 - 1) Equipment tag number.
 - 2) Equipment manufacturer.
 - 3) Subassembly component, if appropriate.
 - 4) Store smaller items in spare parts box:
 - d. Weight: Less than 50 pounds.
 - e. Size: Less than 24 inches wide by 18 inches high by 36 inches long.
 - f. Clearly labeled:
 - 1) Equipment tag number.
 - 2) Equipment manufacturer.
 - 3) Subassembly component, if appropriate.
 - 4) Spare parts and special tools box:
 - a) Box material: Waterproof, corrosion resistant.
 - g. Hinged cover:
 - 1) Locking hasp.
 - h. Spare parts inventory list taped to underside of cover.
 - i. Clearly labeled:
 - 1) The words "Spare Parts and/or Special Tools".
 - 2) Equipment tag number.
 - 3) Equipment manufacturer.
 - 4) Subassembly component, if appropriate.

3.03 STORAGE AND PROTECTION DURING STORAGE

- A. Storage of equipment to be in accordance with the manufacturer's instructions.
 - 1. Including connection of motor heaters, lubrication, manually rotating shafts, etc.
 - 2. The Contractor shall furnish a copy of the manufacturer's instructions for storage to the Engineer prior to storage of equipment and materials.
- B. Immediately store and protect products until installed in Work.
- C. Furnish covered, weather-protected storage structures providing a clean, dry, noncorrosive environment for mechanical equipment, valves, architectural items, electrical and instrumentation equipment and special equipment to be incorporated into this project.
- D. Store products with seals and legible labels intact.
- E. Protect painted or coated surfaces against impact, abrasion, discoloration, and damage.
- F. Storage of spare parts, maintenance products, special tools.
 - 1. Immediately store in accordance with the manufacturer's instructions.
 - 2. Store spare parts, maintenance products, and special tools in enclosed, weather-proof, and lighted facility during the construction period.
 - 3. Protect parts subject to deterioration, such as ferrous metal items and electrical components with appropriate lubricants, desiccants, or hermetic sealing.
 - 4. Store large items individually:
 - a. Weight: Greater than 50 pounds.
 - b. Size: Greater than 24 inches wide by 18 inches high by 36 inches long.
 - c. Clearly labeled:
 - 1) Equipment tag number.
 - 2) Equipment manufacturer.
 - 3) Subassembly component, if appropriate.
 - 5. Store smaller items in spare parts boxes:
 - a. Weight: Less than 50 pounds.
 - b. Size: Less than 24 inches wide by 18 inches high by 36 inches long.
 - c. Clearly labeled:
 - 1) Equipment tag number.
 - 2) Equipment manufacturer.
 - 3) Subassembly component, if appropriate.
 - 6. Spare parts and special tools box:
 - a. Box material: Waterproof, corrosion resistant.
 - b. Hinged cover with locking hasp:
 - c. Inventory list taped to underside of cover.
 - 1) Clearly labeled:
 - 2) The words "Spare Parts and/or Special Tools".
 - 3) Equipment tag number.
 - 4) Equipment manufacturer.
 - 5) Subassembly component, if appropriate.

- G. Exterior storage of fabricated products:
 - 1. Place on aboveground supports that allow for drainage.
 - 2. Cover products subject to deterioration with impervious sheet covering.
 - 3. Provide ventilation to prevent condensation under covering.
- H. Store moisture sensitive products in watertight enclosures.
- I. Store loose granular materials on solid surfaces in well-drained area.
 - 1. Prevent materials mixing with foreign matter.
 - 2. Provide access for inspection.
- J. Provide an equipment log and stored products log with monthly pay applications.
 - 1. Data includes as a minimum: The storage location, equipment or product identification, date stored, date of inspection/maintenance, date removed from storage, copy of manufacturer's recommended storage guidelines, description of inspection/maintenance activities performed, and signature of party performing inspection/maintenance.
- K. When needed and approved by the Engineer, offsite storage location shall be within 20 miles of the project site.
 - 1. Provide proof of insurance coverage for products stored offsite.
- L. Payment will not be made for equipment and materials improperly stored or stored without providing Engineer with the manufacturer's instructions for storage.

3.04 INSTALLATION

- A. Inspect equipment or product prior to product installation.
- B. Repaint or recoat damaged painted or coated surfaces.
- C. Use anti-galling compound on stainless steel threads used for field assembly.

3.05 PROTECTION AFTER INSTALLATION

- A. Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations.
 - 1. Remove covering when no longer needed.
 - 2. Replace corroded, damaged, or deteriorated equipment, product, or parts before acceptance of the project.
- B. Update equipment log with monthly pay applications.
 - 1. Data includes as a minimum: Description of maintenance activities performed in accordance with the manufacturer's recommendation and industry standards and signature of party performing maintenance.

END OF SECTION

**ATTACHMENT A - SPARE PARTS, MAINTENANCE PRODUCTS,
AND SPECIAL TOOLS INVENTORY LIST**

SPARE PARTS, MAINTENANCE PRODUCTS, AND SPECIAL TOOLS INVENTORY LIST

Owner: _____ **Date:** _____
Contractor: _____ **Project No.:** _____
Project Name: _____

Inventory List				
Spec Number: _____		Spec Title _____		
Equipment Tag No.: _____		Equipment Manufacturer: _____		
Quantity	Subassembly Component	Description	Manufacturer's Part Number	Storage Location

SECTION 01_75_17

COMMISSIONING

REFER TO SECTION 00_54_34, ATTACHMENT A – PROCUREMENT CONTRACT AND APPENDIX D – PRE-PROCUREMENT CONTRACT DOCUMENTS FOR COMMISSIONING REQUIREMENTS.

SECTION 01_77_00
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes: Contract closeout requirements.

1.02 REFERENCES

- A. American Water Works Association (AWWA).

1.03 FINAL CLEANING

- A. Perform final cleaning prior to inspections for Substantial Completion.
- B. Employ skilled workers who are experienced in cleaning operations.
- C. Use cleaning materials which are recommended by manufacturers of surfaces to be cleaned.
- D. Prevent scratching, discoloring, and otherwise damaging surfaces being cleaned.
- E. Clean roofs, gutters, downspouts, and drainage systems.
- F. Broom clean exterior paved surfaces and rake clean other surfaces of site work:
 - 1. Police yards and grounds to keep clean.
- G. Remove dust, cobwebs, and traces of insects and dirt.
- H. Clean grease, mastic, adhesives, dust, dirt, stains, fingerprints, paint, blemishes, sealants, plaster, concrete, and other foreign materials from sight-exposed surfaces, and fixtures and equipment.
- I. Remove non-permanent protection and labels.
- J. Polish waxed woodwork and finish hardware.
- K. Wash tile.
- L. Wax and buff hard floors, as applicable.
- M. Wash and polish glass, inside and outside.
- N. Wash and shine mirrors.
- O. Polish glossy surfaces to clear shine.

- P. Vacuum carpeted and soft surfaces.
- Q. Clean permanent filters and replace disposable filters when heating, ventilation, and air conditioning units were operated during construction.
- R. Clean ducts, blowers, and coils when units were operated without filters during construction.
- S. Clean light fixtures and replace burned-out or dim lamps.
- T. Probes, elements, sample lines, transmitters, tubing, and enclosures have been cleaned and are in like-new condition.

1.04 WASTE DISPOSAL

- A. Arrange for and dispose of surplus materials, waste products, and debris off-site:
 - 1. Prior to making disposal on private property, obtain written permission from Owner of such property.
- B. Do not fill ditches, washes, or drainage ways which may create drainage problems.
- C. Do not create unsightly or unsanitary nuisances during disposal operations.
- D. Maintain disposal site in safe condition and good appearance.
- E. Complete leveling and cleanup prior to Final Completion of the Work.

1.05 TOUCH-UP AND REPAIR

- A. Touch-up or repair finished surfaces on structures, equipment, fixtures, and installations that have been damaged prior to inspection for Substantial Completion.
- B. Refinish or replace entire surfaces which cannot be touched-up or repaired satisfactorily.

1.06 FINAL CLEANING AND DISINFECTION OF SYSTEMS OF PLANT FACILITIES

- A. Wash, wherever practicable, or broom sweep channels, pipe, basins, reservoirs, and tanks.

1.07 CLOSEOUT DOCUMENTS

- A. Submit the following Closeout Submittals before Substantial Completion:
 - 1. Punch list of items to be completed or corrected with the request for issuance of Substantial Completion.
 - 2. Evidence of Compliance with Requirements of Governing Authorities.
 - 3. Project Record Documents.
 - 4. Approved Operation and Maintenance Manuals.
 - 5. Approved Warranties and Bonds.
 - 6. Keys and Keying Schedule.
 - 7. Completed contract requirements for commissioning and process start-up.

- B. Submit the following Closeout Submittals before final completion of the Work and at least 7 days prior to submitting Application for Final Payment:
 1. Punch list of items have been completed and Engineer and Owner are satisfied that all deficiencies are corrected.
 2. Evidence of Payment and Release of Liens or Stop Payment Notices as outlined in Conditions of the Contract.
 3. Release of claims as outlined in Conditions of the Contract.
 4. Submit certification of insurance for products and completed operations, as specified in the General Conditions.
 5. Final statement of accounting.
 6. Submit Final (As-Built) Schedule as specified in Section 01_32_21 - Schedules and Reports.

1.08 PROJECT RECORD DOCUMENTS

- A. Maintain at Project site, available to Owner and Engineer, 1 copy of the Contract Documents, shop drawings, and other submittals in good order:
 1. Mark and record field changes and detailed information contained in submittals and change orders.
 2. Record actual depths, horizontal and vertical location of underground pipes, duct banks, and other buried utilities. Reference dimensions to permanent surface features.
 3. Identify specific details of pipe connections, location of existing buried features located during excavation, and the final locations of piping, equipment, electrical conduits, manholes, and pull boxes.
 4. Identify location of spare conduits including beginning, ending, and routing through pull boxes and manholes. Record spare conductors, including number and size, within spare conduits and filled conduits.
 5. Provide schedules, lists, layout drawings, and wiring diagrams.
 6. Make annotations in electronic format. conforming to the following color code:

Additions:	Red
Deletions:	Green
Comments	Blue
Dimensions:	Graphite

- B. Maintain documents separate from those used for construction:
 1. Label documents "RECORD DOCUMENTS."
- C. Keep documents current:
 1. Record required information at the time the material and equipment is installed and before permanently concealing.
 2. Engineer will review Record Documents weekly to ascertain that changes have been recorded.
- D. Affix civil engineer's or professional land surveyor's signature and registration number to Record Drawings to certify accuracy of information shown.
- E. Deliver Record Documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor.

- F. Record Documents will be reviewed monthly to determine the percent complete for the monthly pay application.
- G. Updated Record Documents are a condition for Engineer's recommendation for progress payment.
- H. Final Schedule Submittal as specified in Section 01_32_21 - Schedules and Reports.

1.09 MAINTENANCE SERVICE

- A. Maintenance service as specified in technical specifications.

1.10 SUBSTANTIAL COMPLETION

- A. Obtain Certificate of Substantial Completion.

1.11 FINAL COMPLETION

- A. When Contractor considers the Work is complete, submit written certification that:
 - 1. Work has been completed in accordance with the Contract Documents.
 - 2. Punch list items have been completed or corrected.
 - 3. Work is ready for final inspection.
- B. Engineer will make an inspection to verify the status of completion with reasonable promptness.
- C. Should the Engineer consider that the Work is incomplete or defective:
 - 1. Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.
 - 2. Contractor shall take immediate steps to remedy the stated deficiencies and send a second written certification to the Engineer that the Work is complete.
 - 3. Engineer shall re-inspect the Work.

1.12 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to the Engineer at least 7 days prior to final Application for Payment.
- B. Statement shall reflect all adjustments to the Contract amount.
 - 1. The original Contract amount.
 - 2. Additions and deductions resulting from:
 - a. Change Orders.
 - b. Units installed and unit prices.
 - c. Set-offs for uncorrected or incomplete Work.
 - d. Set-offs for liquidated damages.
 - e. Set-offs for reinspection payments.
 - f. Extended engineering and/or inspection services and inspection overtime.
 - g. Excessive shop drawings review cost by the Engineer.
 - h. Other adjustments.
 - 3. Total Contract amount, as adjusted.

4. Previous payments.
 5. Remaining payment due.
- C. Engineer will prepare a final Change Order reflecting approved adjustments to the Contract amount which were not previously made by Change Orders.

1.13 FINAL APPLICATION FOR PAYMENT

- A. Contractor shall submit the final Application for Payment reflecting the agreed upon information provided in the final statement of accounting.

PART 2 PRODUCTS

2.01 SPARE PARTS

- A. Owner may request advanced delivery of spare parts, maintenance products, and special tools.
1. Deduct the delivered items from the inventory list and provide transmittal documentation.
- B. Prior to Substantial Completion, arrange to deliver spare parts, maintenance products, and special tools to Owner at a location on site chosen by the Owner.
1. Provide itemized list of spare parts and special tools that matches the identification tag attached to each item.
 2. Owner and Engineer will review the inventory and the itemized list to confirm it is complete and in good condition prior to signing for acceptance.

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_78_24

OPERATION AND MAINTENANCE MANUALS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Preparation and submittal of manual with requirements to operate and maintain the equipment.

1.02 PREPARATION

- A. General requirements:
 - 1. Provide dimensions in English units.
 - 2. Assemble material, where possible, in the same order within each volume.
 - 3. Reduce drawings and diagrams to 8 1/2 by 11-inch size, if possible unless otherwise specified.
 - 4. Complete forms on computer, handwriting not acceptable.
 - 5. Delete items or options not provided in the supplied equipment or system.
 - 6. Provide package control system annotated ladder logic for PLC, if applicable.
- B. Hard copy requirements:
 - 1. Binders: 3-ring with rigid covers.
 - a. Break into separate binders as needed to accommodate large size.
 - 2. Utilize numbered tab sheets to organize information.
 - 3. Provide original and clear text on reproducible non-colored paper, 8 1/2 by 11-inch size, 24 pound paper.
 - 4. Drawings larger than 8 1/2 by 11 inch:
 - a. Fold drawings separately and place in envelope bound into the manual.
 - b. Label each drawing envelope on the outside regarding contents.
- C. Electronic requirements:
 - 1. File format:
 - a. Entire manual in PDF format.
 - 1) Include text and drawing information.
 - 2) Provide a single PDF file even if the hard copy version is broken into separate binders due to being large.
 - 3) Create PDF from the native format of the document (Microsoft Word, graphics programs, drawing programs, etc.).
 - a) If material is not available in native format and only available in paper format, remove smudges, fingerprints, and other extraneous marks before scanning to PDF format.
 - b) Hard copy record drawing requirements:
 - (1) Provide a single multipage PDF file of each set of the scanned drawings.
 - (2) Page 1 shall be the cover of the drawing set.

- c) At file opening, display the entire cover.
 - (1) Scan drawings at 200 to 300 dots per inch (DPI), black and white, Group IV Compression, unless otherwise specified.
 - (2) Scan drawings with photos in the background at 400 dots per inch (DPI), black and white, Group IV Compression.
 - 4) Pagination and appearance to match hard copy.
 - 5) Searchable.
 - 6) Scanned images are not acceptable.
 - 7) Bookmarks:
 - a) Bookmarks shall match the table of contents.
 - b) Bookmark each section (tab) and heading.
 - c) Drawings: Bookmark at a minimum, each discipline, area designation, or appropriate division.
 - d) At file opening, display all levels of bookmarks as expanded.
 - 8) Thumbnails optimized for fast web viewing.
 - b. Drawing requirements:
 - 1) Provide additional copy of drawings in most current version of AutoCAD format.
 - 2) Drawings shall have a white background.
 - 3) Drawing shapes shall not degrade when closely zoomed.
 - 4) Screening effects intended to de-emphasize detail in a drawing must be preserved.
 - 5) Delete items or options not provided in the supplied equipment or system.
- 2. Media:
 - a. File Transfer Protocol (FTP), or
 - b. Microsoft® One Drive.
- 3. Label media with the following information:
 - a. Operation and Maintenance Manual.
 - b. Equipment name.
 - c. Specification Section Number
 - d. Equipment tag number.
 - e. Owner's name.
 - f. Project number and name.
 - g. Date.
- 4. If multiple submittals are made together, each submittal must have its own subdirectory that is named and numbered based on the submittal number.

1.03 CONTENTS

- A. Table of Contents: General description of information provided within each tab section.
- B. Complete Attachment A - Equipment Summary Form.
- C. Description of system and components.
- D. Description of equipment function, normal operating characteristics, and limiting conditions.
- E. On-line resources.

- F. Telephone resources.
- G. Approved submittals.
 - 1. Markup with any field changes.
 - 2. Final programming.
- H. Start-up procedures: Recommendations for installation, adjustment, calibration, and troubleshooting.
- I. Operating procedures:
 - 1. Step-by-step instructions including but not limited to the following:
 - a. Safety precautions and applicable Safety Data Sheets.
 - b. Guidelines.
 - c. Other information as needed for safe system operation and maintenance.
- J. Preventative maintenance procedures:
 - 1. Recommended steps and schedules for maintaining equipment.
 - 2. Troubleshooting.
- K. Lubrication information: Required lubricants and lubrication schedules.
- L. Overhaul instructions: Directions for disassembly, inspection, repair and reassembly of the equipment; safety precautions; and recommended tolerances, critical bolt torques, and special tools that are required.
- M. Manufacturer's technical reference manuals.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

ATTACHMENT A - EQUIPMENT SUMMARY FORM

EQUIPMENT SUMMARY FORM

1. EQUIPMENT ITEM _____
2. MANUFACTURER _____
3. EQUIPMENT TAG NUMBER(S) _____
4. LOCATION OF EQUIPMENT _____
5. WEIGHT OF INDIVIDUAL COMPONENTS (OVER 100 POUNDS) _____

6. NAMEPLATE DATA -
 - Horsepower _____
 - Amperage _____
 - Voltage _____
 - Service Factor (S.F.) _____
 - Speed _____
 - ENC Type _____
 - Capacity _____
 - Other _____

7. MANUFACTURER'S LOCAL REPRESENTATIVE
 - Name _____
 - Address _____
 - Telephone Number _____

8. MAINTENANCE REQUIREMENTS:

Maintenance Operation	Frequency	Lubricant (if applicable)	Comments
(List each operation required. Refer to specific information in Manufacturer's Manual, if applicable)	(List required frequency of each maintenance operation)	(Refer by symbol to lubricant list as required)	

9. LUBRICANT LIST:

Reference Symbol	Conoco Phillips	Exxon/Mobil	BP/Amoco	Other (List)
(Symbols used in Item 7 above)	(List equivalent lubricants, as distributed by each manufacturer for the specific use recommended)			

10. SPARE PARTS (recommendations) _____

11. COMMENTS _____

12. GENERAL INFORMATION:

Date Accepted*: _____
 Expected Life*: _____
 Project Name & Number: _____
 Design Engineer: _____

13. WARRANTY:

Start Date: _____
 Expiration Date: _____
 Prorated: _____

SECTION 01_78_36

WARRANTIES AND BONDS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Warranty and bonds requirements.

1.02 SUBMITTALS

- A. For each item of material or equipment furnished under the Contract:
 - 1. Submit manufacturer's warranty prior to fabrication and shipment of the item from the manufacturer's facility.
 - 2. Submit manufacturer's special warranty when specified.
- B. Provide consolidated warranties and bonds within 15 calendar days of Substantial Completion.
 - 1. Contents:
 - a. Organize warranty and bond documents:
 - 1) Include Table of Contents organized by Specification Section number and the name of the product or work item.
 - b. Include each required warranty and bond in proper form, with full information, certified by manufacturer as required, and properly executed by Contractor, or subcontractor, supplier, or manufacturer.
 - c. Provide name, address, phone number, and point of contact of manufacturer, supplier, and installer, as applicable.
 - 2. Hardcopy format:
 - a. Submit 2 copies.
 - b. Assemble in 3 D-side ring binders with durable cover.
 - c. Identify each binder on the front and spine with typed or printed title "Warranties and Bonds"; Project Name or Title, and the Name Address and Telephone Number of the Contractor.
 - 3. Electronic copy in PDF format:
 - a. Submit 1 copy.

1.03 OWNER'S RIGHTS

- A. Owner reserves the right to reject warranties.
- B. Owner reserves the right to refuse to accept Work for the project if the required warranties have not been provided.

1.04 RELATIONSHIP TO GENERAL WARRANTY AND CORRECTION PERIOD

- A. Warranties specified for materials and equipment shall be in addition to, and run concurrent with, both Contractor's general warranty and the correction period requirements.
- B. Disclaimers and limitations in specific materials and equipment warranties do not limit Contractor's general warranty, nor does such affect or limit Contractor's performance obligations under the correction period.

1.05 MANUFACTURER'S 1 YEAR WARRANTY MINIMUM REQUIREMENTS

- A. Written warranty issued by item's manufacturer.
- B. Project-specific information, properly executed by product manufacturer, and expressly states that its provisions are for the benefit of the Contractor.
- C. Covers all costs associated with the correction of the defect, including but not limited to removal of defective parts, new parts, labor, and shipping.
- D. Provides a timely response to correct the defect.
 - 1. Manufacturer shall provide, in a timely fashion, temporary equipment as necessary to replace warranted items requiring repair or replacement, when warranted items are in use and are critical to the treatment process, as defined by Owner.
- E. Warranty commence running on the date of substantial completion.
 - 1. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit warranty within 10 calendar days after acceptance, listing date of acceptance as beginning of warranty period.
- F. Duration of Warranty: 1 year.

1.06 MANUFACTURER'S SPECIAL WARRANTY

- A. Manufacturer's special warranty is a written warranty published by the manufacturer which includes the requirements as specified in the Technical Section.
 - 1. Project-specific information and requirements.
 - 2. Properly executed by product manufacturer.
 - 3. Expressly states that its provisions are for the benefit of the Contractor or Owner.
 - 4. Manufacturer's special warranties commence on the date that the associated item is certified by Engineer as substantially complete.

1.07 WARRANTY WORK

- A. Contractor's responsibilities:
 - 1. Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the work that incorporates the product, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with Contractor.

- B. Replacement cost:
 - 1. Upon determination that work covered by warranty has failed, replace or rebuild the work to an acceptable condition complying with requirement of the Contract Documents.
 - a. Contractor is responsible for the cost of replacing or rebuilding defective work regardless of whether Owner has benefited from the use of the work through a portion of its anticipated useful service life.
- C. Related damages and losses:
 - 1. When correcting warranted work that has failed, remove and replace other work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted work.
- D. Owner's recourse:
 - 1. Written warranties are in addition to implied warranties, and shall not limit the duties, obligations, rights, and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitation on time in which Owner can enforce such other duties, obligations, rights, or remedies.
- E. Reinstatement of warranty:
 - 1. When work covered by a warranty has failed and has been corrected by replacement or rebuilding, reinstate the warranty by written endorsement.
 - a. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

1.08 IMPLIED WARRANTIES

- A. Warranty of title and intellectual rights:
 - 1. Except as may be otherwise indicated in the Contract Documents, implied warranty of title required by Laws and Regulations is applicable to the Work and to materials and equipment incorporated therein.
 - 2. Provisions on intellectual rights, including patent fees and royalties, are in the General Conditions, as may be modified by the Supplementary Conditions.
- B. Implied warranties: Duration in accordance with Laws and Regulations.

1.09 BONDS

- A. Equipment bond and other bond requirements as specified in the Technical Sections.
- B. Bonds commence running on the date of substantial completion.
 - 1. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit warranty within 10 calendar days after acceptance, listing date of acceptance as beginning of bond period.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01_81_50

DESIGN CRITERIA

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Design criteria for use in the selection of equipment and appurtenances specified in Technical Sections of these Specifications and indicated on the Drawings.
 - 2. Criteria for design of systems, components and equipment fabricated off site and shipped to the Work for installation.
 - 3. Criteria for design of anchors to connect equipment and appurtenances to supports and structures.
- B. The criteria in this Section apply throughout the Work, unless additional criteria, or more restrictive criteria, are indicated.
 - 1. Additional criteria and requirements relevant to specific locations, specific materials, and specific equipment are indicated on the Drawings, and in the Technical Sections.

1.02 REFERENCES

- A. American Society of Civil Engineers (ASCE):
 - 1. 7-16 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE 7).
- B. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE):
 - 1. ASHRAE Fundamentals Handbook.
- C. International Code Council (ICC):
 - 1. International Energy Conservation Code (IECC).
 - 2. International Plumbing Code (IPC).
- D. Sheet Metal and Air Conditioning Contractor's National Association (SMACNA):
 - 1. Seismic Restraint Manual: Guidelines for Mechanical Systems, 3rd edition - 2008.

PART 2 PRODUCTS

2.01 DESIGN CRITERIA - SITE INFORMATION

- A. Site name: Calera Creek Water Reclamation Plant.
 - 1. Street Address: 700 Pacific Coast Hwy, Pacifica, CA 94044.
 - 2. Site elevation (approximate):
 - a. 108 ft (NAVD 88).

2.02 DESIGN CRITERIA - REGULATORY REQUIREMENTS

- A. Requirements of authorities having jurisdiction over the project are included in Section 01_41_00 - Regulatory Requirements.

2.03 DESIGN CRITERIA - OPERATING ENVIRONMENT

- A. The Drawings and Technical Sections include additional criteria and requirements relevant to specific locations, materials, and equipment.
- B. Outdoor conditions:
 - 1. International Energy Conservation Code (IECC): Climate Zone 3C.
 - 2. Site climatic data location: San Francisco International Airport.
 - 3. Temperature criteria: As specified in the following Table: Design Temperatures - Outdoor Criteria in Accordance with ASHRAE Fundamentals Handbook.

Table: Design Temperatures - Outdoor Criteria in Accordance with ASHRAE Fundamentals Handbook	
Reference Location:	San Francisco International Airport
Condition	Criteria
Daily mean range:	45 degrees Fahrenheit.
Winter:	At or above this temperature 99.6 percent of the time: 40 degrees Fahrenheit dry-bulb.
Summer:	At or above this temperature 0.4 percent of the time: 63 degrees Fahrenheit dry-bulb.

- C. Indoor Conditions:
 - 1. Humidity:
 - a. Moisture/humidity conditions: As specified, and as defined in individual equipment sections.
 - 2. Temperature:
 - a. UV Equipment in sub-surface structure: Not greater than 78 degrees Fahrenheit dry-bulb.

2.04 DESIGN CRITERIA - STRUCTURAL

- A. General:
 - 1. Criteria for structural design of:
 - a. Equipment at locations subject to seismic events.
 - b. Equipment exposed to outdoor environments.
 - c. Equipment supports and bracing, and anchorage of such items to building and non-building structures.

- d. Structures provided for the Work through Delegated Design.
 - e. Manufactured and prefabricated structures, and anchorage of such structures to foundations or other supporting elements.
2. Structural design criteria used by the engineer of record and required by the building code to be indicated on the Drawings, are included on the Contract Drawing titled "General Structural Notes."
- B. Delegated Design:
1. As specified in Section 01_35_73 - Delegated Design Procedures.
 2. Structural engineering design shall be performed by a Civil or Structural Engineer licensed in the State of California.
- C. Structure risk category:
1. Develop design loads and provide detailing in accordance with the provisions of ASCE 7 and the building code specified in Section 01_41_00 - Regulatory Requirements, based on Structure Risk Category III.
- D. Seismic loads:
1. Seismic design parameters: Basic parameters - ASCE 7:
 - a. Ground motion MCE_R, 5 percent damped:
 - 1) Mapped spectral response acceleration (short period) $S_s = 2.114$ g.
 - 2) Mapped spectral response acceleration (1-second period) $S_1 = .877$ g
 - 3) Design spectral response acceleration (short period) $S_{ds} = 1.41$ g
 - 4) Design spectral response acceleration (1-second period) $S_{d1} = .944$ g
 - b. Peak ground acceleration, MCE_G:
 - 1) Peak ground acceleration, PGA = 0.906 g.
 - c. Mapped long-period transition period:
 - 1) TL = 12 seconds.
 2. Structures - General:
 - a. Seismic Design Category (SDC): D.
 - b. Structure response modification coefficient, R:
 - 1) In accordance with ASCE 7, and the requirements of the Technical Sections.
 3. Structures - Tanks and vessels.
 - a. Includes: Tank structures, tank supports, and anchorage to structures or foundations.
 - b. Liquid storage structures (e.g.: basins and tanks).
 - 1) Include impulsive and convective ("sloshing") effects.
 - 2) Component response modification factor - impulsive effects, R_i : In accordance with ASCE 7, Table 15.4-2.
 - 3) Component response modification factor - convective effects, $R_c = 1.0$.
 - c. Dry material storage structures (e.g.: silos, hoppers):
 - 1) Include effects of stored materials.
 - 2) Component response modification factor - impulsive effects, R_i : In accordance with ASCE 7, Table 15.4-2.

4. Non-structural components - General:
- a. Includes:
 - 1) Mechanical and electrical equipment; anchorage of equipment to structures or supports; design of supports; and anchorage of supports to structures or foundations.
 - 2) Distribution systems associated with mechanical and electrical equipment such as piping, ductwork, conduits, cable trays, raceways, bus ducts, and similar items; anchorage of such systems to supports and structures; and bracing or such systems.
 - b. Seismic design requirements for non-structural components are based on the Seismic Design Category (SDC) of the structure or facility where the equipment is installed.
 - c. Design components, component anchorage, and component connections to piping and utilities in accordance with the requirements of ASCE 7, Table 13.2-1.
 - d. Component amplification factor (a_p), response factor (R_p), and overstrength factor for anchorage to concrete (Ω_o):
 - 1) Mechanical and electrical components and systems: In accordance with ASCE 7, Table 13.6-1, unless otherwise indicated in the Technical Sections for these items.
 - 2) Architectural components and systems: In accordance with ASCE 7, Table 13.6-1, unless otherwise indicated in the Technical Sections for these items.
 - e. Component importance factor, I_p :
 - 1) In accordance with the following Table: Component Importance Factor for seismic design, I_p .
 - 2) For items not listed in Table: Component Importance Factor for seismic design, I_p , designate importance factor in accordance with the provisions of ASCE 7, Chapter 13 and submit to Engineer for review prior to developing calculations and details related to that component.

Table: Component Importance Factor for seismic design, I_p		
Structure Seismic Design Category	Components	I_p
All	Electrical: Items and distribution system components specified in Division 26 - Electrical.	1.5
All	Process Control and Instrumentation Systems: Components and distribution systems specified in Division 40 - Process Integration.	1.5
All	Equipment and components specified in Divisions 11 through 49, <u>except</u> HVAC and plumbing components listed below.	1.5
All	Other equipment not listed above.	1.0
Notes: (1) None.		

- E. Operational loads:
 - 1. Loads may include equipment vibration, torque, thermal effects, effects of internal contents (weight and sloshing), surge or "water hammer," and other load conditions.
 - 2. Design for loads indicated by equipment manufacturer.
 - 3. Design for loads indicated in the Technical Sections for equipment and appurtenances.

- F. Serviceability considerations:
 - 1. Deflection, unless otherwise indicated on the Drawings, or specified:
 - a. Beam deflection as fraction of span:
 - 1) Walkways and platforms: total load = $L/240$; live load = $L/360$.
 - 2) Equipment supports: $L/450$.

PART 3 EXECUTION

3.01 GENERAL

- A. Design approach and criteria in accordance with:
 - 1. Regulatory requirements, including but not limited to the building code specified in Section 01_41_00 - Regulatory Requirements.
 - 2. Reference standards and project-specific design criteria listed in this Section.
 - 3. Specific requirements for individual elements and components of the Work as specified in subsequent Technical Sections.

- B. In the event of conflicts between design criteria, contact Engineer for interpretation.

- C. Where Owner-Delegated Design is required by the Specifications, prepare and submit designs as specified in Section 01_35_73 - Delegated Design Procedures.

3.02 DELEGATED DESIGN:

- A. Where Delegated Design is required by the Technical Sections, prepare and submit designs as specified in Section 01_35_73 - Delegated Design Procedures.

- B. Calculations:
 - 1. Where submittal of calculations is required:
 - a. Provide complete calculations, including sketches to illustrate the design concepts being evaluated, and details to fully describe proposed construction.
 - 2. Requirements for seismic design calculations will be waived for the following:
 - a. Furniture and storage racks 6 feet in height or less.
 - b. Moveable equipment.
 - c. Mechanical and electrical equipment and components located in structures designated as Seismic Design Category A or B.
 - d. Mechanical and electrical equipment and components located in structures designated as Seismic Design Category C and where the component importance factor, I_p , is equal to 1.0.

3. Requirements for wind design calculations will be waived for the following:
 - a. Equipment and components located inside structures, and away from the effects of wind loads.
- C. Shop drawings:
 1. Shop drawings describing components and manufacturer's requirements for connections.
 - a. Include details for connections of components to structures and supports.
 - b. Include details for anchoring bracing to structures where required.

3.03 DESIGN - ANCHORS FOR EQUIPMENT, COMPONENTS, AND BRACING

- A. General:
 1. Engineer's approval of anchor designs is required before placement of construction that supports or provides bracing for anchored equipment and components.
 - a. Prepare anchor designs after Engineer's approval of the products and layout, and before placement of concrete or masonry that supports them.
 2. Adjust equipment pad sizes and add additional anchor confinement reinforcing to provide required strength at anchorage points between equipment and pad, and between pad and structure.
 3. Supports and bracing:
 - a. Design and install braces and anchors to transfer forces from equipment and components to the lateral force resisting system of the surrounding structure.
 - b. Anchor and brace piping, ductwork, and electrical distribution components so that lateral or vertical displacement does not result in damage to or failure of essential architectural, mechanical, or electrical equipment.
 - 1) Provide supplementary framing where required to transfer forces.
 - 2) Detail and locate braces and anchors to minimize differential movements between components and structure.
- B. Preparation:
 1. Obtain manufacturer's information:
 - a. Weight and dimensions of components.
 - b. Layout and location of anchors that connect to equipment base plates, sole plates, skids, or pads.
 - c. Sizes of holes for anchors that will be provided in equipment bases or support frames.
- C. Analysis and design:
 1. Perform and submit calculations to determine anchor designs at locations where equipment and equipment supports are connected to the supporting structure.
 - a. Indicate number, size, type, and material for anchors.
 2. In determining forces at locations where equipment is anchored to structures, include effects of:
 - a. Equipment self-weight and operating weight.
 - b. Location of equipment center of mass.

- c. Forces from equipment operation including, but not limited to:
 - 1) Effects of internal contents including weight and sloshing.
 - 2) Effects of thrust, surge, and water hammer where specified.
 - 3) Equipment reactions and operating torque.
 - 4) Equipment vibration.
 - 5) Thermal effects from equipment and from distribution systems connected to the equipment (piping, ducts, and electrical).
 - 6) Other load or displacement inducing conditions.
- d. Forces on equipment from loads specified in this Section.
 - 1) Include effects of wind, snow, and icing loads where applicable.
 - 2) Design for load combinations indicated in ASCE 7, unless otherwise specified or indicated on the Drawings.
 - 3) Seismic and wind loads: For equipment and tanks with weight that varies based on the volume of contained material, determine anchor forces to accommodate the full range of filled, partially filled, and empty conditions.
- 3. Determine forces and overturning moments at equipment supports and at locations where supports are anchored to structures.
 - a. Indicate shear force and associated axial force at each anchor.
- 4. Do not use friction to resist sliding resulting from seismic or wind forces.
 - a. Resist sliding only by direct application of sliding loads to fasteners as bearing, shear, tension, or compression forces.
- 5. Using combined shears and axial forces at each anchor, design anchors and anchor groups for ductile failure.
 - a. Ductile failure: Anchor yield before failure of base material, typically concrete or masonry, at the anchor.
- 6. Anchor selection:
 - a. Provide anchors type indicated on the Drawings.
 - b. Where anchors are not specifically indicated on the Drawings, select in accordance with the following:
 - 1) Anchors that resist seismic and wind forces:
 - a) Cast-in-place forged hex-head anchor bolt.
 - 2) Anchors loaded in sustained tension:
 - a) Cast-in-place forged hex-head anchor bolt.
 - 3) Anchors for reciprocating, vibrating, and rotating equipment:
 - a) Cast-in-place forged hex-head anchor bolt.
 - c. Do not use post-installed anchors, mechanical or adhesive, unless:
 - 1) Post-installed anchors are indicated on the Drawings.
 - 2) Post-installed are approved by Engineer prior to placement of the surrounding concrete or masonry.
 - d. Anchor diameter:
 - 1) Select diameter so that hole in base plate is not greater than 125 percent of the nominal diameter of the anchor, nor greater than the diameter of the anchor plus 1/4 inch.
- 7. Determine number, size, layout, and minimum effective embedment for anchors.
 - a. Layout includes anchor spacing and required distance(s) from anchor to edge(s) of supporting concrete or masonry.

- b. Anchors in concrete: Design based on minimum specified 28-day compressive strength, f'_c , as follows, unless otherwise indicated on the Drawings for the Work area:
 - 1) Concrete placed for this Work: $f'_c = 4500$ pounds per square inch.
 - 2) Existing concrete in place prior to this Work: $f'_c = 4000$ pounds per square inch.
- 8. Prepare drawings showing construction details of anchor designs.
- 9. Submit design calculations and drawings prior to placement of anchors, and of the structural elements to which they will connect.

END OF SECTION

