BRIDGEPORT PUBLIC UTILITY DISTRICT
ARSENIC REMOVAL PROJECT

ARSENIC REMOVAL SYSTEM PROCUREMENT CONTRACT

Contract Documents

&

Specifications

March 24, 2017

3.24.17

Prepared by:

R.O. ANDERSON ENGINEERING, INC.
1603 Esmeralda Avenue
P.O. Box 2229
Minden, Nevada 89423

for:

BRIDGEPORT PUBLIC UTILITY DISTRICT
P.O. Box 473
Bridgeport, CA 93517

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ADVERTISEMENT FOR BIDS
BRIDGEPORT PUBLIC UTILITY DISTRICT
ARSENIC REMOVAL PROJECT - SYSTEM

Bridgeport Public Utility District (BPUD), as Owner, invites and will receive sealed bids, labeled, addressed, and delivered to:

Bridgeport Public Utility District
BPUD ARSENIC REMOVAL PROJECT
Mailing Address: P.O. Box 473 or Physical Address: 233 Twin Lakes Road
Bridgeport, CA 93517

Bids must be received prior to **1:00 p.m. on Tuesday May 2, 2017**. Bids will be subsequently opened and read aloud publicly in the BPUD main office at 233 Twin Lakes Road.

The Work required of the Arsenic Removal System (ARS) Supplier generally includes supplying a complete ARS utilizing the adsorption process necessary to achieve target water quality standards, performing a successful pilot test, startup and commissioning of the on-site ARS. The ARS includes, but is not limited to, a complete, pre-fabricated system, containing a sufficient number of adsorption vessels to treat up to peak daily flows with the largest vessel out of service, all necessary system piping, joints and fittings, valves, in-line flow meters, PLC-based control panel, as well as ancillary equipment, related testing, start-up, commissioning, and training services. The Engineer's Estimate of Probable Costs is $470,000.

A non-mandatory pre-bid conference will be held at 11:00 a.m. Tuesday, April 11, 2017 at the BPUD main office with a site tour of the project area to follow. The Contract Documents will be available on March 27, 2017, and may be examined at the following locations:

- ISSUING OFFICE:
  R.O. Anderson Engineering, Inc.
  1603 Esmeralda Ave, Minden, Nevada 89423
  (775) 782-2322
- http://www.roanderson.com/bid-documents/
- Various plan rooms

Upon request, hard copies may be purchased from the issuing office for the non-refundable fee of $100.

Questions regarding this project shall be directed to Sue McReavy, P.E. Contractors may register their intent to submit a bid by sending an email to smcreavy@roanderson.com - SUBJECT LINE: BPUD Arsenic Removal Project. Registration as a prospective Bidder of record is necessary to receive notifications via email.

INSTRUCTIONS TO BIDDERS

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by

AMERICAN COUNCIL OF ENGINEERING COMPANIES

_____

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2300 Wilson Boulevard, Suite 400, Arlington, VA 22201-3308
(703) 548-3118
www.agc.org

INSTRUCTIONS TO BIDDERS

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ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary 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 where the bidding procedures are to be administered. R.O. Anderson Engineering, Inc., 1603 Esmeralda Avenue, Minden, Nevada, 89423.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents in the number and for the ~~deposit sum~~, non-refundable cost, if any, stated in the advertisement or invitation to bid may be obtained from the Issuing Office. ~~The deposit will be refunded to each document holder of record who returns a complete set of Bidding Documents in good condition within 30 days after opening of Bids~~.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, ~~within 7 days of Owner's request~~, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and such other data as may be called for below, with the completed Bid Form.

A. ~~Evidence of Bidder's authority to do business in the state where the Project is located~~.

B. ~~Bidder's state contractor license number, if applicable~~.

C. Bidder qualification form, AGC document No. 220

3.02 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

4.01 *Subsurface and Physical Conditions*

A. The Supplementary Conditions identify:

1. Those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site.

2. Those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. Copies of reports and drawings referenced in Paragraph 4.01.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions has been identified and established in Paragraph 4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in

4.02 *Underground Facilities*

A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others. Owner and Engineer do not assume responsibility for the accuracy or completeness thereof unless it is otherwise expressly provided in the Supplementary Conditions.

4.03 *Hazardous Environmental Condition*

A. The Supplementary Conditions identify any reports and drawings known to Owner relating to a Hazardous Environmental Condition identified at the Site.

B. Copies of reports and drawings referenced in Paragraph 4.03.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established in Paragraph 4.06 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 4.06 of the General Conditions.

4.05 On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

4.06 A. Reference is made to Article 7 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, Owner will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.

B. Paragraph 6.13.C of the General Conditions indicates that if an Owner safety program exists, it will be noted in the Supplementary Conditions.

4.07 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and the other related data identified in the Bidding Documents;

B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;

D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in Paragraph 4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in the Paragraph 4.06 of the Supplementary Conditions as containing reliable "technical data";

E. consider the information known to Bidder; 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 Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder’s safety precautions and programs;

F. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work

at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and

I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 5 – PRE-BID CONFERENCE

5.01 A pre-Bid conference will be held at 11:00 a.m. local time on Tuesday, April 11, 2017 at Bridgeport P.U.D. office, 233 Twin Lakes Road, Bridgeport, California, with site tour to follow. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are NOT required to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 6 – SITE AND OTHER AREAS

6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than ten days

prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

ARTICLE 8 – BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of ~~10%~~ 5% percent of Bidder's maximum Bid price and in the form of a certified check, bank money order, or a Bid bond (on the form attached) issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions.

8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents 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. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Agreement or 61 days after the Bid opening, whereupon Bid security

8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within ~~seven~~14 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 substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or "or-equal" items. Whenever it is specified or described in the Bidding Documents that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS AND OTHERS

12.01 Each Bidder must submit a completed List of Subcontractors, and List of Suppliers, on the forms furnished, with the completed Bid Form. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, in which case apparent Successful Bidder shall submit an acceptable 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.

12.02 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, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity 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 revocation of such acceptance after the Effective Date of the Agreement as provided in Paragraph 6.06 of the General Conditions.

12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents. Additional copies may be obtained from Engineer.

13.02 All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each Bid item, alternative, and unit price item listed therein. In the case of optional alternatives the words "No Bid," "No Change," or "Not Applicable" may be entered.

13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.

13.04 A Bid by a partnership shall 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. The official address of the partnership shall be shown.

13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

13.06 A Bid by an individual shall show the Bidder's name and official address.

13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.

13.08 All names shall be printed in ink below the signatures.

13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.10 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. ~~Bidder's state contractor license number, if any, shall also be shown on the Bid Form.~~

ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS

14.01 ~~*Lump Sum*~~ *Unit Price*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.

B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of 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.

14.02 ~~*Allowances*~~

~~A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 11.02.B of the General Conditions.~~

14.03 ~~*Completion Time Comparisons*~~

~~A. Bid prices will be compared after adjusting for differences in the time designated by Bidders for Substantial Completion. The adjusting amount will be determined at the rate set forth in the Contract Documents for liquidated damages for failing to achieve Substantial Completion for each day before or after the desired date appearing in Article 9 above.~~

ARTICLE 15 – SUBMITTAL OF BID

15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the following documents:

A. Completed Unit Price Bid Schedule

B. List of Proposed Subcontractors.

C. List of Proposed Suppliers

D. List of Project References

E. Evidence of authority to do business in Mono County California or covenant to do so prior to award.

F. Bidder qualification form, AGC document No. 220

G. Comparison of bid form

15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked package with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to the Issuing Office.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be modified or 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.

16.02 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, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

17.01 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. 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.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All 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 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.03 In evaluating Bids, Owner will consider whether or not 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.

19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.

19.06 If the Contract is to be awarded, Owner will award the Contract to the ~~lowest~~, responsive, responsible Bidder whose ~~Bid~~ 30-year life cycle cost/ comparison of bid total is lowest, when evaluated by the Owner, indicates that the award is in the best interests of the Project.

ARTICLE 20 – CONTRACT SECURITY AND INSURANCE

20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement along with the other Contract Documents which are identified in the Agreement as attached thereto. Within 15 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within ten days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 22 – SALES TAX

22.01 The successful bidder shall pay Mono County California Sales tax on all materials and equipment to be incorporated in the work. ~~Owner is exempt from California state sales taxes on materials and equipment to be incorporated in the Work (Exemption No. (to be furnished prior to notice of award)). Said taxes shall not be included in the Bid. Refer to Paragraph 6.10 of the Supplementary Conditions for additional information.~~

ARTICLE 23 – APPEAL BY BIDDERS

23.01 Any Bidder may appeal a pending bid award prior to award by Owner. The appellant must:

A. Submit a written protest to the Engineer within 5 workdays after the bid opening.

B. Describe, in the written protest, the issues to be addressed on appeal.

C. Post, with the written protest, a bond with a surety meeting the requirements of Supplementary Condition SC 5.02 authorized to do business in this state or submit other security in a form approved by Owner who will hold the bond or security until a determination is made on the appeal.

D. Post the bond or other security in the amount of 25% of the total dollar value of the appellant's bid, up to a maximum bond or other security amount of $250,000.00.

E. Not seek any type of judicial intervention until Owner has rendered its final decision on the protest.

23.02 Owner will stay award actions until after Engineer has responded in writing to the protest. If the appellant is not satisfied with the response, the appellant may then protest to the Bridgeport Public Utility District Board of Directors, who will render a final decision for the Owner. No bid protests will be heard by the Board of Directors unless Bidder has followed the appeal process.

23.03 If an appeal is granted, the full amount of the posted bond or security will be returned to the appellant. If the appeal is denied or not upheld, a claim may be made against the bond for expenses suffered by Owner because of the unsuccessful appeal.

23.04 Owner is not liable for any costs, expenses, attorney's fees, loss of income, or other damages sustained by the appellant in a bid process.

Unit Price Bid Schedule

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
ARSENIC REMOVAL SYSTEM					
1	Pilot Study, complete with all fittings, valves, connections, vessels and media necessary to demonstrate advertised efficacy with source water quality. Includes calculations verifying similitude of pilot study system size to full size system. This item also includes providing a detailed 20 year life cycle cost analysis, including media replacement, O&M costs, capital costs, disposal costs, etc.	1	LS		
2	Supply new full size, complete Arsenic Removal System. Includes all costs associated with shipping, FOB delivery, startup and training assistance, O&M manuals, all fittings, valves, connections, vessels, media, and accessories necessary to provide a complete, functional, and fully operational Arsenic removal system. Includes system warranty and site visits.	1	LS		

Bid Amount

Contractor:

COMPARISON OF BID FORM
Bridgeport Public Utility District
Arsenic Removal System Purchase Contract
Calculation of 30-Year Life Cycle Costs for Comparison of Bids

Line #	Proposed Treatment System Design Parameters		Instructions
1	Number of Vestles		Input value
2	Cubic Feet of Media per Vestle		Input value
3	Vestle Configuration (# of treatment trains/vestles per treatment train)		Input value
4	Design Flow with All Treatment Trains in Service (650 gpm minimum)		Input value in GPM
5	Empty Bed Contact Time at Design Flow with All Treatment Trains In Service (3 minutes minimum)		Input value in minutes
6	Design Flow with OneTreatment Train Out of Service (500 gpm minimum)		Input value in GPM
7	Empty Bed Contact Time at Design Flow with One Treatment Trains Out of Service (3 minutes minimum)		Input value in minutes
8	Type of Pre Treatment (i.e. pH adjustment, hardness adjustment, additional filtration) Note: raw water will be chlorinated to 0.8 mg/L free chlorine and pass through a 5 micron filter bag prior to any Pre Treatment)	Describe pre treatment method:	
9	Pre Treatment Dosage for Twin Lakes Well Water (gallons/gallon)		Input value in gallons of pre treatment per gallon of water
10	Pre Treatment Dosage for Cain Well Water (gallons/gallon)		Input value in gallons of pre treatment per gallon of water
11	Type of Post Treatment (i.e. pH adjustment, filtration)	Describe post treatment method:	
12	Post Treatment Dosage for Twin Lakes Well Water (gallons/gallon)		Input value in gallons of post treatment per gallon of water
13	Post Treatment Dosage for Cain Well Water (gallons/gallon)		Input value in gallons of post treatment per gallon of water
14	Frequency of Back Flushing (gallons treated per vestle between backflushes)		Input value in gallons
15	Volume of backflush (gallons per backflush per vestle)		Input value in gallons
16	Maximum Headloss Across Treatment (psi) (must be 15 or less)		Input value in psi
17	Average Headloss Across Treatment (psi)		Input value in psi

Line #	Proposed Treatment System Design Parameters		Instructions
18	Asserted Life of Media with Twin Lakes Well Median Water Quality (gallons/cubic foot of media) to 8µg/L total arsenic in discharge.		Input value in gallons per cubic foot of media
19	Asserted Life of Media with Cain Well Well Median Water Quality (gallons/cubic foot of media) to 8µg/L total arsenic in discharge.		Input value in gallons per cubic foot of media
20	Gallons of Twin Lakes Well Water Treated per Year	12,500,000	Predefined
21	Gallons of Cain Well Water Treated per Year	74,800,000	Predefined
22	Media Changes per Year		Step 1) Divide Line 20 by Line 18 Step 2) Divide Line 21 by Line 19 Step 3) Add result from (Step 1) to result from (Step 2) Step 4) Multiply Line 1 by Line 2 Step 5) Divide result from (Step 3) by result from (Step 4) Step 6) Input value from (Step 5)
23	Current Cost of Media ($/cubic foot delivered) (in quantities for a complete media change)	$	Input value in $ per cubic foot of media delivered
24	Estimated Cost of Complete Media Change with Disposal of Old Media (not including the cost of the new media) (i.e. labor, equipment, and disposal)	$	Input value in $
25	Total Cost of Media Changes Per Year	$	Step 1) Multiply Line 24 by Line 22 Step 2) Multiply Lines 1, 2, 22, and 23 together Step 3) Add result from (Step 1) to result from (Step 2) Step 4) Input value from (Step 3)
26	Current Cost of Pre-Treatment Chemicals ($/gallon delivered) (in quantities of a 3 month supply)	$	Input value in $
27	Total Cost of Pre-Treatment Chemicals Per Year	$	Step 1) Multiply Line 20 by Line 9 Step 2) Multiply Line 21 by Line 10 Step 3) Add result from (Step 1) to result from (Step 2) Step 4) Multiply result from (Step 3) by Line 26 Step 5) Input value from (Step 4)
28	Current Cost of Post-Treatment Chemicals ($/gallon delivered) (in quantities of a 3 month supply)	$	Input value in $
29	Total Cost of Post-Treatment Chemicals Per Year	$	Step 1) Multiply Line 20 by Line 12 Step 2) Multiply Line 21 by Line 13 Step 3) Add result from (Step 1) to result from (Step 2) Step 4) Multiply result from (Step 3) by Line 28 Step 5) Input value from (Step 4)
30	Estimated Operator Time (hours per year)		Input value in hours
31	Cost of Operator Time ($ per year assuming $40 per hour)	$	Multiply Line 30 by $40/hr and input resulting value

Line #	Proposed Treatment System Design Parameters		Instructions
32	Annual Maintenance (1% of Arsenic Removal System Bid Amount)	$	Multiply Line 36 by 0.01 and input resulting value
33	**Total Annual Operation and Maintenance Cost**	**$**	Add Lines 32, 31, 29, 27, and 25 together and input resulting value
34	Present Value of 30-Years of Operation and Maintenance Costs at 1.4% Real Interest Rate	$	Multiply Line 33 by 24.35975 and input resulting value
35	Pilot Study Bid Amount	$	Input value in $
36	Complete Arsenic Removal System Bid Amount	$	Input value in $
37	**30-Year Life Cycle Cost**	**$**	Add Lines 36, 35, and 34 together and input resulting value

Comparison of Bid Total in Words: _____

_____

_____

Bidder: _____

COMPARISON OF BID FORM
Bridgeport Public Utility District
Arsenic Removal System Purchase Contract
Calculation of 30-Year Life Cycle Costs for Comparison of Bids
(EXAMPLE)

Line #	Proposed Treatment System Design Parameters		Instructions
1	Number of Vestles	3	Input value
2	Cubic Feet of Media per Vestle	150	Input value
3	Vestle Configuration (# of treatment trains/vestles per treatment train)	3/1	Input value
4	Design Flow with All Treatment Trains in Service (650 gpm minimum)	750	Input value in GPM
5	Empty Bed Contact Time at Design Flow with All Treatment Trains In Service (3 minutes minimum)	4.5	Input value in minutes
6	Design Flow with OneTreatment Train Out of Service (500 gpm minimum)	500	Input value in GPM
7	Empty Bed Contact Time at Design Flow with One Treatment Trains Out of Service (3 minutes minimum)	4.5	Input value in minutes
8	Type of Pre Treatment (i.e. pH adjustment, hardness adjustment, additional filtration) Note: raw water will be chlorinated to 0.8 mg/L free chlorine and pass through a 5 micron filter bag prior to any Pre Treatment)	Describe pre treatment method: pH adjustment to 5.7 using 78% sulfuric acid	
9	Pre Treatment Dosage for Twin Lakes Well Water (gallons/gallon)	0.0000015	Input value in gallons of pre treatment per gallon of water
10	Pre Treatment Dosage for Cain Well Water (gallons/gallon)	0.0000018	Input value in gallons of pre treatment per gallon of water
11	Type of Post Treatment (i.e. pH adjustment, filtration)	Describe post treatment method: pH adjustment to 7.4 using 50% sodium hydroxide	
12	Post Treatment Dosage for Twin Lakes Well Water (gallons/gallon)	0.000001	Input value in gallons of post treatment per gallon of water
13	Post Treatment Dosage for Cain Well Water (gallons/gallon)	0.000001	Input value in gallons of post treatment per gallon of water
14	Frequency of Back Flushing (gallons treated per vestle between backflushes)	400,000	Input value in gallons
15	Volume of backflush (gallons per backflush per vestle)	500	Input value in gallons
16	Maximum Headloss Across Treatment (psi) (must be 15 or less)	14	Input value in psi
17	Average Headloss Across Treatment (psi)	8	Input value in psi

Line #	Proposed Treatment System Design Parameters		Instructions
18	Asserted Life of Media with Twin Lakes Well Median Water Quality (gallons/cubic foot of media) to 8µg/L total arsenic in discharge.	230,000	Input value in gallons per cubic foot of media
19	Asserted Life of Media with Cain Well Well Median Water Quality (gallons/cubic foot of media) to 8µg/L total arsenic in discharge.	250,000	Input value in gallons per cubic foot of media
20	Gallons of Twin Lakes Well Water Treated per Year	12,500,000	Predefined
21	Gallons of Cain Well Water Treated per Year	74,800,000	Predefined
22	Media Changes per Year	0.786	Step 1) Divide Line 20 by Line 18 Step 2) Divide Line 21 by Line 19 Step 3) Add result from (Step 1) to result from (Step 2) Step 4) Multiply Line 1 by Line 2 Step 5) Divide result from (Step 3) by result from (Step 4) Step 6) Input value from (Step 5)
23	Current Cost of Media ($/cubic foot delivered) (in quantities for a complete media change)	$ 300	Input value in $ per cubic foot of media delivered
24	Estimated Cost of Complete Media Change with Disposal of Old Media (not including the cost of the new media) (i.e. labor, equipment, and disposal)	$ 2500	Input value in $
25	Total Cost of Media Changes Per Year	$ 108,029	Step 1) Multiply Line 24 by Line 22 Step 2) Multiply Lines 1, 2, 22, and 23 together Step 3) Add result from (Step 1) to result from (Step 2) Step 4) Input value from (Step 3)
26	Current Cost of Pre-Treatment Chemicals ($/gallon delivered) (in quantities of a 3 month supply)	$ 5.25	Input value in $
27	Total Cost of Pre-Treatment Chemicals Per Year	$ 805	Step 1) Multiply Line 20 by Line 9 Step 2) Multiply Line 21 by Line 10 Step 3) Add result from (Step 1) to result from (Step 2) Step 4) Multiply result from (Step 3) by Line 26 Step 5) Input value from (Step 4)
28	Current Cost of Post-Treatment Chemicals ($/gallon delivered) (in quantities of a 3 month supply)	$ 4	Input value in $
29	Total Cost of Post-Treatment Chemicals Per Year	$ 349	Step 1) Multiply Line 20 by Line 12 Step 2) Multiply Line 21 by Line 13 Step 3) Add result from (Step 1) to result from (Step 2) Step 4) Multiply result from (Step 3) by Line 28 Step 5) Input value from (Step 4)
30	Estimated Operator Time (hours per year)	550	Input value in hours
31	Cost of Operator Time ($ per year assuming $40 per hour)	$ 22,000	Multiply Line 30 by $40/hr and input resulting value

Line #	Proposed Treatment System Design Parameters		Instructions
32	Annual Maintenance (1% of Arsenic Removal System Bid Amount)	$ 4,000	Multiply Line 36 by 0.01 and input resulting value
33	**Total Annual Operation and Maintenance Cost**	**$ 135,183**	Add Lines 32, 31, 29, 27, and 25 together and input resulting value
34	Present Value of 30-Years of Operation and Maintenance Costs at 1.4% Real Interest Rate	$ 3,293,024	Multiply Line 33 by 24.35975 and input resulting value
35	Pilot Study Bid Amount	$ 7,000	Input value in $
36	Complete Arsenic Removal System Bid Amount	$ 400,000	Input value in $
37	**30-Year Life Cycle Cost / Comparison of Bid Total**	**$ 3,700,024**	Add Lines 36, 35, and 34 together and input resulting value

Comparison of Bid Total in Words: Three million seven hundred thousand twenty four and 00/100

Bidder: XYZ Arsenic Treatment

LIST OF PROPOSED SUPPLIERS

(to be submitted with bids)

The name and address of each supplier who will be paid at least **10 percent** of the prime supplier's total bid shall be listed below. To be deemed a responsive bid, this form must be submitted even if no suppliers are required to be listed. In that case, the bidder should state "None" (or similar language stating that no suppliers need to be listed) in the space below.

Name	**Contact Information Address & Phone #**	**Portion of Work**

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER *(Name and Address)*:

SURETY *(Name and Address of Principal Place of Business)*:

OWNER *(Name and Address)*:
Bridgeport P.U.D.
Renn Nolan, Office Manager
P.O. Box 473
Bridgeport, CA 93517

BID
Bid Due Date:
Description *(Project Name and Include Location)*: **Arsenic Removal Project - Procurement**
Twin Lakes Road, Bridgeport, California

BOND
Bond Number:
Date *(Not earlier than Bid due date)*:
Penal sum _____ $ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER	**SURETY**
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
_____	_____
Title	Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

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 shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur 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 shall 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, or

3.3 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. 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.

5. 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 shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.

6. No suit or action shall 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 one year after Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall 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 Registered or Certified Mail, return receipt requested, postage pre-paid, and shall 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. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):
Bridgeport Public Utility District
Renn Nolan, Office Manager
233 Twin Lakes Road
Bridgeport, California. 93517

CONTRACT
Effective Date of Agreement:
Amount:
Description (*Name and Location*): **Arsenic Removal Project - Procurement**
118 Twin Lakes Road, Bridgeport, California

BOND
Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL	**SURETY**
_____ (Seal)	_____ (Seal)
Contractor's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature	Signature (Attach Power of Attorney)
_____	_____
Print Name	Print Name
_____	_____
Title	Title
Attest: _____	Attest: _____
Signature	Signature
_____	_____
Title	Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

1. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 2.1.

2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
   2.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor, and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
   2.2 Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 2.1; and
   2.3 Owner has agreed to pay the Balance of the Contract Price to:
      1. Surety in accordance with the terms of the Contract; or
      2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.

3. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:

   3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
   3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
   3.3 Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
   3.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
      1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
      2. Deny liability in whole or in part and notify Owner citing reasons therefor.

4. If Surety does not proceed as provided in Paragraph 3 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 3.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

5. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 3.1, 3.2, or 3.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To the limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
5.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and
5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

6. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

7. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

8. Any proceeding, legal or equitable, under this 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 shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after 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 period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

9. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

10. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

11. Definitions.

11.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.
11.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
11.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address and Telephone*)
Surety Agency or Broker:
Owner's Representative (*Engineer or other party*): Engineer

BRIDGEPORT PUBLIC UTILITY DISTRICT – ARSENIC REMOVAL PROJECT

ARSENIC REMOVAL SYSTEM PROCUREMENT CONTRACT

GENERAL PROVISIONS

1. **PROJECT SPECIFICATIONS**: The Bidder/Contractor shall not take advantage of any apparent error or omission in the Specifications. In the event the Contractor discovers such an error or omission, he shall immediately notify the Engineer. The Engineer will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the Specifications.

2. **PUBLIC RECORDS**: The BID document and all bids submitted in response thereto are public records. You are cautioned to not put any material into the bid that is proprietary in nature. All bids submitted become the property of the District.

3. **PERFORMANCE OF WORK**: The selected firm shall perform all work as may be necessary to complete the contract in a satisfactory and acceptable manner, and unless otherwise provided, shall furnish all transportation, materials, equipment, labor and incidentals necessary to complete the project.

4. **FORM OF CONTRACT**: Execution of the agreement similar to the attached (Sample) agreement by all named parties and issuance of a Purchase Order will authorize delivery of services obtained under this bid.

5. **LABELING OF BIDS**: All bids must be submitted in a sealed envelope plainly marked, ARSENIC REMOVAL SYSTEM PURCHASE CONTRACT with address of the firm in the upper left corner. No responsibility will attach to the District, any official or employee thereof, for the pre-opening, post-opening, or failure to open, a bid not properly addressed and identified.

6. **EXPLANATION TO BIDDERS**: Any explanations desired by BIDDERS regarding the meaning or interpretation of specifications must be requested in writing and with sufficient time allowed for a reply to reach them before submission of their BIDS. Oral explanations given before the award of the contract will not be binding. Any written interpretation made will be furnished to all bidders and its receipt by the BIDDER will be acknowledged.

    a. Interpretation of the meaning of the plans, specifications or other pre-bid documents will not be binding if presented to any BIDDER orally. Every request for such interpretation should be in writing addressed to Sue McReavy, P.E., smcreavy@roanderson.com or ATTN: Sue McReavy, P.E., R.O. Anderson Engineering, Inc. P.O. Box 2229, Minden, NV 89423. Preferable method is via e-mail. Any and all such interpretations and any supplemental instructions deemed necessary will be in the form of written addenda to the specifications which, if issued, will be mailed to all known perspective BIDDERS. Failure of any BIDDER to receive any such addendum or interpretation shall not relieve such BIDDER from any obligation under this proposal as submitted. All addenda so issued shall become part of the Contract Documents.

7. **BIDDER'S UNDERSTANDING**: At the time of the opening of bids, each Bidder will be required to have considered all pertinent licensing, laws and regulations, and to have read and to be thoroughly familiar with the Bidding Documents (including all addenda). The failure or omission of any BIDDER to examine any form, instrument or document shall in no way relieve any BIDDER from any obligation in respect of his bid.

8. **PREPARATION OF BIDS**: Bids must be prepared on the bid forms provided herein. Bidders may request withdrawal of a posted sealed bid prior to the bid opening time provided the request is made to the Engineer and the Engineer receives the request in time to prevent the opening of the bid. No bid may be withdrawn for a period of sixty days after the bid opening.

9. **SUBMISSION OF BIDS**: Bids shall be submitted as follows:

a. When possible, each bid must be submitted in a sealed envelope of adequate size, show the BIDDER'S name and address and be marked BPUD ARSENIC REMOVAL PROJECT, ARSENIC REMOVAL SYSTEM PURCHASE CONTRACT**,** with the name of the bid, to clearly indicate its contents.

b. The sealed bid must be addressed to the Bridgeport Public Utility District, 233 Twin Lakes Road, Bridgeport, California 93517, in whose Office the bids are to be received prior to the deadline.

c. All bids shall be filled out in completion, prior to the time and at the place specified in the "Advertisement for Bid". Bids received after the time for opening of bids will be returned to the BIDDER unopened.

10. **CORRECTED BID AMOUNT**: The extended price will be calculated by multiplying the quantity by the unit price, as used in the "Description of Bid Items". If the extended price on the bid form is incorrect, it will be corrected by the District and the bidder will be notified of the correction. Unit prices will govern over total price.

11. **PRE-QUALIFICATION OF BIDDERS**: The low BIDDER may be required to file prior to award of contract, an experience questionnaire and confidential financial statement which must be a complete report of the financial resources and liabilities, equipment, past record, personnel or organization and experience.

12. **PUBLIC OPENING**: BIDS will be opened and read publicly at the time and place indicated in the "Advertisement for Bid". The BIDDERS, their authorized agents and the public are invited to be present. No responsibility will attach to any DISTRICT official for the pre-opening of, or the failure to open, a bid not properly addressed or identified.

13. **DETERMINATION OF TOTAL FOR COMPARISON OF BIDS:** Each Bidder must complete the Comparison of Bid Form that approximates the 30-year life cycle cost of the Bidder's Proposal. The Low Bidder will be determined based upon the comparison of bids total. In the event of a discrepancy between the prices and quantities entered and the total extended figure, the prices and quantities shall govern. The Bidders may be required to substantiate the prices and quantities entered into the Comparison of Bid Form. In the event of such a request the Bidder shall within 7 days provide the required substantiation to the satisfaction of the owner or the Bid will be rejected as non-responsive. The right is reserved to reject any or all bids to waive technicalities, to advertise for new bids, or to proceed to do the work otherwise, if in the judgment of the District it is in their best interest to do so.

14. **ADDENDA INTERPRETATIONS**: If it becomes necessary to revise any part of this BID, a written addendum will be provided. The District is not bound by any oral clarifications changing the scope of work for this project. The Addenda must be acknowledged and returned in the Bid document.

15. **AWARD OF CONTRACT**: The award of contract, if awarded, will be based on the TOTAL price for Bid Items and will be awarded to the BIDDER that has the lowest Comparison of Bids Total whose bid complies with all the requirements. The award, if made, will be within sixty (60) days

after opening bids. The successful BIDDER will be notified, by letter mailed to the address shown on his offer, that his bid has been accepted.

a. Upon completion of an executed contract the District will issue a Purchase Order that will authorize the successful BIDDER to furnish, deliver, perform, install and invoice for the Pilot Study items and services specified in this bid.

b. Upon completion of the Pilot Study the Bidder shall revise the Comparison of Bids Form with values that come from the pilot study. If the new total decreases, remains the same or increases by less than 5% the Bidder will be issued a Purchase Order to supply Item 2 on the Bid schedule, supply the full size complete arsenic removal system, and be paid for Item 1 on the Bid Schedule. If the new total increases by 5% or more the Pilot Study will be rejected as defective, the Bidder will not be paid for the Pilot Study Purchase Order and the contract will be canceled.

c. A responsive bid must conform in all respects to the conditions of the "Advertisement for Bid", and to these "General Provisions", and the qualifications listed within the Specifications. To be considered responsible, a BIDDER must establish, to the satisfaction of the District, as a minimum, that he has (a) adequate financial resources to meet the contract obligations and will maintain same for the Contract period; and (b) satisfactory past performance and the necessary experience and technical qualifications in the type of work provided in the Plans and Specifications.

16. **BID PROTESTS:** Any individual or company who submits a BID on the contract may file a notice of protest regarding the award of the contract. The protest must be submitted in writing to the District within five (5) business days after the date on which BIDS were opened. The written protest must include a statement setting forth, with specificity, the reasons the person filing the protest believes that applicable provisions of the contract documents or law were violated. At the time a notice of protest is filed, the person filing such notice of protest shall post a bond with a good and solvent surety authorized to do business in the State of California and supply it to the District. The bond posted must be in an amount equal to the lesser of: twenty-five (25) percent of the total value of the BID submitted by the person filing the notice of protest; or two hundred fifty thousand dollars ($250,000).

A notice of protest filed in accordance with this section shall operate as a stay of action in relation to the award of the contract until a determination is made by the District's Board of Trustees. A person who makes an unsuccessful BID may not seek any type of judicial intervention until after the District's Board of Trustees has made a determination on the notice of protest and awarded the contract. Neither the District nor any authorized representative of the District is liable for any costs, expenses, Attorney's fees, loss of income or other damages sustained by a person who submits a BID, whether or not the person files a notice of protest pursuant to this section.

17. **ASSIGNMENT OF CONTRACTUAL RIGHTS**: It is agreed that this contract must not be assigned, transferred, conveyed, or otherwise disposed of by either party in any manner, unless approved in writing by the other party. The firm or firms will be an independent contractor for all purposes and no agency, either expressed or implied, exists.

18. **LICENSES**: All BIDDERS must have appropriate licenses in accordance with the laws of the State of California, and the County of Mono, California ***prior*** to providing materials or services.

19. **CONTRACT TIMES**: All time limits for Milestones and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

a. This AGREEMENT commences after it is approved by the DISTRICT and the contract is executed.

b. Bid Item 1, the Pilot Study shall be complete within 90 days of execution of this AGREEMENT.

c. Bid Item 2, full size Arsenic Removal System, shall be complete by March 15, 2018. The equipment shall be ready for delivery to the site sufficiently in advance of this date to allow for installation by others and completion of all tasks included in Bid Item 2 (startup, training, etc.). The actual delivery date shall be coordinated with the Owner through the Engineer based on progress of site work being constructed by others. Owner makes no guarantee, expressly or implied, as to the actual delivery date.

d. Contractor and Owner recognize that time is of the essence as stated above and that Owner will suffer financial loss if the Work is not completed within the times specified above, or any proper extension thereof granted by Owner in accordance with these contract documents. 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 if Contractor shall neglect, refuse, or fail to complete any efforts specified in this contract within the times stated herein, as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner $500 for each day that expires after the times specified above until all Work specified in this contract is completed and ready for final payment.

20. **INSURANCE**: The Successful Bidder shall furnish to the District a policy or certificate of insurance in which the District shall be the named insured or be named in such insurance as an additional insured. In compliance with this provision, the Successful Bidder may file with the District a satisfactory policy providing a minimum $1,000,000 "blanket coverage" policy or certificate of insurance. The policy shall insure the District and its officers and employees while acting within the scope of their duties against all claims arising out of or in connection with the work to be performed and shall remain in full force and effect until the work is accepted by the District. The policy shall provide the following minimum limits:

GENERAL LIABILITY	
Bodily Injury	$ 1,000,000 each person
	$ 1,000,000 each accident
Property Damage	$ 1,000,000 each accident
Combined single limit of	$ 1,000,000
Aggregate of	$ 2,000,000

Such insurance shall include the specific coverage set out herein and be written for not less than the limits of liability and coverage provided herein, or required by law and other governing agencies, whichever is greater.

Such policy shall provide coverage at least as broad as that provided in the Standard Form approved by the National Bureau of Casualty Underwriters together with such endorsements as are required to cover the risks involved. In addition, the Successful Bidder shall furnish evidence of a commitment by the insurance company to notify the District by registered mail of the expiration or cancellation of the insurance policies required not less than 30 days before the expiration or cancellation is effective. The cost of this insurance shall be deemed included in the prices for the various items of work and no additional compensation will be made therefore.

21. **WORKER'S COMPENSATION INSURANCE**: The Successful Bidder shall secure, maintain in full force and effect and bear the cost of complete Worker's Compensation Insurance in accordance with the California requirements and shall furnish the District, prior to the execution of the contract, a Certificate of Insurance which meets the requirements of the State of California. The District or any of its officers or employees will not be responsible for any claims or suits in law or equity occasioned by the failure of the Successful Bidder to comply with the provisions of this paragraph.

22. **INDEMNITY**: The successful BIDDER agrees to indemnify and hold the District harmless from any and all causes of action or claims arising out of or related to the successful Bidder's performance on this project.

23. **PROVISIONS PROVIDED BY LAW**: Each and every provision and clause required by law to be inserted in the contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract forthwith shall be physically amended to make such insertion or correction.

The BIDDER'S attention is directed to the fact that all applicable District, County, State and Federal laws, and the rules and regulations of all authorities having jurisdiction over the project shall apply to the contract throughout and they will be deemed to be included in the contract the same as though herein written out in full.

24. **AMERICAN IRON AND STEEL**: The Contractor acknowledges to and for the benefit of the Owner and the State of California (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State

by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

A copy of the "American Iron and Steel (AIS)" guidance memorandum for projects utilizing State Revolving Fund funds is included herein as an Exhibit. The AIS clause is incorporated in its entirety by this reference.

25. **CANCELLATION OF CONTRACT**: The DISTRICT reserves the right to cancel the award or execution of any contract at any time before the Purchase Order has been issued without any liability or claims thereof against the DISTRICT. The District has the right to terminate any contract based on non-compliance by the awarded vendor with a 30-day written notice.

26. **TAXES**: The District is exempt from State, Retail and Federal Excise Tax. The proposal price shall be net, exclusive of taxes.

27. **EXCEPTIONS**: No exceptions to the specifications will be considered.

28. **DEFAULT**: The District may declare the Contractor in default if the Contractor: a) fails to begin the work under this contract within the time specified, b) fails to perform the work with sufficient workmen and equipment or with sufficient materials to insure the completion of said work within the specified time c) performs the work in an unsatisfactory manner d) willfully neglects or refuses to remove materials e) becomes insolvent or be declares bankruptcy f) commits any act of bankruptcy or insolvency g) fails to complete the work in an acceptable manner, or h) fails to comply with any other material term of this Contract. The Purchasing/Contracts/Risk Manager shall give notice in writing to the Contractor of such failure, delay, neglect, refusal, or default, specifying the same. The District may declare the Contractor in default entitling the District to any and all remedies at law or equity, including permitting the District to take over the work, including any or all materials and equipment on the ground as may be suitable and acceptable to the District. The District reserve the option to complete the work own its own, enter into a new contract for the completion of the work, or use such other methods for the completion of the work in an acceptable manner.

All costs and charges incurred by the District, together with the cost of completing the work, shall be deducted from any amount due or which may become due on this contract. If the expense incurred by the District exceeds the sum that would have been payable under this contract, the Contractor will be liable to the District for the amount of such excess.

29. **FUNDING**: This Contract is expected to be funded through the California State Water Resources Control Board Division of Drinking Water (DDW) with funds provided by the California Drinking Water State Revolving Fund (DWSRF). Neither DDW, nor any of its departments, entities, or employees is a party to this Contract.

30. **CONTRACT APPROVAL**: Concurrence by DDW in the award of the Contract is required before the Contract is effective.

31. **CONFLICT OF INTEREST**: Contractor may not knowingly contract with a supplier or manufacturer if the individual or entity who prepared the plans and specifications has a corporate

or financial affiliation with the supplier or manufacturer. Owner's officers, employees, or agents shall not engage in the award or administration of this Contract if a conflict of interest, real or apparent, would be involved. Such a conflict would arise when: (i) the employee, officer or agent; (ii) any member of their immediate family; (iii) their partner or (iv) an organization that employs, or is about to employ, any of the above, has a financial interest in Contractor. Owner's officers, employees, or agents shall neither solicit nor accept gratuities, favors or anything of monetary value from Contractor or subcontractors.

32. **GRATUITIES**: If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or DDW in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract.

In the event this Contract is terminated as provided in Paragraph 18.04.A, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

33. **RESTRICTIONS ON LOBBYING**: Contractor and each subcontractor shall comply with Restrictions on Lobbying (Public Law 101-121, Section 319) as supplemented by applicable State regulations, and Contractor shall also comply with all requirements of Title 40 CFR Part 34 "New Lobbying Requirements". This Law applies to the recipients of contracts and subcontracts that exceed $100,000 at any tier under a Federal loan that exceeds $150,000 or a Federal grant that exceeds $100,000. If applicable, Contractor must complete a certification form on lobbying activities related to a specific Federal loan or grant that is a funding source for this Contract. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Certifications and disclosures are forwarded from tier to tier up to Owner. Necessary certification and disclosure forms shall be provided by Owner.

34. **ENVIRONMENTAL REQUIREMENTS**: In addition to complying with other environmental requirements and constraints described elsewhere in the Contract Documents, Contractor shall comply with the following environmental constraints:

a. Wetlands- When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert wetlands.

b. Floodplains- When disposing of excess, spoil, or other construction materials on public or private property, Contractor shall not fill in or otherwise convert 100 year floodplain

areas delineated on the latest Federal Emergency Management Agency Floodplain maps, or other appropriate maps, i.e., alluvial soils on NRCS Soil Survey maps.

c. Historic Preservation- Any excavation by Contractor that uncovers an historical or archaeological artifact shall be immediately reported to Engineer, Owner, and the State Water Resources Control Board. Construction shall be temporarily halted pending the notification process and further direction issued by Engineer after consultation with the State Historic Preservation Officer (SHPO).

d. Endangered Species- Contractor shall comply with the Endangered Species Act, which provides for protection of endangered and/or threatened species and critical habitat. Should any evidence of the presence of endangered and/or threatened species or their critical habitat be brought to the attention of Contractor, Contractor will immediately report this evidence to Engineer, Owner, and the State Water Resources Control Board. Construction shall be temporarily halted pending notification process and further directions issued by Engineer after consultation with the U.S. Fish and Wildlife Service.

35. **EQUAL EMPLOYMENT OPPORTUNITY**: Attention of BIDDERS is particularly called to the requirement for insuring that employees and applicants for employment are not discriminated against because of their race, religion, sex, or national origin. The contractor will be required to take affirmative action to ensure that employees and applicants for employment are not discriminated against.

a. During the performance of this Contract, Contractors and its Subcontractors shall not unlawfully discriminate, harass, or allow harassment against any employee or applicant for employment because of sex, race, color, ancestry, religious creed, national origin, sexual orientation, physical disability (including HIV and AIDS), mental disability, medical condition (cancer), age (over 40), marital status, and denial of family care leave.

b. Contractor and its Subcontractors shall insure that the evaluation and treatment of their employees and applicants for employment are free from such discrimination and harassment.

c. Contractors and Subcontractors shall comply with the provisions of the Fair Employment and Housing Act (Gov. Code §12990 (a-f) et seq.) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 11000 et seq.). The applicable regulations of the Fair Employment and Housing Commission implementing Government Code Section 12990 (a-f), set forth in Chapter 5 of Division 4 of Title 2 of the California Code of Regulations are incorporated into this Contract by reference and made a part hereof as if set forth in full.

d. Contractor and Subcontractors shall give written notice of their obligations under this paragraph to labor organizations with which they have a collective bargaining or other agreement.

e. Contractor shall include the nondiscrimination and compliance provisions of this clause in all subcontracts to perform work under this Contract.

36. **DISADVANTAGED BUSINESS ENTERTPRISE (DBE) REQUIREMENTS**: Contractor shall and is required to comply with the six good faith efforts (GFE) identified by the CA SWRCB Division of

Financial Assistance to ensure that DBEs, as described in 40 CFR 33.204-33.205 or certified by EPA, have the opportunity to compete for financial assistance dollars through CA DWSRF funding. Contractor shall provide evidence of the six GFEs including a list of all noticed bidders solicited for subcontracted work, practical outreach efforts to DBEs, posting of solicitation and bids, and use of the SBA and/or Minority Business Development Agency (MBDA) of the US Department of Commerce.

37. **ADDITIONAL CALIFORNIA STATE REQUIREMENTS**: In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, Contractor or Subcontractor offers and agrees 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. Section 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time the awarding body tenders final payment to Contractor, without further acknowledgment by the parties.

a. Unless otherwise indicated in the Contract Documents, all utility lines, conduits, wires, or structures shall be maintained by Contractor and shall not be disturbed, disconnected, or damaged by Contractor during the progress of the Work, provided, that should Contractor in the performance of the Work disturb, disconnect, or damage any of the above, all expenses arising from such disturbance or in the replacement or repair thereof shall be borne by Contractor. However, Contractor may be entitled to compensation in accordance with Section 4215 of the California Government Code if any existing main or trunkline utility facilities located on the Site are not indicated in the Contract Documents with reasonable accuracy.

b. Notwithstanding any other provision of law, every contract involving the expenditure of public funds in excess of Ten thousand dollars ($10,000) entered into by any state agency, board, commission, or department or by any other public entity, including a city, county, city and county, or district, shall be subject to the examination and audit of State auditor, at the request of the public entity or as part of any audit of the public entity, for a period of three (3) years after final payment under the Contract.

c. Contractor acknowledges that, from time to time during the term of this Agreement, State may receive further guidance from the United States Environmental Protection Agency ("USEPA") which may require additional information/reporting from Supplier. Upon such guidance from USEPA, State will notify Contractor in writing. Upon notification, Contractor agrees to provide the requested information/reports to State in the time period specified. Contractor's failure to provide the requested information/report in the time specified, may be deemed by State to be a material breach of this agreement and may be treated as a default under Article A-27.

d. Contractor shall maintain current DUNS registration(s) in the Dun & Bradstreet database (http://fedgov.dnb.com/webform) at all times during which they have active federal awards funded with Drinking Water State Revolving Fund funds.

The cutoff date for any questions regarding this project is: Tuesday, April 18, 2017, AT NOON PACIFIC STANDARD TIME. Any questions beyond this cut off time will not be answered.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76, Consolidated Appropriations Act, 2014

FROM: For Andrew D. Sawyers, Director
Office of Wastewater Management (4201M)

Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

Implementation

The Act states:

Sec. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ‘‘iron and steel products’’ means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the ‘‘Administrator’’) finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out

the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

Project Coverage

1) What classes of projects are covered by the AIS requirement?

All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) Does the AIS requirement apply to nonpoint source projects or national estuary projects?

No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a 'treatment works' as defined by section 212 of the Clean Water Act.

3) Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?

Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?

The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

5) What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?

If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

6) What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

7) What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project, where the remaining phases will be funded by SRF assistance in the future?

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

8) What if a project has split funding from a non-SRF source?

Many States intend to fund projects with "split" funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A "project" consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger

project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.

9) What about refinancing?

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12)

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

Lined or unlined pipes or fittings;
Manhole Covers;
Municipal Castings (defined in more detail below);
Hydrants;
Tanks;
Flanges;
Pipe clamps and restraints;
Valves;
Structural steel (defined in more detail below);
Reinforced precast concrete; and
Construction materials (defined in more detail below).

12) What does the term 'primarily iron or steel' mean?

'Primarily iron or steel' places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does 'produced in the United States' mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the

material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of 'municipal castings'?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

Access Hatches;
Ballast Screen;
Benches (Iron or Steel);
Bollards;
Cast Bases;
Cast Iron Hinged Hatches, Square and Rectangular;
Cast Iron Riser Rings;
Catch Basin Inlet;
Cleanout/Monument Boxes;
Construction Covers and Frames;
Curb and Corner Guards;
Curb Openings;
Detectable Warning Plates;
Downspout Shoes (Boot, Inlet);
Drainage Grates, Frames and Curb Inlets;
Inlets;
Junction Boxes;
Lampposts;
Manhole Covers, Rings and Frames, Risers;

Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

20) What is 'structural steel'?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a 'construction material' for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a 'construction material' for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and

data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Compliance

25) How should an assistance recipient document compliance with the AIS requirement?

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, starting with the assistance agreement, all the way down to the purchase agreements. Sample language for assistance agreements and contracts can be found in Appendix 3 and 4.

EPA recommends the use of a step certification process, similar to one used by the Federal Highway Administration. The step certification process is a method to ensure that producers adhere to the AIS requirement and assistance recipients can verify that products comply with the AIS requirement. The process also establishes accountability and better enables States to take enforcement actions against violators.

Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer,

processor, etc) of the iron and steel products certifies that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification can be quite simple. Typically, it includes the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached, as Appendix 5, are sample certifications. These certifications should be collected and maintained by assistance recipients.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. While this type of certification may be acceptable, it may not provide the same degree of assurance. Additional documentation may be needed if the certification is lacking important information. Step certification is the best practice.

26) How should a State ensure assistance recipients are complying with the AIS requirement?

In order to ensure compliance with the AIS requirement, States SRF programs must include specific AIS contract language in the assistance agreement. Sample language for assistance agreements can be found in Appendix 3.

States should also, as a best practice, conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

27) What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?

If a potentially non-compliant product is identified, the State should notify the assistance recipient of the apparent unauthorized use of the non-domestic component, including a proposed corrective action, and should be given the opportunity to reply. If unauthorized use is confirmed, the State can take one or more of the following actions: request a waiver where appropriate; require the removal of the non-domestic item; or withhold payment for all or part of the project. Only EPA can issue waivers to authorize the use of a non-domestic item. EPA may use remedies available to it under the Clean Water Act, the Safe Drinking Water Act, and 40 CFR part 31 grant regulations, in the event of a violation of a grant term and condition.

It is recommended that the State work collaboratively with EPA to determine the appropriate corrective action, especially in cases where the State is the one who identifies the item in noncompliance or there is a disagreement with the assistance recipient.

If fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-

888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: http://www.epa.gov/oig/hotline.htm.

28) How do international trade agreements affect the implementation of the AIS requirements?

The AIS provision applies in a manner consistent with United States obligations under international agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to such agreements. In general, SRF assistance recipients are not signatories to such agreements, so these agreements have no impact on this AIS provision. In the few instances where such an agreement applies to a municipality, that municipality is under the obligation to determine its applicability and requirements and document the actions taken to comply for the State.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow States, on behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from states will be considered. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

Definitions

The following terms are critical to the interpretation and implementation of the AIS requirements and apply to the process described in this memorandum:

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

Assistance Recipient: A borrower or grantee that receives funding from a State CWSRF or DWSRF program.

Step-By-Step Waiver Process

Application by Assistance Recipient

Each local entity that receives SRF water infrastructure financial assistance is required by section 436 of the Act to use American made iron and steel products in the construction of its project. However, the recipient may request a waiver. Until a waiver is granted by EPA, the AIS requirement stands, except as noted above with respect to municipalities covered by international agreements.

The waiver process begins with the SRF assistance recipient. In order to fulfill the AIS requirement, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American made iron and steel products. It is essential that the assistance recipient include the AIS terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 3 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three conditions is met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Proper and sufficient documentation must be provided by the assistance recipient. A checklist detailing the types of information required for a waiver to be processed is attached as Appendix 1.

Additionally, it is strongly encouraged that assistance recipients hold pre-bid conferences with potential bidders. A pre-bid conference can help to identify iron and steel products needed to complete the project as described in the plans and specifications that may not be available from domestic sources. It may also identify the need to seek a waiver prior to bid, and can help inform the recipient on compliance options.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the State SRF program. It is strongly recommended that the State designate a single person for all AIS communications. The State SRF designee will review the application for the waiver and determine whether the necessary information has been included. Once the waiver application is complete, the State designee will forward the application to either of two email addresses. For CWSRF waiver requests, please send the application to: cwsrfwaiver@epa.gov. For DWSRF waiver requests, please send the application to: dwsrfwaiver@epa.gov.

Evaluation by EPA

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the State designee that a waiver request has been approved or denied as soon as such a decision has been made. Granting such a waiver is a three-step process:

1. Posting – After receiving an application for a waiver, EPA is required to publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: http://water.epa.gov/grants_funding/aisrequirement.cfm

2. Evaluation – After receiving an application for waiver of the AIS requirements, EPA Headquarters will use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.

3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program, and post the signed waiver on our website. The assistance recipient should keep a copy of the signed waiver in its project files.

Public Interest Waivers

EPA has the authority to issue public interest waivers. Evaluation of a public interest waiver request may be more complicated than that of other waiver requests so they may take more time than other waiver requests for a decision to be made. An example of a public interest waiver that might be issued could be for a community that has standardized on a particular type or manufacturer of a valve because of its performance to meet their specifications. Switching to an alternative valve may require staff to be trained on the new equipment and additional spare parts would need to be purchased and stocked, existing valves may need to be unnecessarily replaced, and portions of the system may need to be redesigned. Therefore, requiring the community to install an alternative valve would be inconsistent with public interest.

EPA also has the authority to issue a public interest waiver that covers categories of products that might apply to all projects.

EPA reserves the right to issue national waivers that may apply to particular classes of assistance recipients, particular classes of projects, or particular categories of iron or steel products. EPA may develop national or (US geographic) regional categorical waivers through the identification of similar circumstances in the detailed justifications presented to EPA in a waiver request or requests. EPA may issue a national waiver based on policy decisions regarding the public's interest or a determination that a particular item is not produced domestically in reasonably available quantities or of a sufficient quality. In such cases, EPA may determine it is necessary to issue a national waiver.

If you have any questions concerning the contents of this memorandum, you may contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at dorfman.jordan@epa.gov or (202) 564-0614 or Kiri Anderer, Environmental Engineer, Infrastructure Branch, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Attachments

Appendix 1: Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	✓	Notes
General • Waiver request includes the following information: — Description of the foreign and domestic construction materials — Unit of measure — Quantity — Price — Time of delivery or availability — Location of the construction project — Name and address of the proposed supplier — A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor		
Cost Waiver Requests • Waiver request includes the following information: — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers		
Availability Waiver Requests • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: — Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials — Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought • Has the State received other waiver requests for the materials described in this waiver request, for comparable projects?		

Appendix 2: HQ Review Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Comments
Cost Waiver Requests • Does the waiver request include the following information? — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products				
— Relevant excerpts from the bid documents used by the contractors to complete the comparison				
— A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market				
• Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%?				
Availability Waiver Requests • Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested? — Supplier information or other documentation indicating availability/delivery date for materials — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials				
• Does supporting documentation provide sufficient evidence that the contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers?				
• Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information)				
• Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? Examples include: — Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State — Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States — Correspondence with construction trade associations indicating the non-availability of the materials				
• Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits?				

Appendix 3: Example Loan Agreement Language

ALL ASSISTANCE AGREEMENT MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN SRF ASSISTANCE AGREEMENTS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE LAW:

Comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Participant understands includes, among other, requirements that all of the iron and steel products used in the Project are to be produced in the United States ("American Iron and Steel Requirement") unless (i) the Participant has requested and obtained a waiver from the Agency pertaining to the Project or (ii) the Finance Authority has otherwise advised the Participant in writing that the American Iron and Steel Requirement is not applicable to the Project.

Comply with all record keeping and reporting requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a Federal agency or the Finance Authority such as performance indicators of program deliverables, information on costs and project progress. The Participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Bonds and/or other remedial actions.

Appendix 4: Sample Construction Contract Language

ALL CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN ALL CONTRACTS IN PROJECTS THAT USE SRF FUNDS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

The Contractor acknowledges to and for the benefit of the City of _____ ("Purchaser") and the _____ (the "State") that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as "American Iron and Steel;" that requires all of the iron and steel products used in the project to be produced in the United States ("American Iron and Steel Requirement") including iron and steel products provided by the Contactor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney's fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Appendix 5: Sample Certifications

The following information is provided as a sample letter of **step** certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxxx
2. Xxxx
3. Xxxx

Such process took place at the following location:

_____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

California State Water Resources Control Board
Division of Financial Assistance
1001 I Street • Sacramento, California 95814 • (916) 341-5700 FAX (916) 341-5707
Mailing Address: P. O. Box 944212 • Sacramento, California • 94244-2120
Internet Address: http://www.waterboards.ca.gov

Guidelines for Meeting the California State Revolving Fund (CASRF) Programs (Clean Water and Drinking Water SRF) Disadvantaged Business Enterprise Requirements

The Disadvantaged Business Enterprise (DBE) Program is an outreach, education, and objectives program designed to increase the participation of DBEs in the Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) Programs.

How to Achieve the Purpose of the Program

Recipients of CWSRF/DWSRF financing that are subject to the DBE requirements (recipients) are required to seek, and are encouraged to use, DBEs for their procurement needs. Recipients should award a "fair share" of sub-agreements to DBEs. This applies to all sub-agreements for equipment, supplies, construction, and services.

The key functional components of the DBE Program are as follows:

- Fair Share Objectives
- DBE Certification
- Six Good Faith Efforts
- Contract Administration Requirements
- DBE Reporting

Disadvantaged Business Enterprises are:

- Entities owned and/or controlled by socially and economically disadvantaged individuals as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. 7601 note) (10% statute), and Public Law 102-389 (42 U.S.C. 4370d) (8% statute), respectively;
- Minority Business Enterprise (MBE) - entities that are at least 51% owned and/or controlled by a socially and economically disadvantaged individual as described by Title X of the Clean Air Act Amendments of 1990 (42 U.S.C. 7601 note), and Public Law 102-389 (42 U.S.C. 4370d), respectively;
- Women Business Enterprise (WBE) - entities that are at least 51% owned and/or controlled by women;
- Small Business Enterprise (SBE);
- Small Business in a Rural Area (SBRA);
- Labor Surplus Area Firm (LSAF); or
- Historically Underutilized Business (HUB) Zone Small Business Concern or a concern under a successor program.

Certifying DBE Firms:

Under the DBE Program, entities can no longer self-certify and contractors and sub-contractors must be certified at bid opening. Contractors and sub-contractors must provide to the CASRF recipient proof of DBE certification. Certifications will be accepted from the following:

- The U.S. Environmental Protection Agency (USEPA)
- The Small Business Administration(SBA)
- The Department of Transportation's State implemented DBE Certification Program (with U.S. citizenship)
- Tribal, State and Local governments
- Independent private organization certifications

If an entity holds one of these certifications, it is considered acceptable for establishing status under the DBE Program.

Six Good Faith Efforts (GFE)

All CWSRF/DWSRF financing recipients are required to complete and ensure that the prime contractor complies with the GFE below to ensure that DBEs have the opportunity to compete for financial assistance dollars.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practical through outreach and recruitment activities. For Tribal, State and Local Government Recipients, this will include placing DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs. Posting solicitations for bids or proposals for a minimum of 30 calendar days in a local newspaper, before the bid opening date.
3. Consider in the contracting process whether firms competing for large contracts could subcontract with DBEs.
4. Encourage contracting with a group of DBEs when a contract is too large for one firm to handle individually.
5. Use the services of the SBA **and/or** Minority Business Development Agency (MBDA) of the US Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the above steps.

The forms listed in the table below and attached to these guidelines; must be completed and submitted with the GFE:

FORM NUMBER	FORM NAME	REQUIREMENT	PROVIDED BY	COMPLETED BY	SUBMITTED TO
SWRCB Form 4500-2 or EPA Form	**DBE Sub-Contractor Participation Form**	**As Needed to Report Issues**	**Recipient**	**Sub-contractor**	**EPA DBE Coordinator**
SWRCB Form 4500-3 or EPA Form	**DBE Sub-Contractor Performance Form**	**Include with Bid or Proposal Package**	**Prime Contractor**	**Sub-Contractor**	**SWRCB by Recipient**
SWRCB Form 4500-4 or EPA Form	**DBE Sub-Contractor Utilization Form**	**Include with Bid or Proposal Package**	**Recipient**	**Prime Contractor**	**SWRCB by Recipient**

The completed forms must be submitted with each Bid or Proposal. The recipient shall review the bidder's documents closely to determine that the GFE was performed **prior** to bid or proposal opening date. Failure to complete the GFE and to substantiate completion of the GFE before the bid opening date could jeopardize CWSRF/DWSRF financing for the project. The following situations and circumstances require action as indicated:

1. If the apparent successful low bidder was rejected, a complete explanation must be provided.

2. Failure of the apparent low bidder to **perform** the GFE **prior** to bid opening constitutes a non-responsive bid. The construction contract may then be awarded to the next low, responsive, and responsible bidder that meets the requirements or the Recipient may re-advertise the project.

3. If there is a bid dispute, all disputes shall be settled **prior** to submission of the Final Budget Approval Form.

Administration Requirements

- A recipient of CWSRF/DWSRF financing must require entities receiving funds to create and maintain a Bidders List if the recipient of the financing agreement is subject to, or chooses to follow, competitive bidding requirements.
- The Bidders list must include all firms that bid or quote on prime contracts, or bid or quote on subcontracts, including both DBEs and non-DBEs.

- Information retained on the Bidder's List must include the following:
    1. Entity's name with point of contact;
    2. Entity's mailing address and telephone number;
    3. The project description on which the entity bid or quoted and when;
    4. Amount of bid/quote; and
    5. Entity's status as a DBE or non-DBE.
- The Bidders List must be kept until the recipient is no longer receiving funding under the agreement.
- The recipient shall include Bidders List as part of the Final Budget Approval Form.
- A recipient must require its prime contractor to pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the Recipient.
- A recipient must be notified in writing by its prime contractor prior to any termination of a DBE subcontractor by the prime contractor.
- If a DBE subcontractor fails to complete work under the subcontract for any reason, the recipient must require the prime contractor to employ the six GFEs if soliciting a replacement subcontractor.
- A recipient must require its prime contractor to employ the six GFEs even if the prime contractor has achieved its fair share objectives.

Reporting Requirements

For the duration of the construction contract(s), the recipient is required to submit to the State Water Resources Control Board DBE reports annually by October 10 of each fiscal year on the attached Utilization Report form (UR-334). Failure to provide this information as stipulated in the financial agreement language may be cause for withholding disbursements.

CONTACT FOR MORE INFORMATION

SWRCB, CASRF – Barbara August (916) 341-6952 barbara.august@waterboards.ca.gov

US EPA, Region 9 – Joe Ochab (415) 972-3761 ochab.joe@epa.gov

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Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Participation Form

A Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE[1] subcontractor[2] the opportunity to describe work received and/or report any concerns regarding the funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the DBE Coordinator at any time during the project period of performance.

Subcontractor Name	Project Name	
Bid / Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity	

Contract Item Number	**Description of Work Received from the Prime Contractor Involving Construction, Services, Equipment or Supplies**	**Amount Received by Prime Contractor**

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

Please use the space below to report any concerns regarding the above funded project:

Subcontractor Signature	Print Name
Title	Date

The public reporting and record keeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Do not send the completed form to this address.

Send completed Form 4500-2 to:
Mr. Joe Ochab, DBE Coordinator
US EPA, Region 9
75 Hawthorne Street
San Francisco, CA 94105

FORM 4500-2 (DBE Subcontractor Participation Form)

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Performance Form

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the price of the work submitted to the prime contractor. A Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractor's bid or proposal package.

Subcontractor Name	Project Name	
Bid / Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.	Email Address	
Prime Contractor Name	Issuing/Funding Entity	

Contract Item Number	**Description of Work Submitted from the Prime Contractor Involving Construction, Services, Equipment or Supplies**	**Price of Work Submitted to the Prime Contractor**
DBE Certified By: _ DOT _ SBA Other: _____	Meets/exceeds EPA certification standards? YES NO Unknown	

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

Subcontractor Signature	Print Name
Title	Date

Disadvantaged Business Enterprise (DBE) Program

DBE Subcontractor Utilization Form

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractor's[2] and the estimated dollar amount of each subcontract. A Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name
Bid / Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact
Address		
Telephone No.		Email Address
Issuing/Funding Entity		

I have identified potential DBE certified subcontractors. YES NO

If *yes*, please complete the table below. If *no*, please explain:

Subcontractor Name/ Company Name	**Company Address / Phone / Email**	**Estimated Dollar Amount**	**Currently DBE Certified?**

--Continue on back if needed--

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.2015 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an award of financial assistance.

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

Prime Contractor Signature	Print Name
Title	Date

STATE WATER RESOURCES CONTROL BOARD – DIVISION OF FINANCIAL ASSISTANCE
DISADVANTAGED BUSINESS ENTERPRISE (DBE) UTILIZATION
CALIFORNIA STATE REVOLVING FUNDS (CASRF)
FORM UR-334

1. Grant/Finance Agreement Number:	2. Annual Reporting Period 10/1/___ through 09/30/_	3. Purchase Period of Financing Agreement:
4. Total Payments Paid to Prime Contractor or Sub-Contractors During Current Reporting Period: $		
5. Recipient's Name and Address:	6. Recipient's Contact Person and Phone Number:	

7. List All DBE Payments Paid by Recipient or Prime Contractor During Current Reporting Period:

Payment or Purchase Paid by Recipient or Prime Contractor	Amount Paid to Any DBE Contractor or Sub-Contractor For Service Provided to Recipient		Date of Payment (MM/DD/YY)	Procurement Type Code** (see below)	Name and Address of DBE Contractor of Sub-Contractor or Vendor
	MBE	WBE			

8. Initial here if no DBE contractors or sub-contractors paid during current reporting period:
9. Initial here if all procurements for this contract are completed:
10. Comments:

11. Signature and Title of Recipient's Authorized Representative	12. Date

Email Form UR-334 to:

DrinkingWaterSRF@waterboards.ca.gov OR CleanWaterSRF@waterboards.ca.gov

Questions may be directed to:

Barbara August, SWRCB
Barbara.August@waterboards.ca.gov
Phone: (916) 341-6952
Fax: (916) 327-7469

****Procurement Type:**
1. Construction
2. Supplies
3. Services (includes business services; professional services; repair services and personnel services)
4. Equipment

STATE WATER RESOURCES CONTROL BOARD - DIVISION OF FINANCIAL ASSISTANCE
DISADVANTAGED BUSINESS ENTERPRISE (DBE) UTILIZATION
CALIFORNIA STATE REVOLVING FUNDS

INSTRUCTIONS FOR COMPLETING FORM UR-334

Box 1 Grant or Financing Agreement Number.

Box 2 Annual reporting period.

Box 3 Enter the dates between which you made procurements under this financing agreement or grant.

Box 4 Enter the total amount of payments paid to the contractor or sub-contractors during this reporting period.

Box 5 Enter Recipient's Name and Address.

Box 6 Enter Recipient's Contact Name and Phone Number.

Box 7 Enter details for the **DBE purchases only** and be sure to limit them to the current period. 1) Use either an "R" or a "C" to represent "Recipient" or "Contractor." 2) Enter a dollar total for DBE and total the two columns at the bottom of the section. 3) Provide the payment date. 4) Enter a product type choice from those at the bottom of the page. 5) List the vendor name and address in the right-hand column

Box 8 Initial here if no DBE contractors or sub-contractors were paid during this reporting period.

Box 9 Initial this box only if all purchases under this financing agreement or grant have been completed during this reporting period or a previous period. If you initial this box, we will no longer send you a survey.

Box 10 This box is for explanatory information or questions.

Box 11 Provide an authorized representative signature.

Box 12 Enter the date form completed.

BRIDGEPORT PUBLIC UTILITY DISTRICT – ARSENIC REMOVAL PROJECT

ARSENIC REMOVAL SYSTEM PROCUREMENT CONTRACT

SERVICE PROVIDER AGREEMENT (SAMPLE)

This Professional Services Agreement (the "Agreement") is made and entered into as of the ____ day of _____, 2017, by and between the BRIDGEPORT PUBLIC UTILITY DISTRICT (the "District") and _____, a _____ (the "Services Provider").

RECITALS:

A. The District desires to enter into a contract for certain professional services (the "Services").

B. The Services Provider is experienced in and qualified to provide the Services in compliance with the requirements specified in the Arsenic Removal System Purchase Contract.

C. The Services Provider provided a written response to the Bid (attached hereto and incorporated herein as Exhibit A, and is experienced in and qualified to provide the Services.

D. The District desires to have the Services Provider perform all of the Services as described in the Bid, and the Services Provider agrees such performance, upon the terms and conditions described in this Agreement.

NOW THEREFORE, upon good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the District and the Services Provider agree to the following terms, conditions and covenants:

SECTION 1 – RESPONSIBILITY OF THE SERVICES PROVIDER

1.1. The Services Provider shall be responsible for the professional quality, technical accuracy, timely completion, and coordination of all services furnished by the Services Provider and by any of its principals, officers, employees and agents. In performing these services, the Services Provider shall follow practices consistent with generally accepted standard of care and the Project Specifications. The Services Provider shall, without additional compensation, promptly correct and revise any errors or deficiencies in its services, equipment and products, reports or any portion of the Services. Approval by the District of any products or services furnished by the Services Provider shall not in any way relieve the Services Provider of responsibility for the professional and technical accuracy of its services, equipment and products.

1.2. The Services Provider shall assign _____ as the Principal-in-Charge ("Principal-in-Charge"). All of the Services specified by this Agreement shall be performed under the personal supervision of the Principal-in-Charge. Should the Principal-in-Charge be unable to complete his responsibility for any reason, the Services Provider shall notify the District in writing, and within four (4) calendar days thereafter, nominate a replacement for the District's approval who has an equivalent amount of experience performing the same type of services.

1.3. The Services Provider agrees that its officers and employees will cooperate with the District in the performance of services under this Agreement and will be available for consultation with the District during normal business hours.

SECTION 2 - SCOPE OF SERVICES

The Services to be performed by the Services Provider shall consist of those services listed on the attached Exhibit A.

SECTION 3 - CHANGES TO SCOPE OF SERVICES

3.1. The District may at any time, but only by written order, make changes within the general scope of this Agreement in the Services to be performed. If such changes cause a significant increase or decrease in the Successful Bidder's cost or time required for performance of any services under this Agreement, the Parties may formally amend this Agreement. Any claim of the Services Provider for adjustment under this clause must be asserted in writing within thirty (30) calendar days from the date of receipt by the Services Provider of notification of changes to the District, or such claim shall be deemed waived by the Services Provider and the Services Provider will be deemed to have agreed to the changes without modification of the compensation or time of performance hereunder.

3.2 No additional compensation shall be paid, and no increase in the time of performance shall be awarded, to the Services Provider for changes to the Scope of Services without the prior written authorization of the District to proceed with such changes.

3.3 No additional compensation shall be paid to the Services Provider for additional costs or delay due to the negligence or intentional acts of the Services provider or any of its officers, employees or agents.

SECTION 4 - TERM OF AGREEMENT

This Agreement commences upon the date it is approved by the District at a formal District Council proceeding and shall end 30 days after the date the District makes final payment to the Services Provider for services rendered under this Agreement, unless this Agreement is earlier terminated by the District.

SECTION 5 – TERMS OF PAYMENT

5.1. Subject to any provisions of this Agreement concerning payment, the District shall pay the Services Provider for the entirety of the Scope of Work an amount not to exceed _____ and xx/100 Dollars ($xxx,000), in accordance with the rate set forth in Exhibit _____, which amount shall be paid pursuant to this Section.

5.2. Payment to the Services Provider shall be made within thirty (30) days after the District receives an invoice provided by the Services Provider to the District, provided that such invoice is complete, correct, and undisputed by the District, and that it contains all of the information requested by the District.

5.3. No additional compensation shall be paid to the Services provider for changes in the Successful Bidder's responsibilities without the prior written authorization of the District to proceed with such changes.

5.4. No additional compensation shall be paid to the services Provider for additional costs or delay due to the negligence or intentional acts of the Successful Bidder or any of its officers, employees, or agents.

SECTION 6 - TIME OF PERFORMANCE

6.1. The Services Provider shall commence and complete work as set forth in the Scope of Services or as further directed by the District.

6.2. No additional time shall be given to the Services Provider for delay due to the negligence or intentional acts of the Services Provider or any of its officers, employees, or agents.

SECTION 7 - AUDIT AND ACCESS TO RECORDS

7.1. The Services Provider shall maintain all books, records, documents, and other evidence directly pertinent to performance under this Agreement as required by applicable law. The Services Provider shall also maintain a copy of the cost summaries and invoices submitted to the District. The District or any of its duly authorized representatives shall have access to such books, records, documents, and other evidence for the purpose of inspection, audit and copying. The Services Provider will provide proper facilities for such access and inspection.

SECTION 8 - REPRESENTATIONS AND WARRANTIES

8.1. The Services Provider hereby represents and warrants for the benefit of the District, in addition to any other representations and warranties made in this Agreement, with the knowledge and expectation of the District's reliance thereon, as follows:

A. The Services Provider is a duly formed and validly existing _____ company and is in good standing pursuant to the laws of the State of _____, and has the full power, authority and legal right to execute, deliver and perform under this Agreement.

B. The execution, delivery and performance of this Agreement and the taking of all other lawful actions necessary to provider the Services as contemplated hereunder, by the persons executing, delivering and performing the same on behalf of the Services Provider, have been duly and validly authorized, and this Agreement and the other agreements and instruments contemplated hereby, constitute legal, valid and binding obligations of the Services Provider, enforceable in accordance with the respective terms.

C. The Services Provider is duly licensed and authorized to do business in the State of California.

D. The Services Provider is a sophisticated and qualified provider of the Services, whose personnel possess the level of professional expertise and experience that is necessary to properly perform the Services within the required time period, with an appropriate level of diligence, skill and care, and pursuant to the terms, specifications and conditions of this Agreement. The Services Provider has the necessary personnel, equipment, tools, supplies, materials, and facilities to properly perform the Services within the required time period, with an appropriate level of diligence, skill and care, and pursuant to the terms, specifications and conditions of this Agreement.

E. The representations and warranties made by the Services Provider herein shall survive the termination or expiration of the Agreement.

SECTION 9 - MISCELLANEOUS PROVISIONS

9.1. The District may terminate this Agreement, for any reason or no reason, upon fourteen (14) calendar days prior written notification of the termination to the Services Provider. Notification to the Services Provider of such termination shall be sent by the District in accordance with this Section 9. In the event of termination, the District agrees to pay the Services Provider the reasonable value for all work and services performed to the date of termination in accordance with Section 5.

9.2. The District reasonably believes that sufficient funds can be obtained to make all payments during the term of this Agreement.

9.3. All summaries, reports, samples, studies, or other property or documents given, prepared or assembled by the Services Provider which are related to the performance of this Agreement are deemed to be the property of the District, except to the extent such is not allowed by California law.

9.4. The Services Provider shall procure and maintain at its own expense, during the entire term of this Agreement, the following insurances:

A. Comprehensive General Liability (bodily injury and property damage) insurance with respect to the Services Provider's personnel and vehicles assigned to the prosecution of work under this Agreement in a policy limit of not less than $1,000,000 for combined single limit per occurrence. The Services Provider's General Liability insurance policies shall be endorsed as to include the District as an additional insured.

B. The Services Provider's Comprehensive General Liability policy shall automatically include or be endorsed to cover the Services Provider's contractual liability to the District, to waive subrogation against the District, its officers, agents, servants and employees, and to provide that the District will be given thirty (30) calendar days notice in writing of any cancellation of, or material change in, the policy.

C. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer and licensed by the State of California. All deductibles and self-insured retentions shall be fully disclosed in the Certificate of Insurance. No deductible or self-insured retention may exceed $250,000 without the written approval of the District. Certificates indicating that such insurance is in effect shall be delivered to the District before work is begun under this Agreement.

9.5. Notwithstanding any of the insurance requirements herein above set forth or limits of liability set forth therein, the Services Provider shall protect, indemnify and hold harmless the District, its officers, agents and employees from any liabilities, claims, damages, losses, expenses, proceedings, suits, actions, decrees, judgments, reasonable attorney fees, and court costs which the District suffers or its officers or employees suffer, as a result of, or arising out of, the intentional or negligent acts or omissions of the Services Provider or its officers, agents and employees, in fulfillment or performance of the terms, conditions or covenants of this Agreement. This Section 9.5 shall survive the termination or expiration of this Agreement until such time as the applicable statutes of limitation expire.

9.6. The Services Provider shall not assign, sublet or transfer its interest in this Agreement without the prior written approval of the District.

9.7. No consent or waiver, express or implied, by either party to this Agreement or of any breach by the other in the performance of any obligations hereunder shall be deemed or construed to be a consent or waiver to or of any other breach by such party hereunder.

9.8 This Agreement shall be construed and interpreted in accordance with the laws of the State of California without regard to choice of law or conflicts of law.

9.9. The Services Provider shall comply with all laws, rules, regulations, and ordinances applicable to the work performed by the Services Provider under this Agreement, as such may be modified, supplemented or amended from time to time.

9.10. In the event any action is commenced by either party against the other connection herewith, the prevailing party shall be entitled to its costs and expenses, including reasonable attorneys' fees, as determined by the court. This Section 9.10 shall survive until the applicable statutes of limitation expire.

9.11. This Agreement constitutes the entire Agreement between the parties regarding the Services and supersedes all prior representations, agreements and understandings of the parties. No addition to or modification of this Agreement shall be binding unless executed in writing by the parties hereto.

9.12. In the event that any provision of this Agreement shall be held to be invalid or unenforceable, the remaining provisions of this Agreement shall remain valid and binding on the Parties hereto.

9.13. Any notice required to be given hereunder shall be deemed to have been given when sent to the party to whom it is directed by personal service, hand delivery or U.S. certified mail, return receipt requested, at the following addresses:

DISTRICT:

BRIDGEPORT PUBLIC UTILITY DISTRICT
Renn Nolan, Office Manager
223 Twin Lakes Road
Bridgeport, California 93517
P 760-932-7251
F 760-932-9992

SERVICES PROVIDER: _____

_____

_____

IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed the day and year first above written.

BRIDGEPORT PUBLIC UTILITY DISTRICT

By: _____
Ken Reynolds, President Bridgeport Public Utility District

ATTEST:

By: _____

SERVICES PROVIDER:

By: _____

Name: _____

Title: _____

BRIDGEPORT PUBLIC UTILITY DISTRICT – ARSENIC REMOVAL PROJECT

ARSENIC REMOVAL SYSTEM PROCUREMENT CONTRACT

SPECIFICATIONS

(ATTACHMENT “A”)

SECTION 13530

ARSENIC REMOVAL SYSTEM

PART 1 - GENERAL

1.1 SUMMARY OF WORK INCLUDED:

A. This section covers the scope of work (Work) to be required by the Arsenic Removal System (ARS) Supplier. The Work includes performing a successful pilot test, supplying a complete ARS necessary to achieve target water quality standards to be validated by the pilot study, startup and commissioning of the ARS for operation of an on-site arsenic removal system utilizing the adsorption process. The ARS includes, but is not limited to, a complete, pre-fabricated system, containing at a sufficient number of adsorption vessels to treat up to peak daily flows with the largest vessel out of service, all necessary system piping, joints and fittings, valves, in-line flow meters, PLC-based control panel, as well as ancillary equipment as specified herein, related testing, start-up, commissioning, and training services

B. Pilot Study:
   1. The ARS Supplier shall include in its bid a written performance guarantee for a maximum effluent total arsenic concentration in µg/L, and the minimum media life in days, necessary to reach the guaranteed maximum effluent total arsenic concentration.
   2. The ARS Supplier shall perform a bench scale pilot study using the site's existing Source Wells' raw water to demonstrate conformance with the guaranteed maximum effluent total arsenic concentration and minimum media life.
      a. The ARS Supplier shall provide calculations for the Pilot Study to demonstrate similitude of all process components to insure that the results of Pilot Study may successfully be scaled up for the actual intended ARS service conditions described in this Section.
      b. The results of the pilot study shall conform to the ARS Supplier's written performance guarantee for both maximum effluent total arsenic concentrations and minimum media life within ±5%.
   3. The Pilot Study shall be limited to a maximum of 5% of the ARS Supplier's total bid value, and shall consist of all costs associated with providing the Pilot Study including the bench scale ARS, set-up, training, water quality samples, evaluation and reporting of test results, travel, incidentals and per diem costs necessary to perform the Pilot Study.

C. Post Pilot Study Work:
   1. The ARS Supplier shall, upon completion of a successful Pilot Study:
      a. Prepare a Process and Instrumentation Diagram (P&ID) drawing to represent the general process, instrumentation and valves that will be used to control and monitor the arsenic removal system.
      b. Prepare a General Arrangement (GA) drawing showing connections, elevations, and overall system configuration.
      c. Prepare electrical schematics as applicable for the system control panel.
      d. Supply the prefabricated and tested ARS to the project work site.
      e. Other submittals as requested.

f. The ARS Supplier shall submit the P&ID and GA Shop Drawings and other submittals identified above depicting the fabrication of the Arsenic Removal Treatment System equipment for review by the Engineer within 2 weeks of order

2. The General Contractor shall install the ARS system(s), as specified herein and as shown on the drawings. The General Contractor shall be responsible for
   a. Offloading the system(s).
   b. Anchoring the system(s) to the structural pad.
   c. Building the facility housing and foundation.
   d. All electrical power connections.
   e. Distribution pipeline tie-ins
   f. Tie-in the conveyance piping to the raw water, pipe supports, backwash water, and finished water connections on the ARS system(s), as shown on the drawings to provide a complete and fully operational arsenic removal treatment system.
3. The ARS Supplier shall provide a detailed pre-installation checklist or System Commissioning Plan (SCP) as a communication tool for proper installation and work closely with the General Contractor to ensure the system is installed in accordance with the manufacturer's recommendations. The General Contractor shall correct installation-related problems if they occur and shall provide a Certification of Proper Installation for the System.
4. The ARS Supplier shall be responsible for delivering the system pre-wired and pre-tested and/or programmed (as applicable). The Engineer will provide criteria or appropriate specs and drawings to the Contractor for the interconnection of the Arsenic Removal Treatment System.
5. Following the completion of installation by the General Contractor, the ARS Supplier shall perform functional, performance and start-up testing of the System to demonstrate that performance criteria (i.e., consistent arsenic removal to < 10 ppb) are being achieved.
6. The ARS Supplier shall submit an Operation and Maintenance Manual and Maintenance Summary Forms for the Treatment System.
7. The ARS Supplier shall train Owner's personnel and provide detailed instructions in the operation of the Treatment Equipment. This training shall be provided at the time of startup and coordinated closely with the Owner's operator.

1.2 GENERAL

A. Section Includes:

1. Package Arsenic Removal System (ARS) to be provided complete by ARS Supplier with the following components:
   a. Support Skid(s) if applicable
   b. Tanks/pressure vessels, internals
   c. Adsorption media
   d. Interconnect piping, valves, control valves, pipe supports and accessories
   e. Flow meters and totalizers
   f. Pressure transmitters and gauges for inlet and outlet pressure readings

B. All civil, electrical, mechanical, metal, painting and instrumentation work included herein shall conform to the applicable Sections or Divisions of this project except as otherwise shown or specified. The ARS shall be shipped as a complete and fully operational system pre-tested by the ARS supplier. All tie in piping to the existing waterline system and wiring shall be completed by the Contractor on site.

C. The Drawings show details of the components and their overall relationships. Not all items incidental to the ARS are shown or specified. It is the intent of these Contract Documents that the ARS Supplier is to provide a complete workable system whether or not any specific component is shown or specified.

D. Power shall be provided by the General Contractor to the system control panels as shown on the Arsenic Removal Treatment System equipment drawings. A 120 VAC, 20 amp, single phase circuit should be sufficient for the ARS system. The General Contractor shall be responsible for providing all necessary conduit and wiring necessary for a complete electrical service to this location. All wiring shall comply with the National Electrical Code, 2014 (NFPA70) or latest edition.

E. Sodium hypochlorite (chlorine), will continue to be injected into the raw source water by an existing chemical metering system in order to oxidize and convert any Arsenic (III), if present, to Arsenic (V), and provide residual disinfection.

F. Related Requirements
1. Section 02660 – Water Pipeline Testing And Disinfection
2. Section 11200 – Water Supply Equipment
3. Section 15010 – Common Work Results For Plumbing
4. Section 15073 – Vibration And Seismic Controls For Plumbing Piping And Equipment
5. Section 15111 – General-Duty Valves for Plumbing Piping
6. Section 15140 – Domestic Water Piping
7. Section 16000 – General Requirements for Electrical Work

1.3 REFERENCE STANDARDS

A. American Society of Mechanical Engineers:
1. ASME B31.9 - Building Services Piping.

B. ASTM International:

1. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
2. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
3. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.

C. American Water Works Association:
1. AWWA C509 - Resilient-Seated Gate Valves for Water Supply Service.
2. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Transmission and Distribution.

D. Manufacturers Standardization Society of the Valve and Fittings Industry:

1. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.

1.4 PREINSTALLATION MEETINGS

A. Section 01 30 00 - Administrative Requirements: Requirements for pre-installation meeting.

B. Convene minimum one week prior to commencing Work of this Section.

1.5 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Bid Submittal:
   1. Submittal Documents Accompanying Contractor's Bid Proposal: Submit with bid the following information:
      a. ARS Supplier's literature, illustrations, specifications, and engineering data, including dimensions, materials, size, weight, and performance data.
      b. ARS Supplier's written performance guarantee that shall include a guarantee of maximum effluent arsenic concentrations and the minimum duration of the media life for which the effluent arsenic concentration will be less than or equal to the maximum guaranteed effluent arsenic concentration.
      c. ARS Supplier's qualifications as described in 1.9 – QUALITY ASSURANCE.
      d. Complete Equipment Scope of Supply
      e. Adsorptive filtration media Supplier's technical information, including physical and chemical characteristics, volume and weight to be provided in each contactor vessel, and empty bed contact time at service conditions.
      f. Spent media disposal methods, procedures and costs, including analytical methods used to assure disposal in accordance with the Resource Conservation and Recovery Act for hazardous wastes.

C. Shop Drawings: Within two (2) weeks of award, Contractor shall submit the ARS Supplier's comprehensive shop drawing package for review and approval by Engineer and Owner:
   1. Shop drawings showing the fabrication, assembly, installation, and wiring diagrams of ARS. Shop drawings shall include, but not be limited to the following:
      a. A title page, drawing index, and legend/symbols/abbreviation sheet.
      b. A general arrangement drawing of the ARS system.
      c. A process and instrumentation diagram (PID) of the ARS system.
      d. An electrical one-line diagram, electrical control schematics and system wiring diagram.
      e. Equipment cut sheets and specifications for major equipment, including equipment elevations, dimensions, and setbacks, as necessary.
      f. Control panel drawings (including annotated panel front view and internal layout/wiring diagrams).
   2. Chemical feed module info, drawings, calculations and P&ID

D. Product Data: Within two (2) weeks of award, Contractor shall submit the following information:
   1. Data on adsorptive media.
   2. Pressure Vessels: Submit data on vessel material, construction, pressure and temperature ratings, connections, capacities and accessories.
   3. Piping: Submit data on pipe materials, fittings, and accessories.

4. Valves: Submit manufacturers catalog information with valve data and ratings for each service.
5. Supports: Submit manufacturers catalog information including load capacity.
6. Manufacturer's list of recommended spare parts.

E. ARS and Original Equipment Manufacturers' (OEM) Certificate: Certify that all products and individual system components meet or exceed specified requirements as shown on the Drawings and contained in this and other individual specifications.

F. Manufacturer Instructions: Submit installation instructions for ARS system, complete with valves, piping and accessories.

G. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections, including:
   1. Factory Acceptance Test (FAT)
      a. The ARS supplier shall test each and every component prior to shipment, and a fully functional test shall be performed on the system to certify the following:
         1) Verifies that all mechanical and hydraulic components operate properly.
         2) Ensures that the control panel operates and controls the correct components in the manner intended.
         3) Confirmation of the control panel settings and any provided safety alarm features.
         4) All system alarms and faults shall be confirmed and documented.
         5) Verify that system dimensions match submittal drawings.

H. Qualifications Statements:
   1. Submit qualifications for manufacturer and installer.
   2. Submit manufacturer's approval of installer.

1.6 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations of water utility distribution piping connections, actual equipment locations and setbacks, etc.

C. Operation and Maintenance Data: Submit spare parts list, exploded assembly views, and recommended maintenance intervals for all ARS process components.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements:

B. Requirements for maintenance materials.

C. Operation and Maintenance (O&M) Manuals:
   1. Provide 2 complete and bound hard copies and one electronic version in PDF format of the ARS O&M Manual upon project completion before application for final payment.
   2. Manuals shall include:
      a. Complete installation instructions

b. Copies of all approved shop drawings
c. Operation procedures (including start-up and shut-down procedures for all modes of operation);
d. Preventative maintenance procedures and schedules
e. Lubrication charts and schedules
f. Spare parts list;
g. Troubleshooting instructions
h. Safety considerations
i. Names, addresses, and telephone numbers of:
   1) Contractor
   2) ARS Supplier
   3) System Component OEM(s)

3. Format Requirements:
   a. Use 8-1/2 inch by 11-inch paper and provide in a PDF format on compact disk or drive. Larger drawings or illustrations shall be folded neatly to the specified size in a manner which will permit easy unfolding without removal from the O&M binder. Provide all sheets in a reinforced punched binder tab.
   b. Each page shall have a binding margin of 1-1/2 inches and be punched for placement in a triple post binder. Identify each binder with the following: BRIDGEPORT PUBLIC UTILITES DISTRICT - ARSENIC REMOVAL SYSTEM OPERATION AND MAINTENANCE INSTRUCTIONS.
   c. Use dividers and indexed tabs between major categories of information. Provide a table of contents for each binder.

D. Extra Stock Materials:

1. Furnish necessary pre-filter cartridges for one (1) complete pre-filter replacement.

1.8 QUALITY ASSURANCE

A. Perform Work according to BPUD standards.

1.9 QUALIFICATIONS

A. ARS Supplier's Qualifications:
   1. The ARS Supplier shall have experience in manufacturing and furnishing equipment of similar capacity and service capability to the equipment described herein. As part of their bid submittal package (to be submitted with the bid), the system Supplier shall provide the following:
      a. A list of at least ten (10) installations, where similar equipment by the Supplier is currently in comparable service. For each installation listed, include:
         1) Contact name, telephone number, mailing address of the installation, engineer, owner, and date of installation.
      b. If ten installations do not exist, the list shall include all existing installations.
      c. Documentation of successful implementation of arsenic treatment systems for Public Community Water systems for at least 5 years
      d. Permitted installations of the specified technology in the state of California
      e. Current NSF Standard 61 Certification for the media and system components being offered.

f. Evidence of successful participation in one of EPA's Arsenic Demonstration Projects using this same technology or certification by the Environmental Technology Verification Drinking Water Treatment Systems program, conducted by the EPA & NSF to verify the performance claims of the system Supplier.
g. The ARS equipment shall be pre-assembled and tested to assure compliance with pressure and operational requirements.

B. Installer: California licensed and bonded Contractor specializing in performing Work of this Section with minimum five years' documented experience and approved by ARS Supplier.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Shipping & Delivery:
1. Equipment and materials shall not be fabricated, shipped or delivered to the project site until related shop drawings have been approved in writing by the Engineer.
2. ARS Supplier shall coordinate with the Contractor and arrange for and include costs of transportation and delivery of the Supplier's ARS system unit(s) and media. Shipment of the system(s) shall be delivered to the site on Monday through Friday only (excluding holidays) during the hours between 8 AM and 3 PM Pacific Standard Time, and consigned to the proper party giving name of the project and the full address of Owner's project site. Notify Contractor's representative by telephone 48 hours prior to the anticipated arrival at the project site.

C. Inspection: Accept materials on Site in manufacturer's original packaging. Inventory and inspect all equipment upon delivery to the site. Repair or replace all equipment discovered missing or damaged.

D. Furnish temporary protective coating for cast iron and steel valves.

E. Furnish temporary end caps and closures for pipe and fittings; maintain caps and closures in place until installation.

F. Protection:
1. Throughout shipment, all contactor ports and pipe ends shall remain sealed with watertight caps or blind flanges/plates that remain in place until installation of the equipment and completion of all piping connections.
2. Contractor shall make provisions to protect materials on-site from theft, damage, or vandalism. Contractor is responsible for replacement of all damaged or stolen materials at the work site until final acceptance by Owner.

1.11 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

1.12 WARRANTY

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.

B. Performance Warranty – ARS Supplier shall warrant performance of the full scale ARS to within ±5% of the performance determined from results of the pilot study for both media life and total effluent arsenic concentration. ARS Supplier shall provide written performance warranty and acknowledge that the ARS performance will be evaluated against the required performance bond to be submitted with the ARS Supplier's bid.

C. Prior to acceptance of the arsenic removal system, the ARS Supplier shall provide a written warranty that includes the following statements:
   1. ARS Supplier has inspected the installation and the arsenic removal system is free from faults and defects and is in conformance with the Contract Documents.
   2. ARS Supplier must provide the following after sales services:
      a. Availability of technician to timely respond to and address any warranty issues that arise with the system during the warranty period.
      b. Must maintain an inventory of spare parts on this system such as valves, actuators, media, pressure gauges, metering and controlling valves.
   3. ARS is warranted for a period of 24 months after start-up.
   4. The filtration vessels are warranted for a 2 year warranty period that begins the date of startup. Should the vessel experience a structural failure or defect during the first 2 years, the vessel will be replaced free of charge, exclusive of labor, replacement media and shipping costs assuming operation of the system per O&M procedures with documentation log.

PART 2 - PRODUCTS

2.1 ARSENIC REMOVAL SYSTEM (ARS)

A. A complete packaged water treatment system for the remediation of arsenic contamination in domestic water.
   1. The ARS shall consist of filter vessel(s) containing adsorptive media whereby arsenic is either physically or chemically removed from water during a flow through process.
   2. The ARS shall be capable of treating up to 650 ±50 gallons per minute (GPM) during peak flows, or up to 500 GPM with the largest vessel out of service.
   3. Media shall be disposable as a solid waste in a RCRA subtitle D (non-hazardous) landfill when spent. Media shall be durable, attrition-resistant, and suitable for backwashing and removal of arsenic, iron, and manganese.
   4. The site's existing sodium hypochlorite injection module shall be used with the ARS.
   5. Capable of treating variations in the influent arsenic concentration up to as high as 32 micrograms per liter (µg/l) while maintaining an effluent arsenic concentrations consistently below 10 µg/l.
   6. Design operating pressures of up to 150 psi.
   7. Stainless steel NEMA 4X panel enclosure with Allen Bradley PLC and HMI prewired and mounted on the skid if applicable.
   8. Mounted on an epoxy-coated-painted steel tubular skid(s) if applicable.

9. Stainless steel hydraulic panel with sample ports for operator monitoring and optionally system inlet and outlet pressure gauges.
10. Magnetic flow meters on each vessel for measuring individual instantaneous gallons per minute and total gallons through the system in service and in backwash/rinse cycles.
11. Pressure transmitters on the inlet and outlet with a 4-20 mA signal to the control panel to monitor differential pressure on the HMI.

B. Manufacturers:
1. Isolux – MELsorb by MEL Chemicals, Inc.
   a. 500 Point Breeze Road, Flemington, NJ 08822.
   b. 1 (908) 782-1280
   c. www.zrpure.com
2. Evoqua Water Technologies by Siemens Corp.
   a. 1 (719) 622-5320
   b. www.siemens.com/water
3. Engineer Approved Equal

2.2 MATERIALS

A. Wet Side Materials:
1. All materials and equipment in contact with process water shall be NSF61 Rated and compatible with drinking water applications.

B. Dry Side Materials:
1. All materials not in contact with water shall be generally comprised of corrosion resistant materials or coated with corrosion resistant coatings.

2.3 FUNCTIONAL REQUIREMENTS

A. Sufficient instruments, control panel, gauges, and valves shall be provided by the Supplier as part of the packaged unit for the system to operate as described below.

B. Flanged connections for ease of connection by Contractor for installation; fittings and piping to be supplied by the Contractor.

C. General arrangement, piping sizes and accessories are shown on the Contract Drawings.

2.4 GENERAL

A. Provide to Owner and install an integrated, Arsenic Removal System consisting of adsorptive media, pressure vessels in parallel, inlet and discharge assemblies, piping, valves, and other appurtenances as necessary to provide a complete and operational system.

2.5 SERVICE CONDITIONS

A. The Arsenic Removal System shall be designed and constructed for installation indoors and continuous operation with the following service conditions:

1. Site Electrical Service: 125 volts AC, single phase, 60 Hz and 460 volts AC, three phase, 4 wire, 60 Hz with backup power provided from an emergency generator after an adjustable delay of 2 minutes to 30 minutes.
   a. NOTE: Flow may continue during the delay
2. Elevation 6,480 feet
3. Ambient Outside Air Temperature: -30° F to 105° F
4. Inside Air Temperature: 45° F to 90° F
5. Well Pump Flow Rate: 650 (±50) gallons per minute (GPM)
6. Back flushing flow rate to be determined by manufacturer
7. Design treatment rate: Pump flow rate ±50 GPM
8. Design Pressure: 150 pounds per square inch (psi)
9. Upstream operating Pressure: 115 to 140 pounds per square inch (psi)
10. Downstream operating pressure 95 to 100 pounds per square inch (psi)
11. Treat water from either the Twin Lakes Well or the Cain well but not water from both wells at the same time
12. Approximately 86% of the water treated will be from the Cain Well and approximately 14% of the water treated will be from the Twin Lakes Well (Cain well will be in lead and the Twin Lakes well will be in backup approximately 6 days a week under normal conditions)
13. Average annual percent of time that raw water is supplied 30.4% or approximately 7.3 hours per day.
14. Maximum total duration of backwash is 1.5 hours in a 48 hour period
15. Backwash water is to be from the Bridgeport distribution system that is continuously available at 95 to 100 pounds per square inch (psi)
16. Service filtration rates of < 5 gpm/sq foot of surface area
17. Backwashing rates not to exceed 500 gpm
18. Backwash volume not to exceed 24,000 gallons per backwash of all filters
19. Location of existing sodium chlorite injection points: at well heads (see drawings)
20. Raw water flow rate measurement signal: from existing SCADA via 4 - 20 mA signal (1 signal from each well)
21. Layout of treatment units; piping; chemical feed lines; backwash water, raw water, treated water and recycle water connections: see Drawings
22. Raw water temperature 48° F to 52° F

B. Representative water chemistry data for the each source well is attached to the end of this Specification Section 13530.

2.6 MINIMUM PERFORMANCE REQUIREMENTS

A. Under the Service Conditions set forth in Paragraph 2.5, the ARS shall reduce total arsenic from a maximum concentration of 32 µg/L to less than 10 µg/L consistently.

B. The system shall be configured to operate with all treatment units in parallel or in such a manner as to provide optimal media capacity utilization.

C. The ARS Supplier shall provide a system performance guarantee with the bid to ensure that the system and media perform to expectations of the Owner based upon the Supplier's predicted performance. Samples for determining ARS performance will be the responsibility of the Owner or Owner's operator and reported to the Supplier on a minimum quarterly basis. The system must

attain the treatment requirement of less than 10 µg/L for the entire first year of operation. Media life shall achieve a duration of within ±5% of that determined during the Pilot Study.

1. If the minimum media life under normal service conditions is found to be less than 95% of that determined during the Pilot Study the ARS Supplier shall, at its sole expense, replace or repair those portions of the system found to be adversely impacting the media life.
2. If modifications cannot be made to improve media life to within the specified amounts the contract value will similarly be reduced by the equivalent percentage by which the media life fails to meet the guaranteed duration less the 5% tolerance. For example, if the actual media life under normal service conditions is found to be 90% of that demonstrated by the pilot study, the contract value will be reduced 5% which shall accrue to the Owner as a credit.

2.7 SYSTEM DESCRIPTION

A. General:
1. The arsenic removal system shall employ an adsorptive media for the removal of arsenic from raw source water.
2. The arsenic removal system shall be sized to in accordance with 2.5 above and per the Drawings and shall include sufficient dispersion and media to treat the entire flow rate from the Source Wells in a parallel fashion under the specified service conditions. The system, which must fit in the specified building treatment system footprint, shall include tees, piping, and valving for a system bypass line for emergency situations where the unit is being serviced, worked on or similarly out of operation.
3. The complete arsenic removal system shall be pre-assembled (in skid mounted units if applicable) and delivered to the site.

B. Mechanical System Components:
1. Vessels:
2. Components:
   a. Shell and Heads: carbon steel SA516Gr70
   b. Exterior Liner: 3 mils Tnemec Hi-Build Epoxoline II, N69F epoxy; SSPC-SP-6 blast
   c. Inner Liner: 5-7 mils Devoe high performance coatings #BAR-TUST 233H, multi-purpose epoxy, SSPC-SP-10 blast
   d. 12 x 16 Manway opening on top head
   e. Flange Supports: Coated to protect the alloy from external corrosion
3. Maximum operating pressure: 150 psi with a safety factor of 6:1.
4. Maximum operating temperature: 135°F.
5. Designed to pass a 0-to-rated operating pressure cycle test of 250,000 cycles without failure.
6. Capable of withstanding negative pressure up to 5” Hg.
7. Employ quick-connect or threaded fittings which shall be easily removable.
8. Threaded pressure vessel openings shall all be an NPSM or UN thread specification with a positive O-ring seal.
9. Connections to pressure vessel openings shall accommodate vertical expansion between side, top, and bottom openings and between openings and hard piping.

C. Piping and Flanges:
1. Piping: 304 Stainless Steel SCH 10, ASTM A312, ANSI B36.19
2. Pipe threads: ANSI B1.20.1
3. Flanges: 304 SS, ASTM A105
   a. Bolt hole pattern: ANSI B16.5

b. ANSI Class 150, pressure rated to 150 psi @ 73o F

D. Valves
1. Resilient-wedge gate valve:
   a. AWWA C515, NSF 61
   b. Pressure Class: Class 125
   c. Rising stem valve with hand wheel operator
   d. Stem: Copper alloy with integral thrust collar. Two piece collars are not acceptable.
2. Wedge: ASTM A536 Ductile iron or bronze symmetrically and fully encapsulated with EPDM molded rubber (minimum thickness 1/8-inch)
   a. Flanged connections.
   b. Body, Bonnet, Stuffing Box: ASTM A536 Ductile Iron.
   c. Rubber Items: Buna-N or other suitable synthetic rubber
   d. All Internal External Bolting and Other Hardware, Including Pins, Set Screws, Plug, Studs, Bolts, Nuts, and Washers: Type 316 stainless steel, with strength requirements conforming to ASTM A307
   e. Surfaces, except machined surfaces, shall be epoxy coated in accordance with AWWA C550.
   f. Manufacturer: Bray or Engineer approved equal.
3. Forged Brass Ball Valves:
   a. Type: Quarter turn, full port ball valve.
   b. Ball: Chrome plated brass
   c. Rating: 150psi. Water, Oil, Gas (WOG)
   d. Manufacturer: Jomar or Engineer approved equal
4. Silent Check Valves:
   a. Type: Swing, regrinding bronze disc, screw-in cap.
   b. Materials:
      1) Body: Cast Iron
      2) Seat, plug, bushing: bronze
      3) Spring, Screw: Stainless steel
   c. Rating: ANSI Class 125
   d. End Connection: Flanged
   e. Manufacturer: Valmatic or Engineer approved equal
5. Pressure Relief Valves:
   a. Class: 150 ANSI (100 psi set point)
   b. Body: Bronze
   c. Seat: Non-metallic disc-to-metal seating
   d. Connection: Female inlet and outlet
   e. Manufacturer: APCO or Watts Regulators Series 174A or Engineer approved equal
6. Angle Valves:
   a. Type: MIPT x compression
   b. Materials: Brass
   c. Manufacturer: Lasco or approved equal
7. Anchor Bolts, Nuts, and Washers
   a. Type 316 stainless steel

E. Arsenic Removal Media:
1. General: Product shall be a media product certified as compliant with ANSI / NSF Standard 61 for Drinking Water and proven to be effective at adsorption of arsenic from water.

2.8 AUTOMATIC SYSTEM VALVES

A. Actuated butterfly valves shall be in accordance with AWWA C504. Body and disc shall be cast or ductile iron, shaft shall be stainless steel and operator shall be lever.

B. Actuated butterfly valves shall be equipped with an AWWA C504 compliant electric motor or pneumatic actuator. Preference is for pneumatic actuation. The actuator shall be quarter turn or equivalent with manual override and two (2) limit switches and two (2) dry contacts. Enclosure shall be NEMA 4 & 6 and IP67 with aluminum alloy construction.

C. For Electric actuated valves, RCEL electric actuators 5L series.

D. For Pneumatic actuated valves, Bray or Engineer approved equal shall be acceptable.

2.9 SYSTEM INSTRUMENTATION

A. Flow Meters:
   1. One per vessel.
   2. General:
      a. Type: Seametrics Series EX-80 Magnetic Meter conforming to NSF 61
      b. Materials:
         1) Main Body: PVC sensor body or Stainless steel
         2) Lining: not applicable
         3) Electronics Housing: powder coated aluminum
         4) Electrodes: hastelloy electrodes
      c. Flow rate display indication in gpm and totalized flow in gallons.
      d. Accuracy: ±1.0% of flow rate or better
      e. End Connection: Flanged
      f. Manufacturer: Seametrics EX-80 or Engineer approved equal

B. Pressure Sensors:
   1. Two pressure transducers/sensors, one on system inlet and one on system outlet, for measuring differential pressure (to be displayed on HMI screen)
   2. General:
      a. Type: quick-disconnect, ¼-inch NPT connection
      b. Output: 4-20 mA analog output
      c. Range: 0-150 psi
      d. Manufacturer: IFM Efector or Engineer approved equal

C. Pressure Gauges:
   1. Two gauges on each vessel, one on vessel inlet and one on vessel outlet for measuring local pressure.
   2. General:
      a. Type: 2.5” dial, stainless steel case, ¼-inch NPT connection
      b. Accuracy: ASME B40.1 Grade A, 2-1-2%
      c. Range: 0-200 psi
      d. Manufacturer: SPAN, McDaniel or approved equal

D. Sample Ports:

1. Two ports on each vessel, one on vessel inlet and one on vessel outlet for local water sampling. One additional port on system inlet and one on system outlet (located on hydraulic panel)
2. General:
   a. Type: full-port, 2 piece ball valve, ¼-inch NPT connection
   b. Material: 316 SS body, EPDM seals,
   c. Operator: locking-lever handle
   d. Manufacturer: Flowtek or approved equal

2.10 SYSTEM CONTROL

A. The ARS Supplier shall provide an Arsenic Removal Treatment System Control Panel, which shall house the necessary logic controller, instruments, power supply, relays, terminal blocks and other ancillary components for operating the system. All wiring to field devices shall be terminated at a numbered terminal strip mounted directly in the panel. A separate stainless steel hydraulic panel shall be provided in addition to the control panel to monitor pressures and to obtain samples for compliance.

B. Controller:
   1. Main Control Panel shall be a Stainless steel NEMA 4X enclosure pre-wired and skid mounted if applicable. The panel shall contain the necessary equipment, instruments, ancillary control devices, hardware and logic to perform the automation functions of the system. All wiring to field devices shall be terminated at a numbered terminal strip mounted directly in the panel. The panel shall include:
      a. Programmable Logic Controller (PLC), including a Central Processing Unit (CPU), Input/Output (racks with I/O cards), and auxiliary equipment and cables for PLC internal data transfer. (Allen Bradley Micrologix 1500 PLC).
      b. HMI touch screen (Allen-Bradley PanelView Plus 600).
   2. PLC shall be fully programmed, staged and debugged at the manufacturer's facility.
   3. Software documentation shall be provided consisting of a fully annotated Ladder Logic Listing with cross-reference of internal coil and contact usage and location.
   4. The local panel system alarm outputs shall include:
      a. System high differential pressure
      b. System automatic control valve failure
      c. System High Flow

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.

B. The Contractor shall inspect all equipment and materials against approved Shop Drawings at time of delivery. Equipment and materials damaged or not conforming to the approved Shop Drawings shall be noted. The ARS supplier shall be notified immediately and steps taken to rectify, repair, or correct the deficiencies.

C. Equipment and materials received are under the care and responsibility of the Contractor. These items shall be stored by the Contractor in a dry location and protected from the elements according to the ARS Supplier's instructions.

D. Equipment and materials shall be handled in an approved manner according to the ARS Supplier's instructions.

E. Verify that piping connections to existing piping system, sizes, locations, and inverts are as indicated on Drawings.

3.2 PREPARATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Remove scale, grease, oil and dirt on inside and outside before assembly.

3.3 INSTALLATION

A. Offloading and Installation of the ARS and appurtenances shall be performed by the General Contractor and shall be in accordance with the Engineer's Drawings and with the ARS Supplier's drawings, instructions and recommendations. Conflicts of information shall be called to the attention of the Engineer.

B. ARS shall be delivered by the Supplier and offloaded, placed appropriately, and secured by the Contractor with anchor bolts to the building concrete foundation in accordance with the ARS Supplier's recommendations. The system shall be accurately leveled on the ground support surface.

C. General Contractor shall support piping independent of equipment. Equipment shall be free from all loads and stresses induced by the piping.

D. The General Contractor shall inspect all equipment as it arrives and is offloaded, before installation, and if damaged the carrier and ARS Supplier shall be notified promptly. Do not install damaged equipment until the Contractor makes repairs in accordance with ARS Supplier's written instruction and approval.

3.4 START-UP SERVICES AND TESTING

A. General Contractor and ARS Supplier shall verify that structures, equipment, media and vessels are compatible for an efficient system.

B. General Contractor and ARS Supplier shall make equipment adjustments required to place system in proper operating condition.

C. General Contractor or ARS Supplier shall test the arsenic removal system for proper operation in the presence of the Owner and Engineer.

D. The ARS Supplier shall furnish all testing equipment and devices required to demonstrate arsenic treatment compliance. The Contractor may utilize the existing chlorination equipment to provide disinfection of the system and piping prior to startup. Sodium Hypochlorite will be provided by the Owner.

E. General Contractor shall be responsible for first compliance sample. Costs for this analysis should be included in the Supplier or Contractor's bid. If any sample indicates non-compliance, that sample will be re-run. Results shall be provided to the Engineer and Owner. Additional future sampling shall be the responsibility of the Owner.

F. If the arsenic removal system fails to meet any of the specified performance requirements, General Contractor and/or ARS Supplier shall modify and/or replace defective equipment until it meets specified requirements and re-sample and analyze to verify satisfactory operation.

G. The ARS Supplier's field services – shall be retained for a period of not less than three (3) 8-hr days for installation and startup assistance of the treatment system factory-trained representatives of the manufacturer of each component with demonstrated ability and experience in the installation and operation of the equipment. The representative shall perform the services listed below:
   1. Inspect the completed installation and prepare an inspection report.
   2. Test, calibrate and adjust all components for optimum performance.
   3. Assist in initial media loading, start-up, and field-testing.
   4. Supervise the correction of any defective or faulty work before and after acceptance by Owner.
   5. Instruct Owner's personnel in the operation and maintenance of all components and conduct a training seminar at the site.
   6. Field service representative shall be responsible for ensuring that all operator-training is completed.

H. The ARS Supplier shall provide three (3) bound hard copies and one (1) CD or Drive of an Operation and Maintenance (O&M) Manual. Electronic files shall be provided in PDF format.

I. Spare Parts:
   1. Any special tools required for operation and maintenance of the system shall be identified and listed in the O&M Manual.

3.5 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.
   1. Disinfect as specified in Section 02660 – Water Pipeline Testing And Disinfection.

END OF SECTION

EXISTING WATER QUALITY

(ATTACHMENT “B”)

Table 3
EXISTING WATER CHEMISTRY

PARAMETER	Twin Lakes Well (#2)	Cain Well (#4)
ARSENIC TOTAL (ug/L)		
Number of Samples	25	26
Maximum Value	54	30
Minimum Value	20	10
Average Value	30.8	21.5
Standard Deviation	6.9	4.1
Median Value	31.0	22.0
ARSENITE (ASIII) (ug/L)		
Number of Samples	2	2
Maximum Value	<0.75%	<0.133%
Minimum Value	<0.07%	<0.14%
Average Value	<1.299%	<1.86%
Standard Deviation	N/A	N/A
Median Value	<1.29%	<1.82%
CHLORIDE (mg/L)		
Number of Samples	2	4
Maximum Value	14	4.7
Minimum Value	6.7	0.64
Average Value	10.4	1.9
Standard Deviation	5.2	1.9
Median Value	10.4	1.2
FLUORIDE (mg/L)		
Number of Samples	2	4
Maximum Value	0.43	0.3
Minimum Value	0.22	0.13
Average Value	0.3	0.2
Standard Deviation	0.1	0.1
Median Value	0.3	0.2

PARAMETER	Twin Lakes Well (#2)	Cain Well (#4)
IRON (ug/L)		
Number of Samples	3	4
Maximum Value	<100	260
Minimum Value	<50	<50
Average Value	<66.67	<140
Standard Deviation	N/A	N/A
Median Value	<50	<125
MANGANESE (ug/L)		
Number of Samples	5	4
Maximum Value	<30	14
Minimum Value	<10	6.5
Average Value	<14	<10.1
Standard Deviation	N/A	N/A
Median Value	<10	<10
NITRATE (mg/L as N)		
Number of Samples	4	6
Maximum Value	16.8	1.59
Minimum Value	0.16	0.18
Average Value	4.4	0.4
Standard Deviation	8.3	0.6
Median Value	0.26	0.21
NITRITE (mg/L as N)		
Number of Samples	3	3
Maximum Value	<.050	<.050
Minimum Value	<.040	<.01
Average Value	<.047	<.037
Standard Deviation	N/A	N/A
Median Value	<.050	<.050
pH (Std. Units)		
Number of Samples	2	4
Maximum Value	7.35	7.9
Minimum Value	6.84	7.53
Average Value	7.1	7.7
Standard Deviation	0.36	0.15
Median Value	7.10	7.75
NOTE: Statistical analysis is based on numeric value in Std. Units		

Table 3
EXISTING WATER CHEMISTRY

PARAMETER	Twin Lakes Well (#2)	Cain Well (#4)
SILICA (mg/L)*		
Number of Samples	9	9
Maximum Value	40	36
Minimum Value	28	28
Average Value	32.3	30.3
Standard Deviation	3.6	2.5
Median Value	32.0	29.0
*Sample of 132 mg/L from Well #2 on 5/5/09 omitted as an anomaly.		
SULFATE (mg/L)		
Number of Samples	3	5
Maximum Value	89	36
Minimum Value	16	10
Average Value	50.3	21.4
Standard Deviation	36.7	11.8
Median Value	46.0	16.0
TOTAL DISSOLVED SOLIDS (TDS) (mg/L)		
Number of Samples	1	3
Maximum Value	240	200
Minimum Value	240	114
Average Value	240	144.7
Standard Deviation	N/A	48
Median Value	240	120
BICARBONATE AS HCO3 (mg/L)		
Number of Samples	2	4
Maximum Value	160	130
Minimum Value	150	65.9
Average Value	155.0	95.2
Standard Deviation	7.1	26.4
Median Value	155.0	92.5
CHROMIUM (ug/L)		
Number of Samples	4	4
Maximum Value	<10	<10
Minimum Value	<10	<10
Average Value	<10	<10
Standard Deviation	N/A	N/A
Median Value	<10	<10
NON-VOL. ORGANIC CARBON (NVOC) (mg/L)		
Number of Samples	1	1
Maximum Value	0.16	0.19
Minimum Value	0.16	0.19
Average Value	0.16	0.19
Standard Deviation	N/A	N/A
Median Value	0.16	0.19

PARAMETER	Twin Lakes Well (#2)	Cain Well (#4)
TOTAL PHOSPHOROUS (mg/L)*		
Number of Samples	11	10
Maximum Value	0.11	0.11
Minimum Value	0.067	0.033
Average Value	0.09	0.08
Standard Deviation	0.02	0.02
Median Value	0.10	0.073
*To convert between total Phosphorous and Orthophosphate, multiply phosphours by 3.0		
SELENIUM (ug/L)		
Number of Samples	3	4
Maximum Value	75	<2
Minimum Value	<2	<1
Average Value	<27.3	<1.8
Standard Deviation	N/A	N/A
Median Value	<5	<2
GROSS ALPHA (pci/L)		
Number of Samples	4	5
Maximum Value	10	1.33
Minimum Value	1.57	0.38
Average Value	3.78	0.79
Standard Deviation	4.15	0.41
Median Value	1.77	0.74
TURBIDITY (NTU)		
Number of Samples	3	3
Maximum Value	0.26	2.2
Minimum Value	0.17	0.16
Average Value	0.21	0.93
Standard Deviation	0.05	1.11
Median Value	0.19	0.43
Total URANIUM (pci/L)		
Number of Samples	0	1
Maximum Value	N/A	0.59
Minimum Value	N/A	0.59
Average Value	N/A	0.59
Standard Deviation	N/A	N/A
Median Value	N/A	0.59
CALCIUM (mg/L)		
Number of Samples	4	6
Maximum Value	29	22
Minimum Value	21	12.9
Average Value	26.50	18.65
Standard Deviation	3.7	3.6
Median Value	28	19.5

Table 3
EXISTING WATER CHEMISTRY

PARAMETER	Twin Lakes Well (#2)	Cain Well (#4)
MAGNESIUM (mg/L)		
Number of Samples	4	6
Maximum Value	11	7.7
Minimum Value	6.20	3.88
Average Value	9.30	5.60
Standard Deviation	2.1	1.56
Median Value	10	5.15
ALKALINITY (as CaCO3) (mg/L)		
Number of Samples	2	5
Maximum Value	180	120
Minimum Value	130	54
Average Value	155.0	87.2
Standard Deviation	35.4	27.2
Median Value	155.0	77

PARAMETER	Twin Lakes Well (#2)	Cain Well (#4)
HARDNESS (as CaCO3) (mg/L)		
Number of Samples	4	6
Maximum Value	120	86
Minimum Value	78	52
Average Value	104.5	70.2
Standard Deviation	18.3	13.5
Median Value	110.0	70
SODIUM (mg/L)		
Number of Samples	1	1
Maximum Value	80	12
Minimum Value	80	12
Average Value	80	12
Standard Deviation	NA	NA
Median Value	80	12

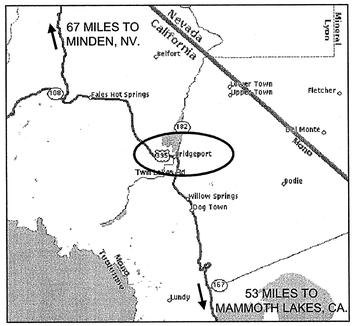
BRIDGEPORT PUBLIC UTILITY DISTRICT – ARSENIC REMOVAL PROJECT

ARSENIC REMOVAL SYSTEM PROCUREMENT CONTRACT

DRAWINGS

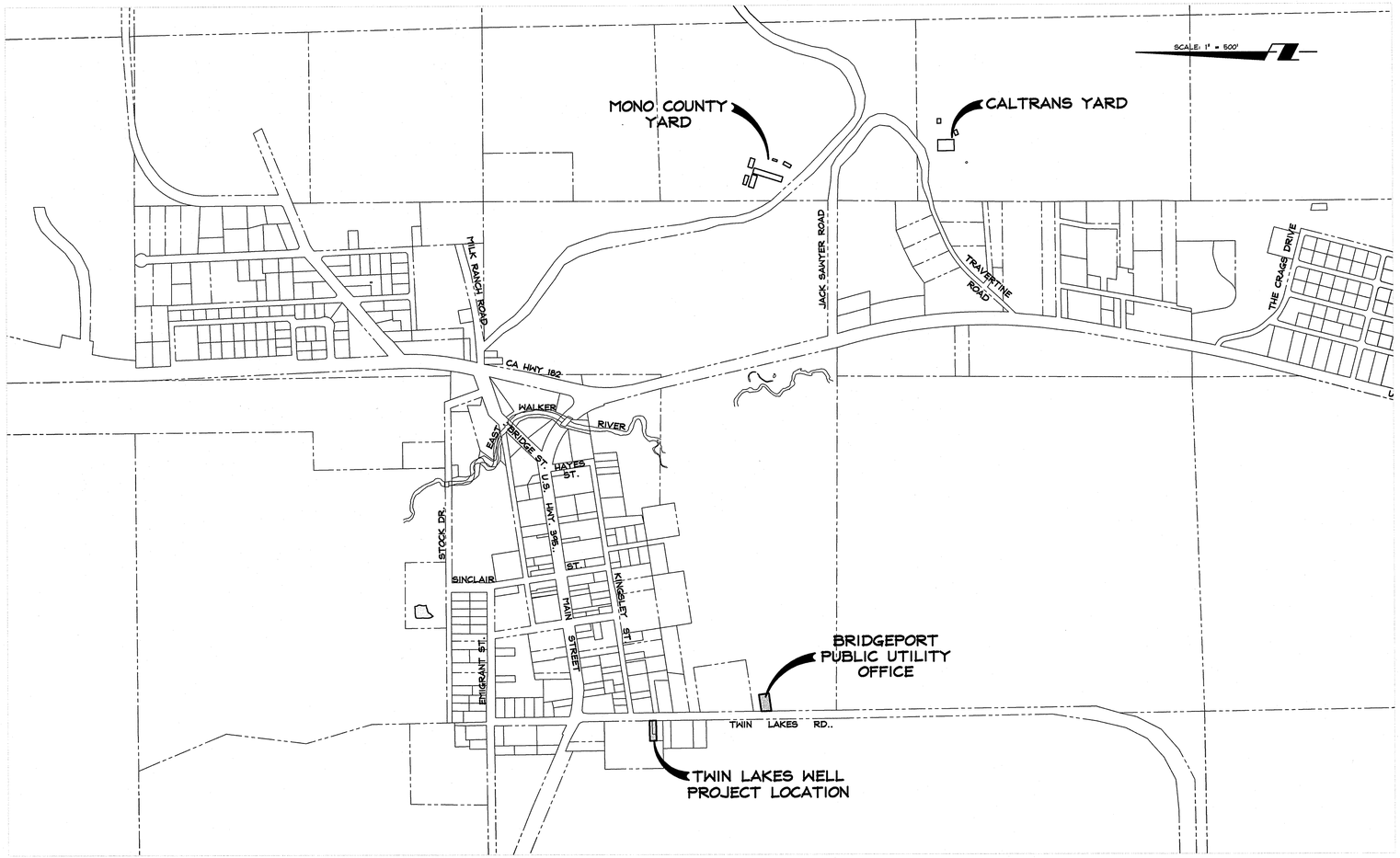
(ATTACHMENT “C”)

ARSENIC TREATMENT
IMPROVEMENT PLANS
FOR
BRIDGEPORT PUBLIC UTILITY DISTRICT
BRIDGEPORT, CALIFORNIA

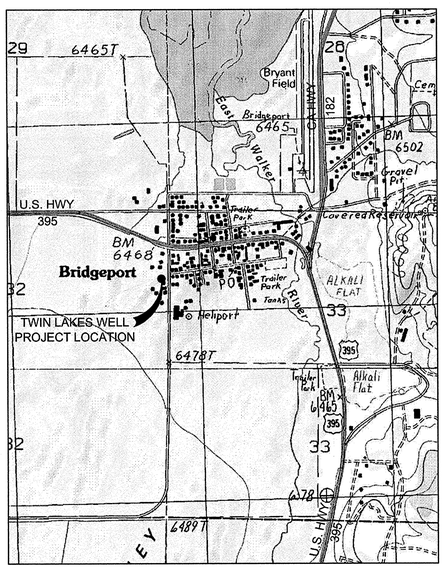


AREA MAP
SCALE: 1" = 8 MILES ±

SCALE: 1" = 8 MILES ±



LOCATION MAP
SCALE: 1" = 500'



SCALE: N.T.S.

VICINITY MAP
SCALE: N.T.S.

PROJECT SUMMARY

TITLE:	ARSENIC TREATMENT
OWNER:	BRIDGEPORT P.U.D. c/o RENN NOLAN, OFFICE MANAGER P.O. BOX 473 BRIDGEPORT, CA 93517 (760) 932-7251
CIVIL ENGINEER:	R.O. ANDERSON ENGINEERING, INC. SUE MCREAVY, P.E. 1603 ESMERALDA AVE. MINDEN, NV 89423 (775) 782-2322

PROJECT INDEX

NO.	DATE	REVISION BLOCK	BY

R|O|Anderson
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MINDEN, NEVADA 89423
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ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

TITLE SHEET

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: AS NOTED	SHEET: C1
DATE: 03.24.2017	OF: 30 SHEETS

3.24.17

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE STANDARDS FOR PUBLIC WORKS CONSTRUCTION BY MONO COUNTY. THE OWNER SHALL OBTAIN PERMITS FROM MONO COUNTY PUBLIC WORKS AND BUILDING DEPARTMENTS PRIOR TO THE START OF CONSTRUCTION.
2. ALL TRAFFIC CONTROL AND BARRICADING WITHIN THE PUBLIC RIGHTS-OF-WAY SHALL CONFORM TO PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION. NO STREET CLOSURES WILL BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF A TRAFFIC CONTROL PLAN BY THE MONO COUNTY DEPARTMENT OF PUBLIC WORKS.
3. THE CONTRACTOR SHALL CALL UNDERGROUND SERVICE ALERT "CALL BEFORE YOU DIG" (1-800-227-2600) FORTY-EIGHT (48) HOURS PRIOR TO START OF CONSTRUCTION.
4. THE CONTRACTOR SHALL CALL MONO COUNTY PUBLIC WORKS, (760) 932-5262, AND BUILDING DEPT., (760) 932-5231 AND BRIDGEPORT PUD FORTY-EIGHT (48) HOURS PRIOR TO START OF CONSTRUCTION. CONTRACTOR SHALL CALL TWENTY-FOUR (24) HOURS PRIOR TO REQUIRED INSPECTIONS AND TESTING.
5. THE APPROVED PLANS, PERMITS AND INSPECTION RECORDS MUST BE ON THE JOB SITE AT ALL TIMES.
6. MODIFICATIONS TO THE APPROVED PLANS REQUIRE REVIEW AND APPROVAL BY THE OWNER AND ENGINEER. WORK PERFORMED WITHOUT WRITTEN APPROVAL WILL REQUIRE REMOVAL AT THE CONTRACTORS EXPENSE.
7. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO POTHOLE EXISTING WATERLINES AND UTILITIES SURROUNDING THE AREA TO DETERMINE THE EXACT LOCATION AND DEPTH. POTHOLING SHALL OCCUR A MINIMUM OF 7 DAYS PRIOR TO THE COMMENCEMENT OF WORK IN ANY AREA.
8. ALL EXISTING VALVES AND SALVAGEABLE EQUIPMENT REMOVED DURING THE PROJECT SHALL BE RETURNED TO BRIDGEPORT PUD.
9. RESTRAINED FITTINGS: ALL FITTINGS ON HYDRANT ASSEMBLIES, BENDS, TEES, AND VALVES SHALL BE RESTRAINED. RESTRAINT SHALL BE PROVIDED BY ROMAC GRIPRING, EBAA IRON MEGAFLANGE, OR EQUAL.
10. FLANGE COUPLING ADAPTERS SHALL BE ROMAC 501 COUPLING WITH RESTRAINT (RFCA), OR EBAA IRON MEGALUG, OR EQUAL. RESTRAINTS ON PVC PIPE SHALL BE SPECIFIED FOR USE ON PVC PIPE.
11. ALL DUCTILE IRON PIPE ON THIS PROJECT SHALL BE FULLY RESTRAINED. ALL BURIED DUCTILE IRON PIPE OR EPOXY COATED PIPE AND FITTINGS SHALL BE DOUBLE-WRAPPED IN PLASTIC PER AWWA C105.
12. ALL WATER MAINS SHALL BE CLASS 150 OR 200 C900 PVC, AS SPECIFIED ON THE PLANS AND AS APPROVED BY BRIDGEPORT PUD. ALL WATER SERVICES 2" OR LESS SHALL BE CTS PE TUBING. SERVICES 4" OR GREATER SHALL BE CLASS 150, C900 PVC OR AS SPECIFIED ON THE PLANS.
13. ALL WATER MAINS SHALL BE DISINFECTED PER AWWA C651 & C653 AND BACTERIOLOGICAL ANALYSIS MEETING PRIMARY STANDARDS FOR COLIFORM BACTERIA OBTAINED AND REPORTED TO BRIDGEPORT PUD.
14. ALL WATER MAINS SHALL BE PRESSURE TESTED PER AWWA C605.
15. VARIATION OF ALL LOCATOR WIRE AT GATE VALVES, AIR RELEASE VALVES, AND LOCATE STATIONS SHALL BE PERFORMED BY THE INSPECTOR PRIOR TO PROJECT COMPLETION.
16. ALL NONPOTABLE INFLUENT PIPE SHALL HAVE A BLUE STRIPE MARKING ON THE PIPE WITH PURPLE MARKING TAPE PLACED AT TWO (2) LOCATIONS: SECURED TO THE TOP OF THE PIPE AND PLACED DURING BACKFILL 1' ABOVE PIPE. WARNING TAPE SHALL INCLUDE THE FOLLOWING TEXT: "CAUTION BURIED NON-POTABLE RAW WATERLINE BELOW".
17. COAT ALL EXPOSED BOLTS, WASHERS, NUTS, TIE RODS, AND ALL OTHER METAL PARTS INSTALLED UNDERGROUND WITH TWO (2) COATS OF APPROVED MASTIC PRIOR TO WRAPPING WITH POLYETHYLENE PLASTIC.
18. ALL PIPE FITTINGS AND VALVES OF A WATER DISTRIBUTION SYSTEM AND ANY FIRE HYDRANTS CONNECTED TO A PUBLIC WATER SYSTEM MUST COMPLY WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION 'GREEN BOOK' AND THE AWWA STANDARDS.
19. UNLESS OTHERWISE SPECIFIED, ALL SANITARY SEWER LINES SHALL BE PVC SDR 35.
20. EVERY EFFORT IS TO BE MADE TO KEEP WATER 18" ABOVE SEWER MAINS AND WATER 12" ABOVE SEWER LATERALS. OTHERWISE, THE FOLLOWING SPECIAL CONSTRUCTION METHODS APPLY:
    A. EFFORT SHALL BE MADE TO KEEP PIPELINE JOINTS EQUAL DISTANCE FROM THE POINT OF CROSSING.
    B. PIPELINES MUST BE 6' APART. IF 6' IS NOT ATTAINABLE RELOCATE WATER MAIN PER PROJECT DETAILS.
    C. WATER LINE MUST BE INSPECTED TO INSURE SUFFICIENT RESTRAINTS ARE IN PLACE.
    D. SEWER MUST HAVE A SLEEVE OR BE ENCASED IN 4" OF CONCRETE SLURRY FOR 20' CENTERED ON POINT THE POINT OF CROSSING.
21. IF ARCHAEOLOGICAL FEATURES OR MATERIALS ARE UNEARTHED DURING ANY PHASE OF PROJECT ACTIVITIES, ALL WORK IN THE IMMEDIATE VICINITY OF THE FIND SHALL HALT UNTIL BPUD HAS CONTACTED THE STATE WATERBOARDS ENVIRONMENTAL REVIEW UNIT (ERU) AND THE SIGNIFICANCE OF THE RESOURCE HAS BEEN EVALUATED. ANY MITIGATION MEASURES THAT MAY BE DEEMED NECESSARY MUST HAVE THE APPROVAL OF THE ERU, AND SHALL BE IMPLEMENTED, PURSUANT TO THE SECRETARY OF THE INTERIOR'S STANDARDS AND GUIDELINES FOR ARCHAEOLOGY AND HISTORIC PRESERVATION, 48 CFR 44716, BY A "QUALIFIED" ARCHAEOLOGIST REPRESENTING BPUD PRIOR TO THE RESUMPTION OF CONSTRUCTION ACTIVITIES.
22. IF HUMAN REMAINS ARE EXPOSED BY ACTIVITY RELATED TO THE PROJECT, BPUD SHALL COMPLY WITH CALIFORNIA STATE HEALTH AND SAFETY CODE, SECTION 7050.5, WHICH STATES THAT NO FURTHER DISTURBANCE SHALL OCCUR UNTIL THE COUNTY CORONER HAS MADE THE NECESSARY FINDINGS AS TO ORIGIN AND DISPOSITION PURSUANT TO CALIFORNIA PUBLIC RESOURCES CODE, SECTION 5097.98. BPUD WILL PROVIDE THE OPPORTUNITY FOR (A) NATIVE AMERICAN MONITOR (S) TO PARTICIPATE IN THE IDENTIFICATION, EVALUATION, AND MITIGATION OF EFFECTS UPON ANY NATIVE AMERICAN HUMAN REMAINS OR CULTURAL RESOURCES INADVERTENTLY EXPOSED DURING THE PROPOSED UNDERTAKING. CONSULTATION WITH PERSONNEL DESIGNATED BY THE NATIVE AMERICAN HERITAGE COMMISSION WOULD BE ACCEPTABLE. SHOULD TRIBAL REPRESENTATIVES AGREE TO CONSULT ON ANY SUCH DISCOVERIES; COSTS INCURRED WILL BE THE RESPONSIBILITY OF BPUD.
23. ALL SANITARY SEWER LATERALS SHALL BE PRESSURE TESTED WITH AIR AT 5 PSI IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, "GREEN BOOK".

LANDSCAPE AND IRRIGATION NOTES

GENERAL LANDSCAPE NOTES:

1. ALL LANDSCAPE WORK SHALL BE PERFORMED BY A CALIFORNIA LICENSED LANDSCAPE CONTRACTOR.
2. VERIFY LOCATIONS OF PERTINENT SITE EXISTING OR PROPOSED IMPROVEMENTS. IF ANY PARTS OF THIS PLAN CAN NOT BE FOLLOWED DUE TO SITE CONDITIONS, CONTACT THE LANDSCAPE ARCHITECT FOR INSTRUCTIONS PRIOR TO COMMENCING WORK.
3. REFER TO THE IMPROVEMENT PLANS FOR UTILITY LOCATIONS & FINAL GRADING. IF ACTUAL SITE CONDITIONS VARY FROM WHAT IS SHOWN ON THE PLANS, CONTACT THE LANDSCAPE ARCHITECT FOR DIRECTIONS ON HOW TO PROCEED.
4. PRIOR TO COMMENCING CONSTRUCTION, CONTACT THE UNDERGROUND UTILITY LOCATION SERVICES OR UTILITY LOCATION & IDENTIFICATION 1-800-227-2600.
5. VERIFY PLANT COUNTS. QUANTITIES ARE PROVIDED AS OWNER INFORMATION ONLY. IF QUALITIES ON PLANTING LIST DIFFER FROM GRAPHIC INDICATIONS THEN GRAPHICS SHALL PREVAIL.
6. PERFORM EXCAVATION IN THE VICINITY OF UNDERGROUND UTILITIES WITH CARE & IF NECESSARY BY HAND. THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR THIS WORK & DISRUPTION OR DAMAGE TO UTILITIES SHALL BE REPAIRED IMMEDIATELY AT NO EXPENSE TO THE OWNER.
7. THE CONTRACTOR SHALL PROTECT ALL EXISTING WORK DURING CONSTRUCTION & REPAIR ALL DAMAGE TO THE SITE AT NO COST TO THE OWNER.
8. ALL POST CARE & REQUIRED MAINTENANCE SHALL BEGIN IMMEDIATELY UPON THE COMPLETION OF THE WORK UNTIL THE FINAL PROJECT ACCEPTANCE IS COMPLETE.
9. ALL INSTALLATION MANUALS, OPERATION SHEETS, & AS-BUILT DRAWINGS SHALL BE SUBMITTED UPON FINAL INSPECTION.
10. ALL PLANT MATERIALS SHALL BE FIELD LOCATED TO AVOID ALL FINAL CIVIL IMPROVEMENTS, & TO AVOID STREET LIGHT ILLUMINATION INTERFERENCE. ALL TREES SHALL BE FIELD LOCATED WITH A MIN. 10' OFFSET FROM ALL UNDERGROUND & ABOVE GROUND UTILITY LINES.
11. LANDSCAPE ARCHITECT TO REVIEW PLANT MATERIALS AT SOURCE OR BY PHOTOGRAPH PRIOR TO DIGGING OR SHIPPING OF PLANT MATERIALS.
12. THE CONTRACTOR SHALL PROVIDE ALL PLANT MATERIALS IN SUFFICIENT QUANTITIES & SIZES TO COMPLETE ALL SHOWN PLANTINGS.
13. ALL PLANT MATERIAL SHALL CONFORM TO CURRENT INDUSTRY STANDARDS ADOPTED BY THE AMERICAN STANDARDS FOR NURSERY STOCK AS WELL AS CRITERIA ADOPTED BY THE AMERICAN ASSOCIATION OF NURSERYMEN.
    - ALL PLANT MATERIALS SHALL BE HEALTHY, VIGOROUS, WELL ROOTED, & ESTABLISHED IN THE APPROPRIATE CONTAINER.
    - ALL PLANT MATERIALS SHALL HAVE AN APPROPRIATELY SIZED ESTABLISHED ROOT BALL & BE FREE OF EXCESSIVE ROOT GROWTH.
    - ALL PLANT MATERIALS SHALL BE FREE OF LARGE WOUNDS (LARGER THAN 1"), INSECTS, DISEASE, WINDBURN, RODENT, WEED, OR MECHANICAL DAMAGE.
    - ALL PLANT MATERIALS SHALL CONTAIN MATERIALS APPROPRIATE LEADERS, COLOR, BUDS, FOLIAGE, STRUCTURE, & TAPER.
14. ALL PLANT MATERIALS SHALL BE FREE OF ANY PLASTIC OR METAL ROOT BALL CONTAINERS. ALL FABRIC STYLE POTS SHALL HAVE SIDES REMOVED BEFORE PLANTING. ALL CONTAINER GROWN PLANT MATERIAL SHALL BE INSPECTED FOR, & REJECTED IF, ROOT BOUND.
15. ALIGN & EQUALLY SPACE IN ALL DIRECTIONS PLANT MATERIALS AS DESIGNATED PER THESE NOTES & DRAWINGS.
16. ALL PLANT MATERIALS SHALL MAINTAIN THE SAME RELATION TO FINISHED GRADE WHEN PLANTED AS THEIR ORIGINAL GRADE.
17. PRUNE NEWLY PLANTED PLANT MATERIALS ONLY UPON APPROVAL BY THE LANDSCAPE ARCHITECT.
18. SOILS SHALL BE TESTED FOR CORRECT PH & FERTILITY, & SHALL BE ADJUSTED WITH LIME, SULFUR OR FERTILIZER TO CORRECT ANY IMBALANCES.
19. APPLY PROPERLY LABELED PRE-EMERGENT HERBICIDE IN PLANTING AREA & WET ACCORDING TO THE MANUFACTURERS DIRECTIONS PRIOR TO APPLYING MULCH OR ROCK.
20. ALL PLANTER AREAS NOT TOP DRESSED WITH MULCH SHALL BE TOP DRESSED WITH 3"-8" NATIVE COBBLE 6" DEEP MIN.
21. FINISH GRADE IN PLANTED AREAS (COBBLE LAYER) SHALL BE 1 1/2 INCHES BELOW ADJACENT PAVING OR HEADER.
22. ALL SETTLING BELOW GRADE SHALL BE FILLED WITH MOIST BACKFILL TO THE TOP OF THE SOIL BALL.
23. CARE SHALL BE TAKEN TO REDUCE ANY SOIL COMPACTION TO PLANTED AREAS. IF SOIL COMPACTION OCCURS LOOSEN AS NECESSARY.

GENERAL IRRIGATION CONSTRUCTION INFORMATION:

1. IRRIGATION DESIGN TO BE PROVIDED BY CONTRACTOR AND SHALL PROVIDE SUFFICIENT IRRIGATION WATER TO SUPPORT THE PROPOSED LANDSCAPE IMPROVEMENTS PERPETUALLY.
2. ALL IRRIGATION COMPONENTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S & LOCAL GOVERNMENT REQUIREMENTS.
3. ALL IRRIGATION COMPONENTS SHALL BE KEPT TO THE SIDE OF ALL PLANTING MATERIALS.
4. ALL IRRIGATION COMPONENTS SHALL BE NEW & HAVE NO DEFECTS.
5. COORDINATE ALL SLEEVE INSTALLATION WITH THE PAVING CONTRACTOR.
6. ALL SOIL COMPACTION FOR BACKFILL SHALL MATCH ADJACENT SOIL COMPACTION DENSITY.
7. A COMPLETE SYSTEM FLUSHING, AT 1.5 TIMES THE STATIC PRESSURE FOR 2 CONTINUOUS HOURS, & INITIAL SYSTEM TESTING SHALL BE CONDUCTED BEFORE BACKFILLING. ALL LEAKS & SYSTEM MALFUNCTIONS SHALL BE REPAIRED & THE SYSTEM SHALL BE RETESTED UNTIL A SATISFACTORY RESULT IS PRODUCED.

SCHEDULE OF WORK

- THE CONTRACTOR SHALL SUBMIT A SCHEDULE OF WORK TO THE ENGINEER FOR APPROVAL IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ALL WORK SHALL BE IN ACCORDANCE WITH THE APPROVED SCHEDULE.

SURVEY INFORMATION

BASIS OF BEARING

- N 00°27'49" E - THE WEST LINE OF SECTION 33, T. 5 N., R. 25 E., M.D.M. SEE SITE PLAN FOR REFERENCE LINES.

DATUM

- IDENTICAL TO THE AERIAL SURVEY PERFORMED BY TRI-STATE AERIAL SURVEYING, LTD. FOR BRIDGEPORT PUBLIC UTILITY DISTRICT, DATED SEPTEMBER 20, 2001. SEE GRADING PLAN FOR SITE BENCH MARKS.

DESIGN CRITERIA

- GROUND SNOW LOAD IS 65 PSF PER MONO COUNTY BUILDING DEPARTMENT.
- FLAT ROOF SNOW LOAD IS 50 PSF PER MONO COUNTY BUILDING DEPARTMENT
- DESIGN WIND SPEED IS 90 MPH, EXPOSURE C
- SEISMIC DESIGN CATEGORY D
- FROST DEPTH = 18" PER MONO COUNTY BUILDING DEPARTMENT
- CLIMATE ZONE: 16

MONO COUNTY GRADING and EARTHWORK SPECIFICATIONS

1. ALL WORK SHALL CONFORM TO POLICIES AND STANDARDS IN THE MONO COUNTY GENERAL PLAN AND THE MONO COUNTY CODE.
2. SITE-DISTURBING CONSTRUCTION ACTIVITIES MUST BE RESTRICTED TO THE BOUNDARIES OF THIS SITE. AREAS TO BE GRADED SHALL BE CLEARED OF BRUSH, VEGETATION, LARGE BOULDERS AND OTHER DELETERIOUS MATERIALS. CLEARED MATERIALS SHALL BE DISPOSED OF BY THE CONTRACTOR TO A DESIGNATED DUMP SITE OR OTHER LOCATION APPROVED BY THE MONO COUNTY DEPARTMENT OF PUBLIC WORKS.
3. TOPSOIL SHALL BE STOCKPILED WITHIN THE CONSTRUCTION PERIMETER AREAS, AS APPROVED BY THE OWNER, FOR USE ON SLOPES AND DISTURBED AREAS. ALL GRADING SHALL BE PERFORMED IN ACCORDANCE WITH MONO COUNTY ORDINANCES AND STANDARDS.
4. ANY EVIDENCE OF THE HISTORICAL PRESENCE OF MAN FOUND DURING CONSTRUCTION SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER, ENGINEER AND MONO COUNTY PLANNING DEPARTMENT AND CONSTRUCTION SHALL STOP UNTIL FURTHER NOTICE.
5. CONTRACTOR SHALL CONDUCT ALL GRADING OPERATIONS IN ACCORDANCE WITH THE MONO COUNTY ORDINANCES AND STANDARDS, AND IN CONFORMANCE WITH THE CONSTRUCTION SAFETY ORDERS OF THE STATE OF CALIFORNIA, DEPARTMENT OF INDUSTRIAL RELATIONS, DIVISION OF INDUSTRIAL SAFETY. IN ADDITION, CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF GENERAL OSHA STANDARDS FOR THE PROTECTION OF WORKMEN AND THE GENERAL PUBLIC. OSHA PERMITS ARE REQUIRED FOR ANY EXCAVATED TRENCHES OVER 4 FEET.
6. CONTRACTOR SHALL TAKE ALL SUCH MEASURES NECESSARY TO CONTROL DUST IN CONSTRUCTION AREAS OR ON ACCESS ROADS. SUFFICIENT WATER TRUCKS SHALL BE MADE AVAILABLE FOR DUST CONTROL PURPOSES. ALL EXPOSED SOIL SURFACES SHALL BE MOISTENED AS REQUIRED TO AVOID NUISANCE CONDITIONS AND INCONVENIENCES FOR LOCAL RESIDENTS AND TRAVELERS OF NEARBY ROADWAYS.
7. AGGREGATE BASE SHALL BE CLASS 2, 3/4" MAXIMUM GRADING, AND SHALL CONFORM TO THE PROVISIONS OF SECTION 26, "AGGREGATE BASES," OF 1992 CALTRANS STANDARD SPECIFICATIONS AND SHALL BE COMPACTED TO A MINIMUM OF 95% OF THE MATERIAL'S MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557-92 (OR MOST RECENT EDITION).
8. SHOULD ANY COMPACTION TEST FAIL TO MEET THE MINIMUM REQUIRED DENSITY AS SPECIFIED ON THE PLANS OR IN THE GEOTECHNICAL REPORT, THE DEFICIENCY SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE SOILS ENGINEER. THE EXPENSE OF RETESTING SUCH AN AREA SHALL BE BORNE BY THE CONTRACTOR, AT NO COST TO THE OWNER.
9. THE LIMITS OF CONSTRUCTION SHALL BE CAREFULLY AND FULLY FLAGGED PRIOR TO THE START OF CONSTRUCTION, AND POSTED SO AS TO PREVENT DAMAGE TO VEGETATION AND DISTURBANCE TO SOILS OUTSIDE OF THE AREA OF CONSTRUCTION.
10. CONSTRUCTION AND DELIVERY OF MATERIALS SHALL BE LIMITED TO 7:00 AM TO 8:00 PM, MONDAY THROUGH FRIDAY (NO OPERATIONS ON SATURDAY, SUNDAY OR CALIFORNIA LEGAL HOLIDAYS). NOISE LEVELS OF CONSTRUCTION EQUIPMENT WILL BE KEPT TO A MINIMUM, USING SOUND MUFFLING DEVICES IN ACCORDANCE WITH PREVAILING REQUIREMENTS. SITE PREPARATION AND CONSTRUCTION SHALL BE CONDUCTED SO AS TO MINIMIZE EXCESSIVE NOISE, DUST, DEBRIS AND DISTURBANCE TO NEIGHBORS WITHIN 500'.
11. RESTRICTIONS ON THE MOVEMENTS OF HEAVY EQUIPMENT SHALL BE ACCOMPLISHED THROUGH THE ESTABLISHMENT OF DESIGNATED TRAVEL ROUTES, AND BARRIERS WHICH PREVENT CUTTING, SCARRING AND ROOT DAMAGE TO TREES AND SHRUBS NOT BEING REMOVED. IF DAMAGE IS DONE, REVEGETATION SHALL OCCUR AS SOON AS FEASIBLE.
12. ALL EXPOSED SOIL SURFACES SHALL BE STABILIZED WITH ADEQUATE EROSION CONTROL SYSTEMS PRIOR TO THE ONSET OF WINTER WEATHER.
13. NO MATERIALS, DEBRIS OR OTHER ARTICLES SHALL BE STORED OR PLACED WITHIN ANY ROADWAY AREA PRIOR TO CONSTRUCTION.
14. CUT AND FILL SLOPES SHALL NOT EXCEED A STEEPNESS OF 2:1, UNLESS OTHERWISE NOTED. TO CONTROL EROSION, SLOPES SHALL BE REVEGETATED WITH A NATIVE SEED MIX OR LANDSCAPED WITHIN TWO WEEKS OF ESTABLISHING FINISHED GRADE, BY INDIVIDUAL SECTION. STOCKPILED TOPSOIL SHALL BE SPREAD EVENLY OVER SLOPES AND DISTURBED AREAS, THEN SEED SHALL BE BROADCASTED OR HYDROSEEDED WITH THE FOLLOWING SEED MIXTURE:

    ANTELOPE BITTER BRUSH (PUSHIA TRIDENTATA) @ 10 lb/Ac
    LUPIN (LUPINUS ARGENTEUS) @ 5 lb/Ac
    CRESTED WHEAT GRASS (AGROPTRON DESERTORIUM) @ 20 lb/Ac
    BIG SAGEBRUSH (ARTEMISIA TRIDENTATA) @ 5 lb/Ac
    RABBIT BRUSH (CHRYSANTHAMNUS NAUSEOSUS) @ 10 lb/Ac
    NEEDLEGRASS (ACHNATHERUN) @ 20 lb/Ac

15. THESE AREAS SHALL THEN BE IMMEDIATELY STABILIZED WITH .76 lb/sqyd STRAW AND FIBER, CRIMPED OR TRACKED IN PLACE. ANY DISTURBANCE OF AREAS NOT INTENDED FOR CONSTRUCTION WILL BE IMMEDIATELY REPAIRED.

NO.	DATE	REVISION BLOCK	BY

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ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

GENERAL NOTES

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: MAB	JOB: 0883-029
ENGINEER: S.JRM	DRAWING: SEE PLOT STAMP
SCALE: N.T.S.	SHEET: C2
DATE: 03.24.2017	OF: 30 SHEETS

3.24.17

SYMBOLS

EXISTING	NEW	
W	W	AIR RELEASE VALVE
		CONIFEROUS TREE
		DIRECTION OF NORTH
		DECIDUOUS TREE
		FIRE HYDRANT
		GAS MANHOLE
		GAS RISER
G	G	GAS VALVE
		GAS METER
		HANDICAPPED ACCESSIBLE SPACE
	A / C5	IDENTIFICATION OF SECTION POINTING IN THE DIRECTION IN WHICH THE SECTION IS VIEWED; SHEET NUMBER THAT THE SECTION APPEARS ON
	B / C6	IDENTIFICATION OF DETAIL; SHEET NUMBER THAT THE DETAIL APPEARS ON
INTX	INTX	INTERSECTION SIGN
MERGE	MERGE	MERGING TRAFFIC SIGN
		PARKING LIGHT
PEDX	PEDX	PEDESTRIAN CROSSING SIGN
		PERCOLATION TEST PIT LOCATION
		POWER GUY ANCHOR
		POWER GUY POLE
		POWER HAND HOLE
P	P	POWER MANHOLE
		POWER METER
PP	PP	POWER POLE
		POWER RISER
1	1	REVISION NUMBER
		SANITARY SEWER CLEAN OUT
S	S	SANITARY SEWER MANHOLE
SCHOOL	SCHOOL	SCHOOL ZONE SIGN
5 MPH	5 MPH	SPEED LIMIT SIGN
STOP	STOP	STOP SIGN
		STORM DRAIN CATCH BASIN
		STORM DRAIN CATCH INLET
		STORM DRAIN CULVERT INVERT
		STORM DRAIN DROP INLET
SD	SD	STORM DRAIN MANHOLE
ST	ST	STREET SIGN
		STREET LIGHT
		SURVEY CONTROL POINT
		TELEPHONE GUY ANCHOR
		TELEPHONE GUY POLE
		TELEPHONE HAND HOLE
T	T	TELEPHONE MANHOLE
		TELEPHONE POLE
		TELEPHONE RISER
		TELEVISION GUY ANCHOR
TV	TV	TELEVISION HAND HOLE
TV	TV	TELEVISION MANHOLE
		TELEVISION RISER
		TRAFFIC HAND HOLE
		TRAFFIC LIGHT
TF	TF	TRAFFIC MANHOLE
		UTILITY GUY ANCHOR
		UTILITY GUY POLE
		UTILITY POLE
		WATER GATE VALVE
W	W	WATER MANHOLE
		WATER METER
		WATER RISER
W	W	WELL

EXISTING	NEW	
YIELD	YIELD	YIELD SIGN
100.00 FG		GRADE ELEVATION; GRADE DESCRIPTION

ABBREVIATIONS

AASHTO..... AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS
AB..... AGGREGATE BASE
AC..... ASPHALT CONCRETE
ADA..... AMERICANS WITH DISABILITIES ACT OF 1990
ADT..... AVERAGE DAILY TRAFFIC
ALT..... ALTITUDE
ANSI..... AMERICAN NATIONAL STANDARDS INSTITUTE
APN..... ASSESSOR'S PARCEL NUMBER
APPROX..... APPROXIMATELY
APWA..... AMERICAN PUBLIC WORKS ASSOCIATION
ARV..... AIR RELEASE VALVE
ASCE..... AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM..... AMERICAN SOCIETY OF TESTING AND MATERIALS
@..... AT
AWS..... AMERICAN WELDING SOCIETY
AWWA..... AMERICAN WATER WORKS ASSOCIATION

BC..... BEGIN CURVE
BFE..... BASE FLOOD ELEVATION
BLD..... BUILDING
B.L.M..... BUREAU OF LAND MANAGEMENT
BW..... BACK OF WALK
BW..... BARBED WIRE

CAP..... CORRUGATED ALUMINUM PIPE
CAPA..... CORRUGATED ALUMINUM PIPE ARCH
C&G..... CURB AND GUTTER
CB..... CATCH BASIN
CC..... CARSON CITY
CF..... CUBIC FOOT
CHL..... CHAIN LINK
CI..... CURB INLET(THROUGH)
CL..... CENTER LINE
CMP..... CORRUGATED METAL PIPE
CO..... CLEAN OUT
COMP..... COMPACTION
CON..... CONIFEROUS
CRN..... CROWN OF ROAD
CSP..... CORRUGATED STEEL PIPE
CSPA..... CORRUGATED STEEL PIPE ARCH
CUL..... CULVERT INVERT
CY..... CUBIC YARD

°..... DEGREES
D..... DIRT
DEC..... DECIDUOUS
DG..... DECOMPOSED GRANITE
DI..... DROP INLET
DIA(ø)..... DIAMETER

E..... EAST
EA..... EACH
EC..... END CURVE
ED..... EDGE
EGL..... ENERGY GRADE LINE
ELEC..... ELECTRICAL
ELEV..... ELEVATION
EP..... EDGE OF PAVEMENT
EPA..... ENVIRONMENTAL PROTECTION AGENCY
EVC..... END VERTICAL CURVE
EW..... EDGE OF WATER
EX..... EXISTING

F..... FAHRENHEIT
FC..... FACE OF CURB
FC..... FIRE CONNECTION
FEMA..... FEDERAL EMERGENCY MANAGEMENT AGENCY
FF..... FINISHED FLOOR
FG..... FINISHED GRADE
FH..... FIRE HYDRANT
FL..... FLOWLINE
FNC..... FENCE
FND..... FOUND MONUMENT, CORNER OR CONTROL POINT
FS..... FIRE STUB
FT(')..... FOOT(FEET)

G..... GAS
G..... GATE
GA..... GUY ANCHOR
GB..... GRADE BREAK
GID..... GENERAL IMPROVEMENT DISTRICT
GP..... GUY POLE
GPM..... GALLONS PER MINUTE
GR..... GRAVEL
GS..... GROUND SHOT

H/C..... HANDICAP
HDPE..... HIGH DENSITY POLYETHYLENE
HDS..... HYDRAULIC DESIGN SERIES
HEC..... HYDRAULIC ENGINEERING CIRCULAR
HERCP..... HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE
HGL..... HYDRAULIC GRADE LINE
HH..... HAND HOLE
HORIZ..... HORIZONTAL
HW..... HOG WIRE

ID..... INNER DIAMETER
IE..... INVERT ELEVATION
IN(")..... INCH
INC..... INCORPORATED
INTX..... INTERSECTION
IRRIG..... IRRIGATION
ITE..... INSTITUTE OF TRANSPORTATION ENGINEERS

LAT..... LATERAL
LOS..... LEVEL OF SERVICE
LS..... LUMP SUM
LT..... LIGHT

M..... METER
MAX..... MAXIMUM
MGD..... MILLION GALLONS PER DAY
MH..... MANHOLE
MI..... MILE
MIN..... MINIMUM
MISC..... MISCELLANEOUS
MIX..... MIXED
MPH..... MILES PER HOUR
MUTCD..... MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES
MUI..... RADIO FREQUENCY METER INTERFACE UNIT

N..... NORTH
NE..... NORTHEAST
NEC..... NATIONAL ELECTRIC CODE
NFIP..... NATIONAL FLOOD INSURANCE PROGRAM
NSF..... NATIONAL SANITATION FOUNDATION
NO..... NUMBER
NOAA..... NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NRCS..... NATIONAL RESOURCE CONSERVATION SERVICE
NTS..... NOT TO SCALE
NW..... NORTHWEST
NWS..... NATIONAL WEATHER SERVICE

OC..... ON CENTER
OD..... OUTER DIAMETER
OSHA..... OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970
O/H..... OVERHEAD

±..... PLUS OR MINUS
P..... POWER
PC..... POINT OF CURVATURE
PDL..... PADDLE
PE..... PROFESSIONAL ENGINEER LICENSED BY THE STATE OF CALIFORNIA
PED..... PEDESTAL
PEDX..... PEDESTRIAN CROSSING
PK..... PARKING
%..... PERCENT
P/L..... PROPERTY LINE
PMF..... PROBABLE MAXIMUM FLOOD
PNT..... POINT
PNT..... PAINT MARK
PO..... PUSH ON
PSI..... POUNDS PER SQUARE INCH
PT..... POINT OF TANGENCY
P.U.D..... PUBLIC UTILITY DISTRICT
PUE..... PUBLIC UTILITY EASEMENT
PVC..... POLYVINYL CHLORIDE

R..... RADIUS
R..... ROCK
R..... RISER
RB..... RIVER BED
RCBC..... REINFORCED CONCRETE BOXED CULVERT
RCP..... REINFORCED CONCRETE PIPE
ROW..... RIGHT OF WAY

S..... SIGN
S..... SLOPE
S..... SOUTH
SD..... STORM DRAIN
SDMH..... STORM DRAIN MANHOLE
SDR..... STANDARD DIMENSION RATIO
SE..... SOUTHEAST
SET..... SET MONUMENT, CORNER OR CONTROL POINT
SF..... SQUARE FOOT(FEET)
SPP..... STRUCTURAL PLATE PIPE
SPPA..... STRUCTURAL PLATE PIPE ARCH
SRV..... SERVICE
SS..... SANITARY SEWER
SSMH..... SANITARY SEWER MANHOLE
ST..... STREET
STA..... STATION
STB..... STUB
STD..... STANDARD
SW..... SOUTHWEST
S/W..... SIDEWALK

T..... TELEPHONE
TBC..... TOP BACK OF CURB
TC..... TOP OF CURB
TRB..... TRANSPORTATION RESEARCH BOARD
TOE..... TOE OF SLOPE
TOP..... TOP OF SLOPE
TR..... TREE
TRF..... TRAFFIC CONTROL
TV..... TELEVISION
TYP..... TYPICAL

U..... UTILITY
UBC..... UNIFORM BUILDING CODE
UG..... UNDERGROUND
UMC..... UNIFORM MECHANICAL CODE
UPC..... UNIFORM PLUMBING CODE
USACE..... UNITED STATES ARMY CORPS OF ENGINEERS
USBR..... UNITED STATES BUREAU OF RECLAMATION
USGS..... UNITED STATES GEOLOGICAL SURVEY

V..... VALVE
VA..... VAULT
VC..... VERTICAL CURVE
VG..... VALLEY GUTTER
VERT..... VERTICAL
VPC..... VERTICAL POINT OF CURVATURE
VPT..... VERTICAL POINT OF TANGENCY

W..... WEST
W/..... WITH
WEF..... WATER ENVIRONMENT FEDERATION
WL..... WALL
WK..... WALKWAY
WV..... WATER GATE VALVE

YR..... YEAR

LINE TYPES

EXISTING	NEW	
		ADJACENT PROPERTY LINE
		ON-SITE PROPERTY LINE
		BUILDING ENVELOPE
		CENTERLINE OF RIGHT-OF-WAY
100		CONTOUR - FIVE FOOT INTERVAL
99		CONTOUR - ONE FOOT INTERVAL
		EASEMENT OR ON-SITE R.O.W.
		EDGE OF PAVEMENT AND/OR CURB
		FLOW LINE
EX 4" G	4" G	GAS LINE
		STREET R.O.W.
OHP	OHP	OVERHEAD POWER
UGP	UGP	UNDERGROUND POWER
EX 8" SS	8" SS	SANITARY SEWER MAIN
EX 12" SD	12" SD	STORM DRAIN
EX 12" W	12" W	WATER MAIN
		BARBED WIRE FENCE
		OTHER FENCE

NO.	DATE	REVISION BLOCK	BY

R|O|Anderson
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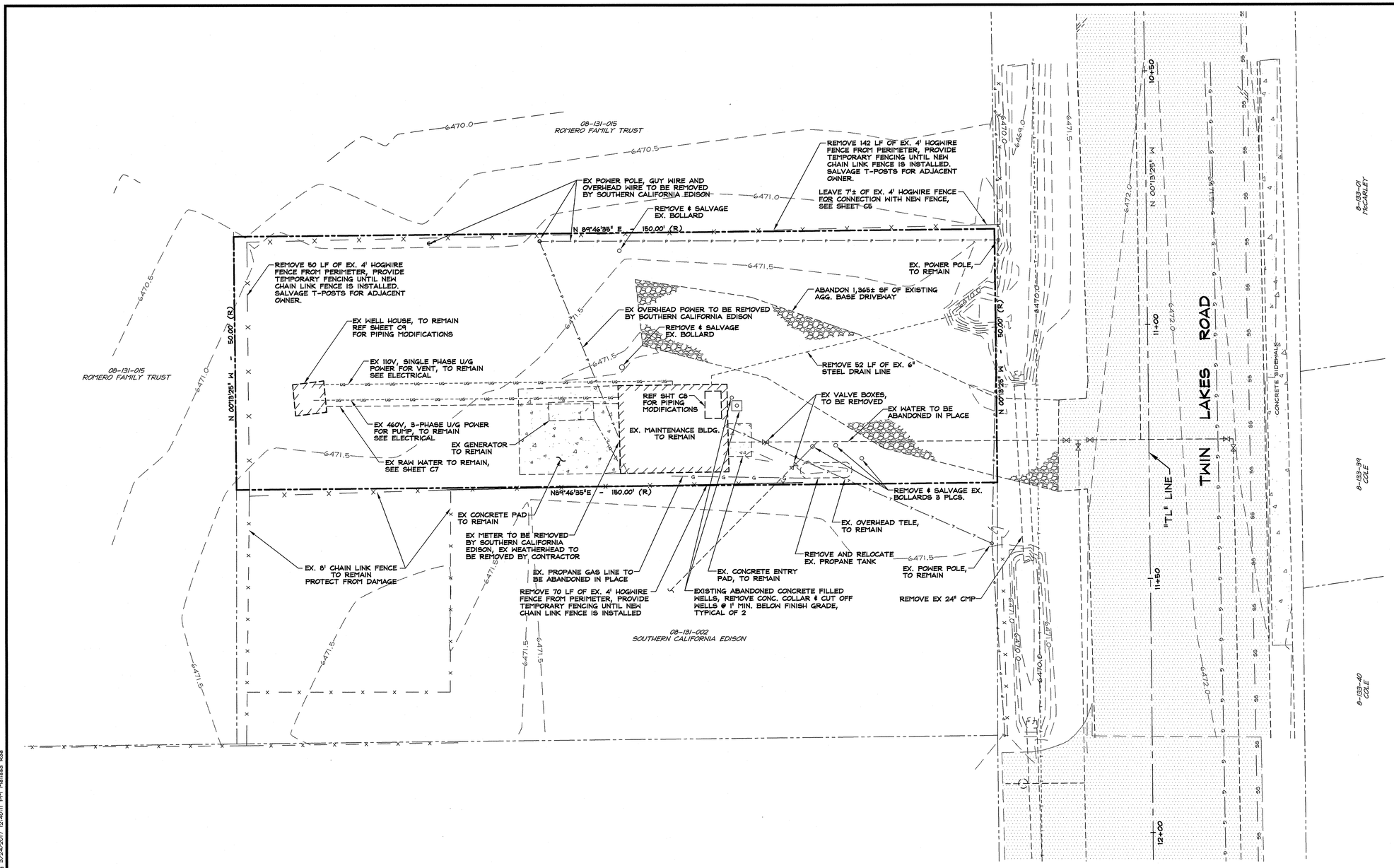
ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

LEGEND AND ABBREVIATIONS

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: N.T.S.	SHEET: C3
DATE: 03.24.2017	OF: 30 SHEETS

3-24-17



DEMOLITION NOTES:

1. REMOVE AND DISPOSE OF 4' HOGWIRE FENCE, 262 LF± TOTAL.
2. APPROXIMATE LOCATION OF GAS LINE, CONTRACTOR SHALL VERIFY. PROPANE TANK: REMOVE AND RESET. REMOVE EX BOLLARDS AND STORE FOR RE-USE.
3. EX BUILDING, GENERATOR AND WELL HOUSE SHALL BE PROTECTED FROM DAMAGE.
4. REMOVE AND DISPOSE OF EX PIPING AS SHOWN.
5. FOR ELECTRIC SERVICE SEE PLANS BY SOUTHERN CALIFORNIA EDISON, FOR POLE REMOVAL COORDINATE WITH SOUTHERN CALIFORNIA EDISON.
6. SEE SPECIFICATIONS FOR SCHEDULING TIMES THAT THE TWIN LAKES WELL IS WITHOUT POWER.
7. PROPERTY BOUNDARY LINE BEARINGS AND DISTANCES ARE PER RECORD OF SURVEY No. 32-84, PREPARED FOR BRIDGEPORT PUBLIC UTILITY DISTRICT, FILED IN MONO COUNTY IN BOOK 4 ON PAGE 99, APRIL 29, 2011.

NO.	DATE	REVISION BLOCK	BY

SCALE: 1"=10'

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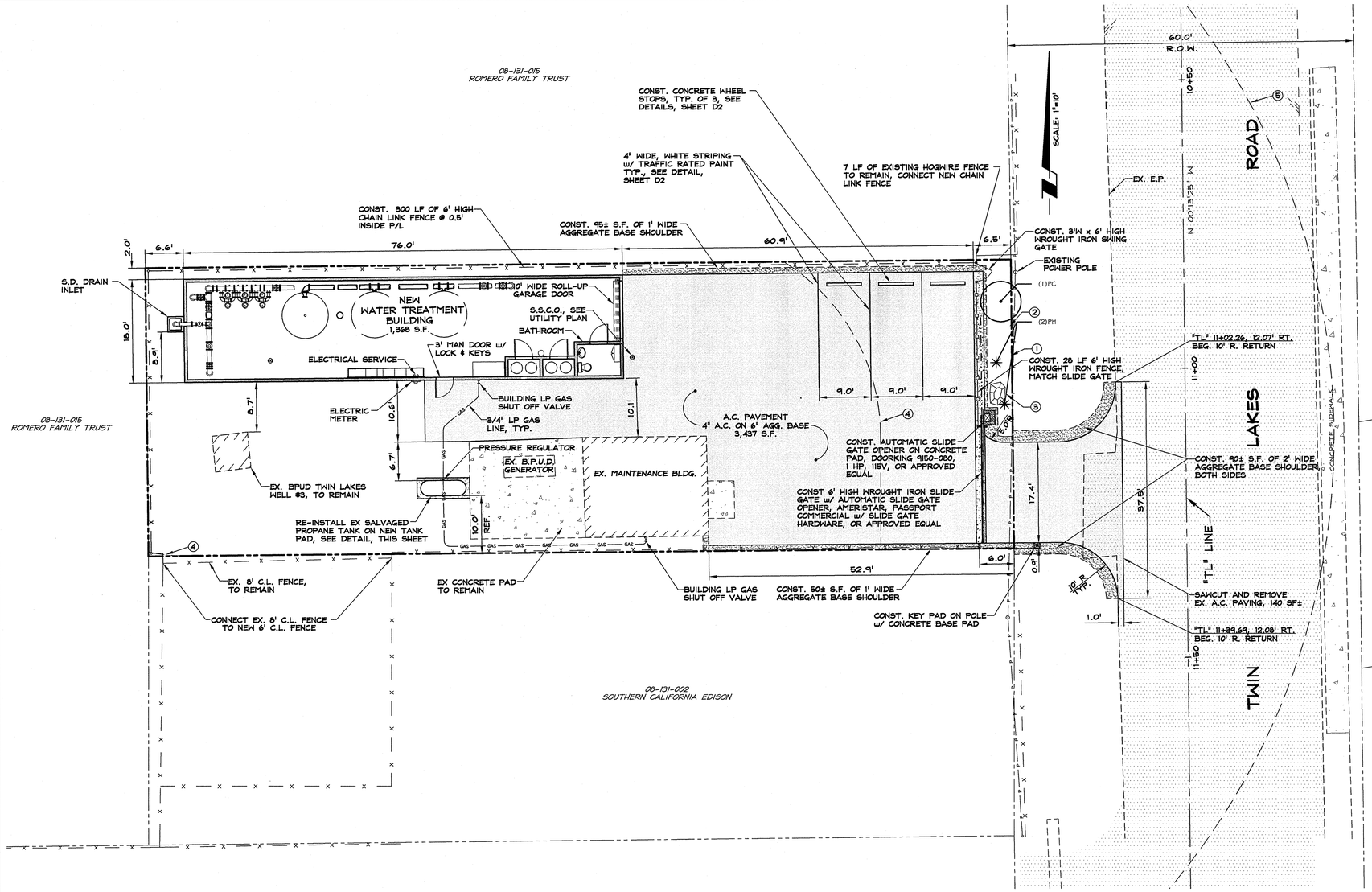
ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

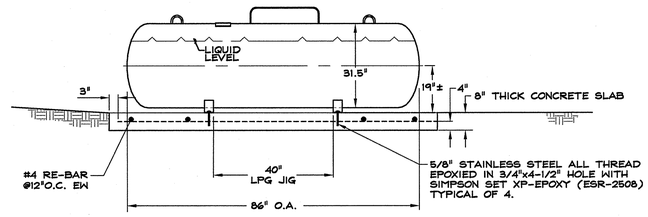
DEMOLITION PLAN

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: 1"=10'	SHEET: C4
DATE: 03.24.2017	OF: 30 SHEETS

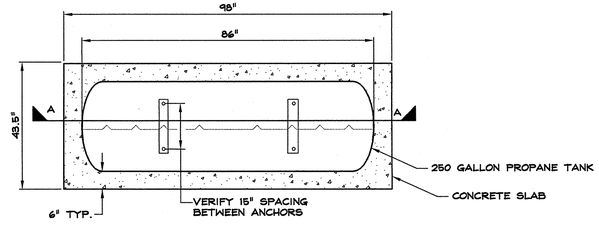
3.24.17





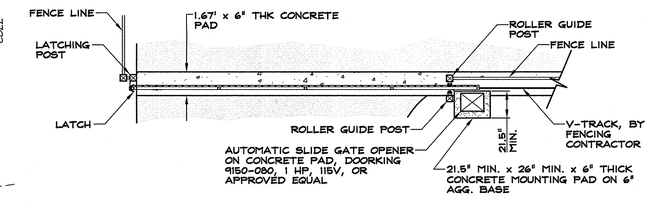
NOTES:

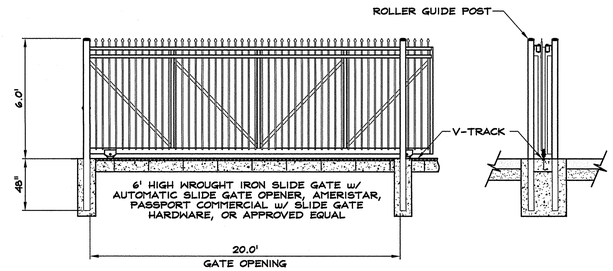
- VERIFY TANK DIMENSIONS BEFORE CONSTRUCTING SLAB.



PROPANE TANK PAD DETAIL

N.T.S.





ROLL GATE DETAIL

N.T.S.

LANDSCAPE NOTES

1. TOP DRESS LANDSCAPE AREA WITH 3"-8" NATIVE COBBLE.
2. ALL PLANTS SHALL BE WATERED BY HAND 3 TIMES PER WEEK (OR AS NEEDED) UNTIL FINAL COMPLETION.
3. 3'-4' NATIVE BOULDER. INSTALL WITH 1/3 HGT. BELOW GRADE.
4. 30' CLEARANCE PER WUI REQUIREMENT FOR DEFENSIBLE SPACE.
5. 100' CLEARANCE PER WUI REQUIREMENT FOR DEFENSIBLE SPACE.

PLANT SCHEDULE

SHRUBS	CODE	QTY	COMMON NAME / BOTANICAL NAME	CONT
⊙	PC	1	PURPLE LEAF SAND CHERRY / PRUNUS X CISTENA	5 GAL MIN.
GRASSES	**CODE**	**QTY**	**COMMON NAME / BOTANICAL NAME**	**CONT**
✳	PH	2	HAMELN DWARF FOUNTAIN GRASS / PENNISETUM ALOPECUROIDES `HAMELN`	2 GAL MIN.

GENERAL NOTES:

1. VERIFY UTILITY ENTRY LOCATIONS AT BUILDING WITH MECHANICAL, ELECTRICAL AND PLUMBING PLANS.
2. FOR ELECTRIC SERVICE SEE PLANS BY SOUTHERN CALIFORNIA EDISON, COORDINATE WITH ELECTRICAL AND PLUMBING PLANS.
3. SEE DETAILS SHEETS FOR DESIGN INFORMATION REGARDING LATERALS, WATER FITTINGS, VERTICAL SEPARATIONS, RESTRAINTS, etc.
4. REF. SHEET C2, GENERAL NOTE #7 REGARDING IDENTIFICATION AND LOCATION OF EX UTILITIES.

NO.	DATE	REVISION BLOCK	BY

1 0 1 2
10' 0 10' 20'
SCALE: 1"=10'

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ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

SITE / LANDSCAPE PLAN

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: 1"=10'	SHEET: C5
DATE: 03.24.2017	OF: 30 SHEETS

3.29.17

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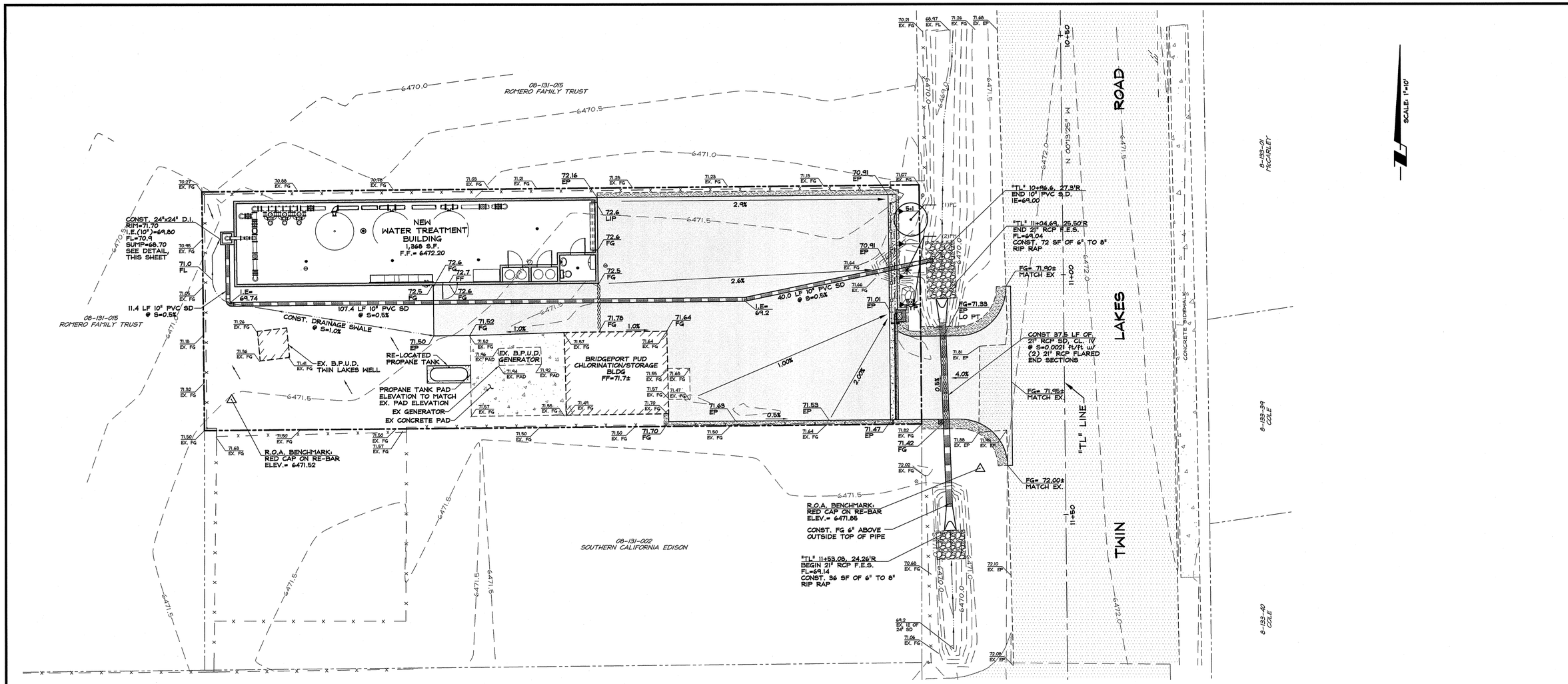
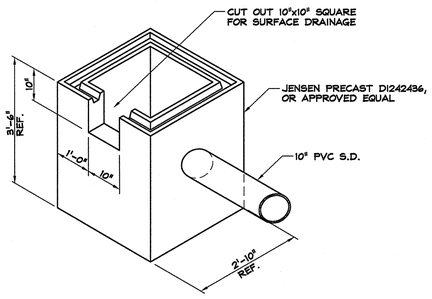
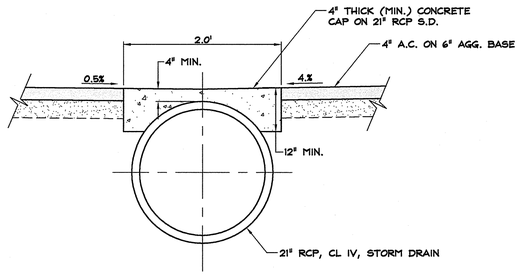




STORM DRAIN D.I. DETAIL

SCALE:N.T.S.



21" STORM DRAIN/DRIVEWAY CROSSING

SCALE: N.T.S

GENERAL NOTES:

1. ADD 6400 TO ALL SPOT ELEVATIONS.
2. CLEAR AND GRUB ANY VEGETATION WITHIN THE STRUCTURAL AREAS OF THE BUILDING AND PAVEMENT.
3. A.C. PAVEMENT IN DRIVEWAY AND PARKING AREAS (APPROX. 3,437 S.F.) SHALL CONSIST OF 4" A.C. ON 6" TYPE 2, CL. B, AGGREGATE BASE COMPACTED TO 90% MDD ON NATIVE MATERIALS, STRIPPED, GRUBBED, GRADED AND COMPACTED TO 90% MDD. CORRECT ANY SOFT OR LOOSE AREAS IN ACCORDANCE WITH THE GEOTECHNICAL REPORT.
4. REFER TO STRUCTURAL PLANS FOR CONCRETE SLAB AND FOOTINGS. THE AREA OF FOOTINGS SHALL BE OVER-EXCAVATED 18" BELOW FOOTING GRADE. THE BOTTOM AND SIDES OF THE FOOTING OVER-EXCAVATIONS COVERED WITH A NON-WOVEN GEOTEXTILE SIMILAR TO MIRAFI 140N THEN BACKFILLED WITH CAL-TRANS CLASS I OR II DRAIN ROCK. THE DRAIN ROCK SHALL BE DENSIFIED (WACKED) UNTIL NO FURTHER DEFLECTION IS OBSERVED. THE AREA OF THE CONCRETE SLAB SHALL BE STRIPPED, GRUBBED AND GRADED. ANY SOFT OR LOOSE AREAS CORRECTED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND COMPACTED TO 90% MDD. THEN 6" OF CAL-TRANS CLASS 2, 3/4-INCH AGGREGATE BASE PLACED AND COMPACTED TO 95% MDD FOLLOWED BY SAND AND VAPOR BARRIER PER THE ARCHITECTURAL PLANS.

NO.	DATE	REVISION BLOCK	BY

SCALE: 1" =10'

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ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

GRADING PLAN

SUSAN J.R. MCREAVY No.C69438 Civil — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

3-24-17

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: 1"=10'	SHEET: C6
DATE: 03.24.2017	OF: 30 SHEETS

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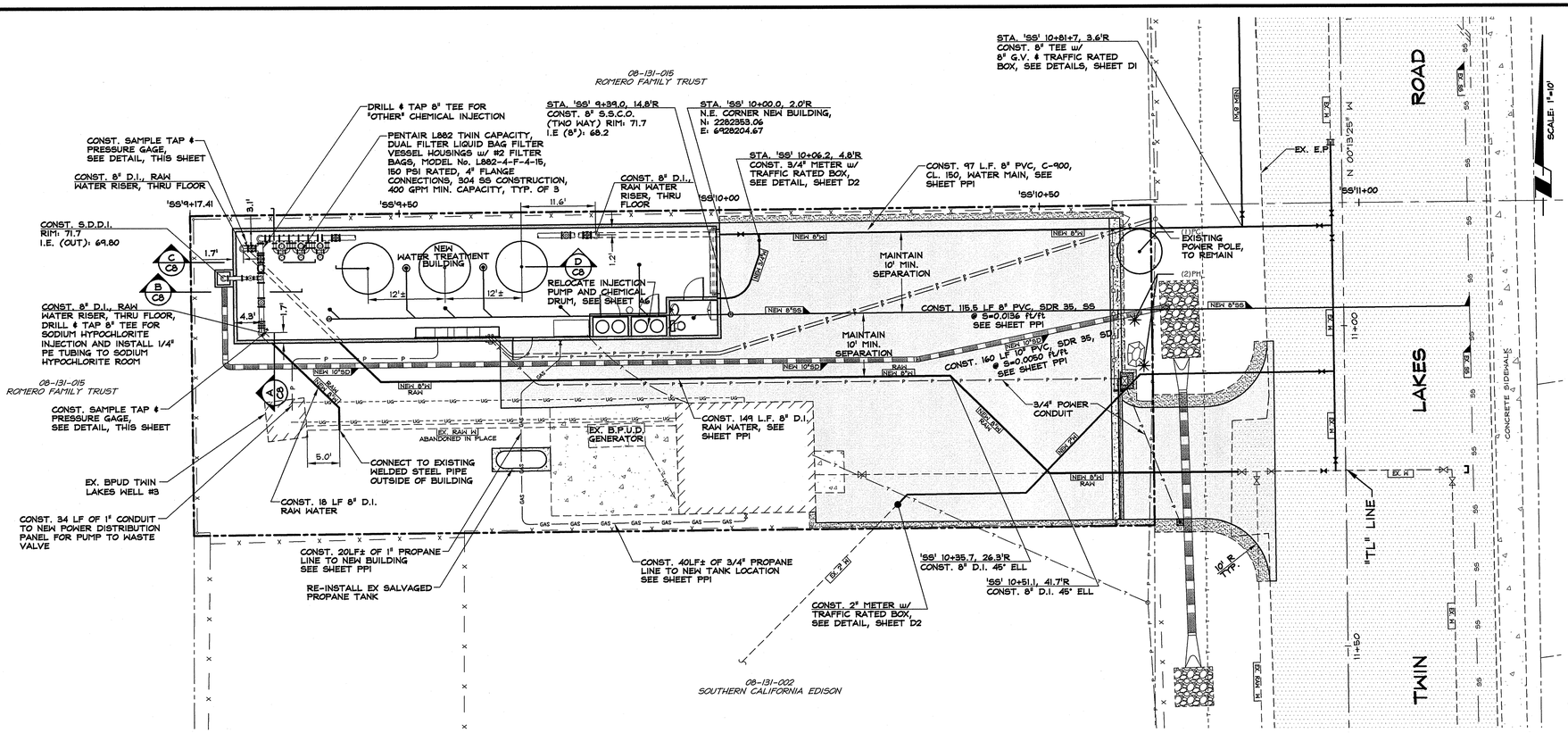
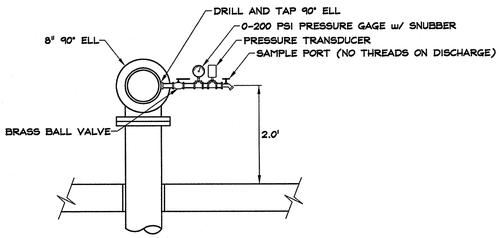
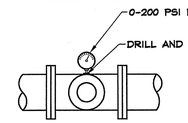




SAMPLE TAP & PRESSURE GAGE ASS'Y

SCALE: N.T.S.

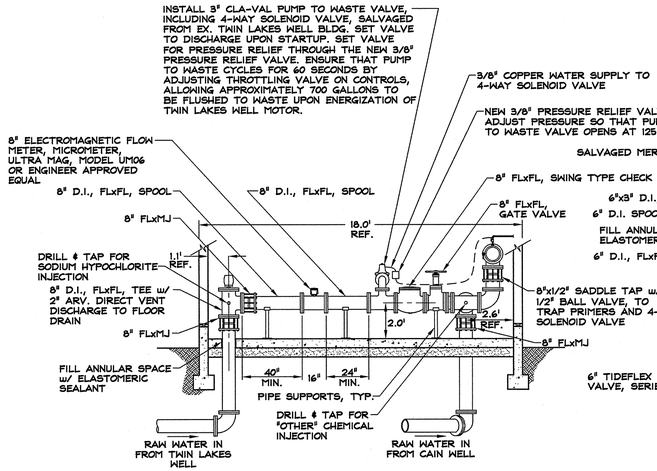


PRESSURE GAGE ASS'Y

SCALE: N.T.S.

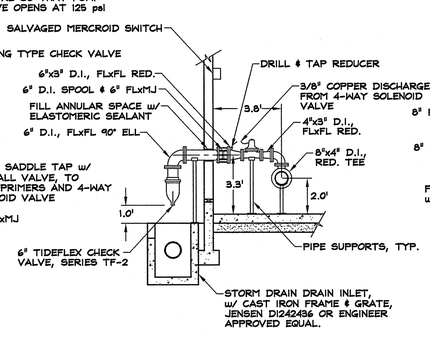
GENERAL NOTES:

1. VERIFY UTILITY ENTRY LOCATIONS AT BUILDING WITH MECHANICAL, ELECTRICAL AND PLUMBING PLANS.
2. FOR ELECTRIC SERVICE SEE PLANS BY SOUTHERN CALIFORNIA EDISON, COORDINATE WITH CIVIL, ELECTRICAL AND PLUMBING PLANS.
3. SEE DETAILS SHEETS FOR DESIGN INFORMATION REGARDING LATERALS, WATER FITTINGS, VERTICAL SEPARATIONS, RESTRAINTS, etc.
4. REF. SHEET C2, GENERAL NOTE #7 REGARDING IDENTIFICATION AND LOCATION OF EX UTILITIES.
5. CONTRACTOR SHALL COORDINATE GAS AND ELECTRIC CONNECTIONS WITH RESPECTIVE UTILITIES.
6. ALL DUCTILE IRON PIPE SHALL BE IN ACCORDANCE WITH AWWA C151, C110 & C104.
7. ALL BURIED DUCTILE IRON PIPE SHALL BE WRAPPED IN POLYETHYLENE w/ APPROPRIATE COLOR AND LABELS.
8. THERE SHALL BE 48" MINIMUM COVER OVER THE WATER MAIN AND LATERALS.
9. INSTALL RUBBER GASKET AND FOAM SEPARATION AROUND PIPE AT CONCRETE PENETRATIONS TO PREVENT CONCRETE FROM BONDING DIRECTLY TO PIPE.
10. PAINT ALL ABOVE GROUND PIPING AND FIXTURES TO MATCH TREATMENT EQUIPMENT, SUPPLIER PAINT SCHEME AND COLORS, REFERENCE TREATMENT EQUIPMENT SHOP DRAWINGS.
11. LABEL ABOVE GROUND PIPING WITH DESCRIPTIONS AND FLOW ARROWS, MATCH TREATMENT EQUIPMENT LABELING, TYPE AND WORDING SCHEME. REFERENCE SHOP DRAWINGS.
12. LABEL CHEMICAL PIPING WITH RESPECTIVE CHEMICAL AND FLOW ARROWS.
13. TREATMENT PLANT AND PIPING TO BE DISINFECTED IN ACCORDANCE WITH AWWA C653.
14. SEE SHEETS E-2 AND A6 FOR OTHER CONDUITS.



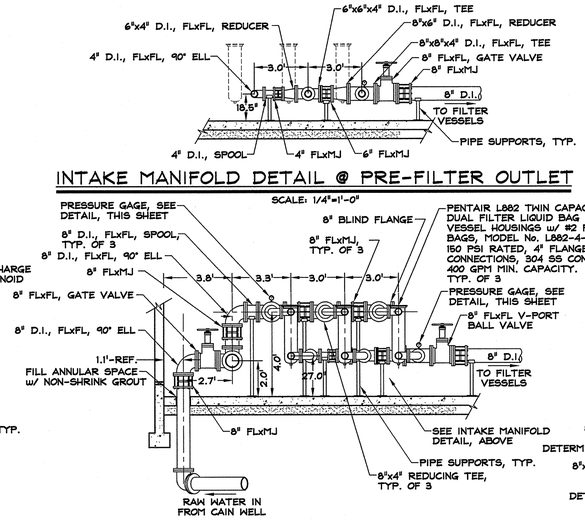
SECTION A-A

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



SECTION B-B

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

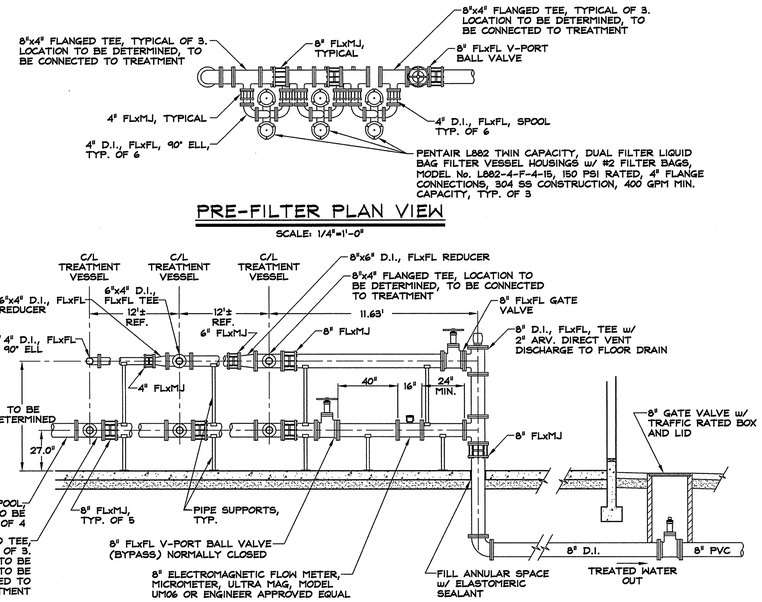


INTAKE MANIFOLD DETAIL @ PRE-FILTER OUTLET

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

SECTION C-C

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



PRE-FILTER PLAN VIEW

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

SECTION D-D

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

NO.	DATE	REVISION BLOCK	BY

SCALE: 1"=10'

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ARSENIC TREATMENT

BRIDGEPORT PUBLIC UTILITY DISTRICT

UTILITY PLAN

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: 1"=10'	SHEET: C7
DATE: 03.24.2017	OF: 30 SHEETS

3-24-17

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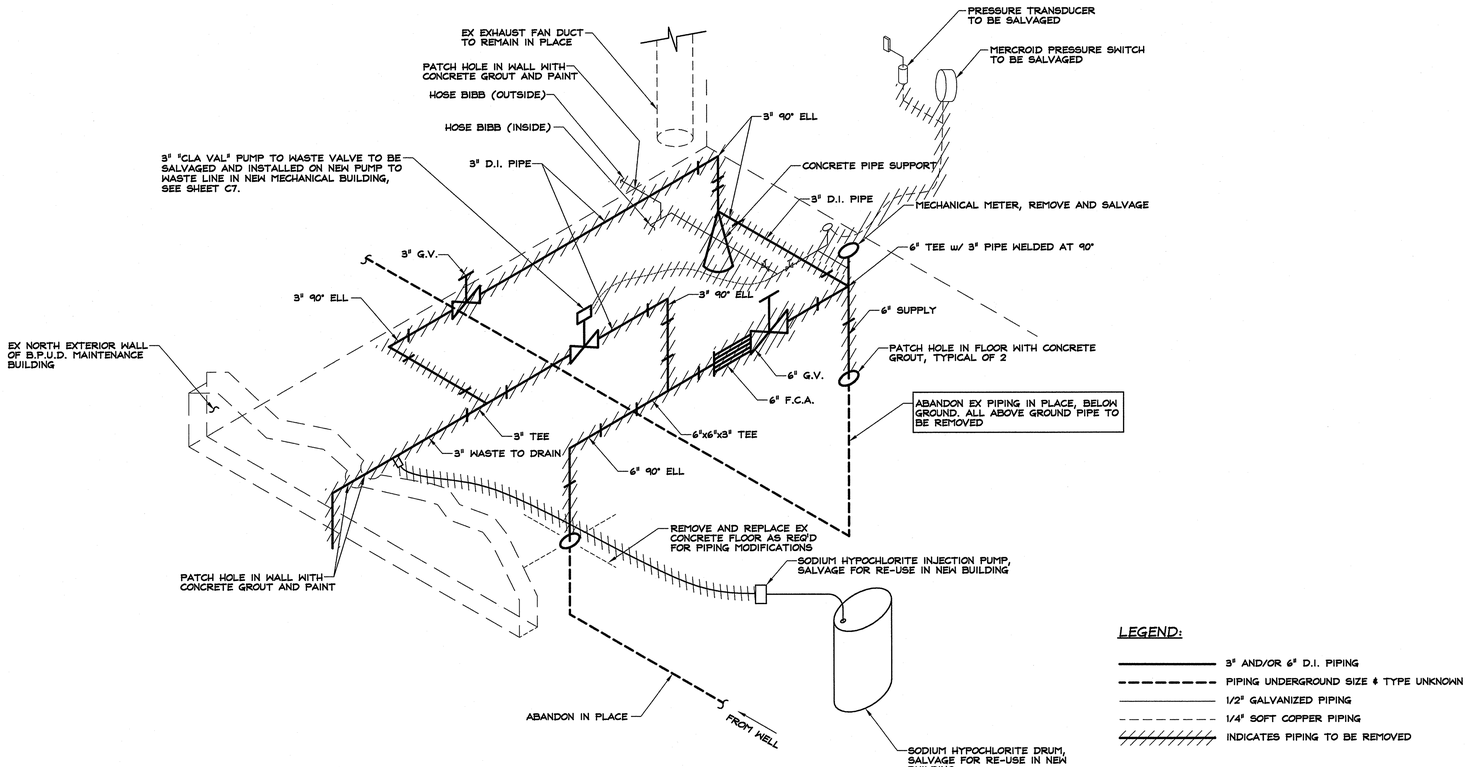

MAINTENANCE BUILDING EXISTING PIPING SCHEMATIC

SCALE: N.T.S.

NO.	DATE	REVISION BLOCK	BY

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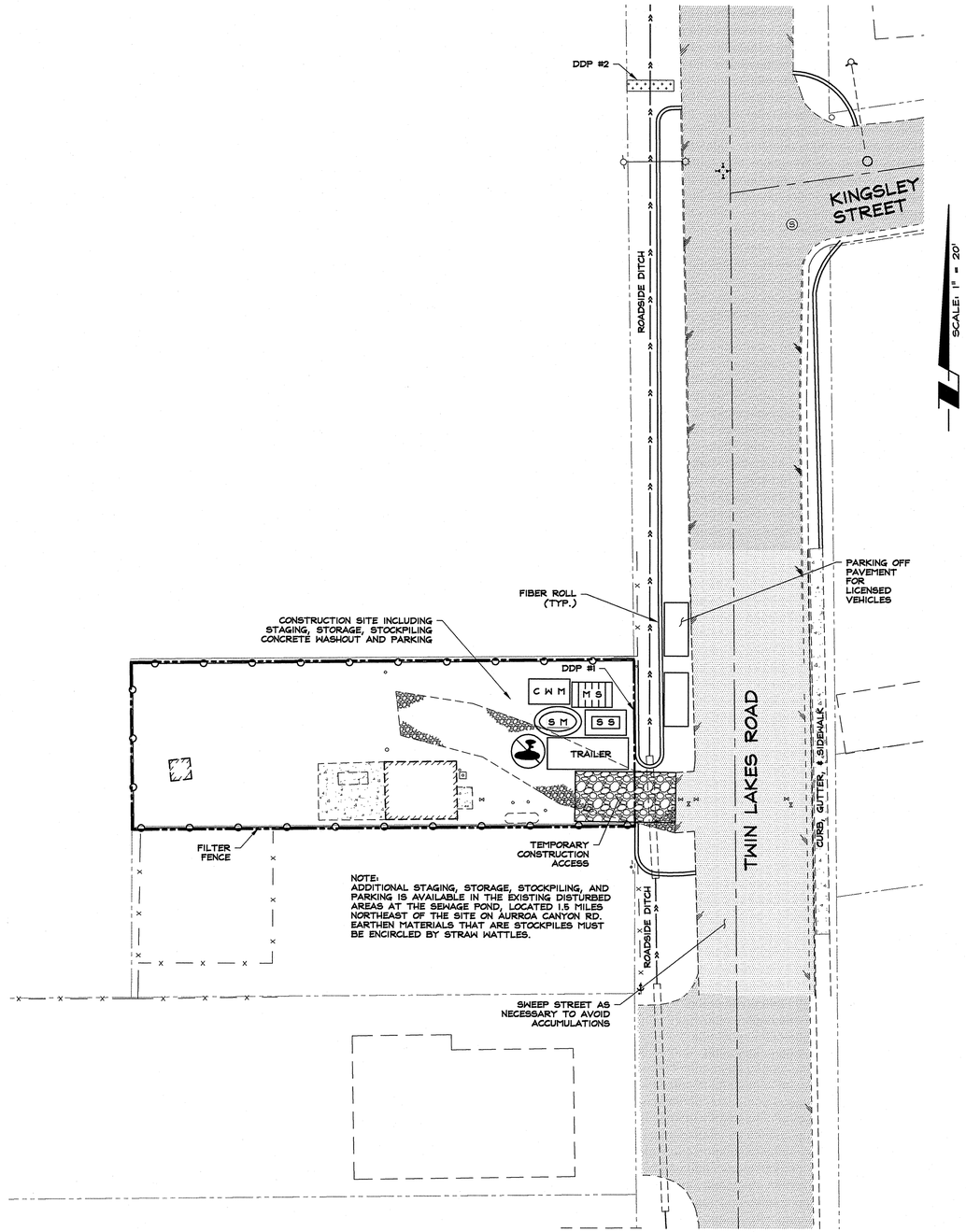
ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

EXISTING BUILDING PIPING MODIFICATIONS

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: N.T.S.	SHEET: C8
DATE: 03.24.2017	OF: 30 SHEETS

3-24-17

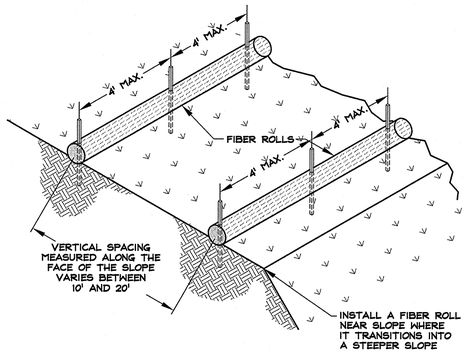


LEGEND

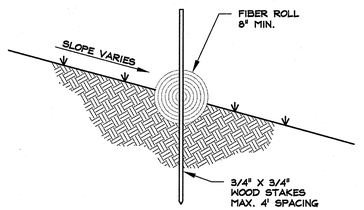
- EXISTING PAVEMENT
- FILTER FENCE
- FIBER ROLL/STRAW WATTLE
- C W M — HANDLING AND DISPOSAL OF CONCRETE AND CEMENT
- M S — MATERIAL DELIVERY, HANDLING AND STORAGE
- S M — STOCKPILE MANAGEMENT
- S S — SANITARY / SEPTIC WASTE MANAGEMENT
- SPILL PREVENTION AND CONTROL
- CONSTRUCTION SITE ENTRANCE AND EXIT
- TRAILER — CONTRACTOR TEMPORARY OFFICE TRAILER

NOTES

1. DDP #1 = DEWATERING DISCHARGE POINT INFILTRATION BASIN
2. DDP#2 = STRAW BALE BARRIER
3. CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD (LRWQCB) DEWATERING DISCHARGE PERMIT.
4. TEMPORARY CONSTRUCTION ACCESS WITH SEDIMENT BASIN IF NECESSARY, TO BE REMOVED PRIOR TO PLACING BASE FOR PAVING.
5. INSTALL FIBER ROLL / STRAW WATTLE. MAINTAIN THROUGHOUT COURSE OF CONSTRUCTION. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
6. PROTECT EXISTING INFRASTRUCTURE IN PLACE.
7. THE CONTRACTOR SHALL MAINTAIN A CLEAN PROJECT SITE, REMOVING CONSTRUCTION DEBRIS AT THE END OF EACH ACTIVITY DAY. TRASH SHALL BE DISPOSED IN A COVERED ON-SITE DUMPSTER OR DEBRIS BOX OR HAULED TO A LICENSED DISPOSAL FACILITY. NO CONSTRUCTION WASTE MATERIALS SHALL BE BURIED ON SITE.
8. ALL EROSION CONTROL MEASURES SHALL BE MAINTAINED IN GOOD WORKING ORDER. IF A REPAIR IS NECESSARY IT SHALL BE INITIATED WITHIN 24 HOURS OF REPORT.
9. BUILT-UP SEDIMENT SHALL BE REMOVED AS NECESSARY TO MAINTAIN PROPER FUNCTIONING OF THE BMP'S.
10. REPORT RELEASES OF REPORTABLE QUANTITIES OF OIL OR HAZARDOUS MATERIALS (IF THEY OCCUR) TO LRWQCB AND THE OWNER WITHIN 24 HOURS.



TYPICAL FIBER ROLL INSTALLATION

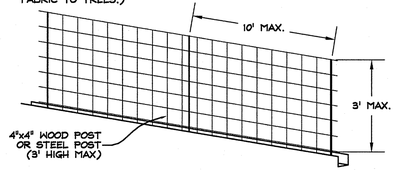


TYPICAL FIBER ROLL INSTALLATION

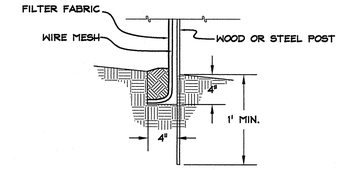
FIBER ROLLS DETAIL

NOT TO SCALE

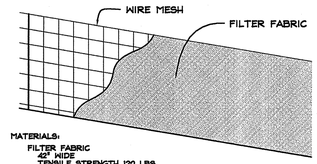
1. SPACE POSTS NO MORE THAN 10' APART AND DRIVE THEM AT LEAST 1' INTO THE GROUND. ALIGN THE FENCE ALONG THE SLOPE CONTOUR, CURVING IT SLIGHTLY UPHILL TO AVOID END RUNS.
2. DIG A 4"x4" TRENCH ALONG THE UPHILL SIDE OF THE POSTS
3. FASTEN WIRE MESH TO UPHILL SIDE OF POST WITH STAPES (ON WOOD POSTS) OR WIRE (ON STEEL POSTS). EXTEND MESH TO BOTTOM OF TRENCH. (DO NOT ATTACH MESH OR FABRIC TO TREES.)



4. FASTEN FILTER FABRIC TO UPHILL SIDE OF POSTS WITH STAPES OR WIRE. EXTEND FABRIC 8" INTO TRENCH.



5. BACKFILL TRENCH AND COMPACT THE SOIL.



MATERIALS:

FILTER FABRIC
42" WIDE
TENSILE STRENGTH 120 LBS. EQUIVALENT OPENING SIZE 70

POSTS
5' LONG (MIN.)
4"x4" WOOD OR 1.3 LBS/FT. STEEL EQUIVALENT OPENING SIZE 70

WIRE MESH
42" WIDE
6" MESH MAX.
14 GAUGE WIRE (MIN.)

STAPLES (FOR WOOD POSTS)
HEAVY DUTY
1" LONG (MIN.)
14 GAUGE WIRE (MIN.)

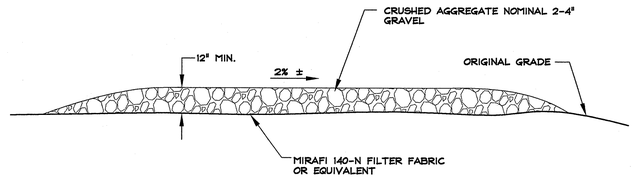
WIRE (FOR STEEL POSTS)

NOTES:
SOME TYPES OF FILTER FABRIC FENCE HAVE STAKES INCLUDED AND DO NOT REQUIRE THE MATERIALS LISTED.

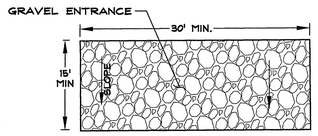
THE FABRIC SHOULD NOT EXCEED MORE THAN 3' ABOVE THE GROUND. CUT FILTER FABRIC FROM A CONTINUOUS ROLL TO AVOID HAVING JOINTS. WHERE JOINTS ARE NECESSARY, SPLICE THE FABRIC ONLY AT A POST, WITH AT LEAST 6" OF OVERLAP, AND FASTEN BOTH ENDS SECURELY TO THE POST.

FILTER FENCE

NO SCALE



SECTION



PLAN

TEMPORARY CONSTRUCTION ACCESS

NO SCALE

NO.	DATE	REVISION BLOCK	BY

SCALE: 1" = 20'

R|O|Anderson
WWW.ROANDERSON.COM
NEVADA
1603 Esmeralda Ave
P.O. Box 2228
Minden, NV 89423
p 775.782.2322
f 775.782.7084
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595 Tahoe Keys Blvd
Suite A-2
South Lake Tahoe, CA 96150
p 530.600.1660
f 775.782.7084

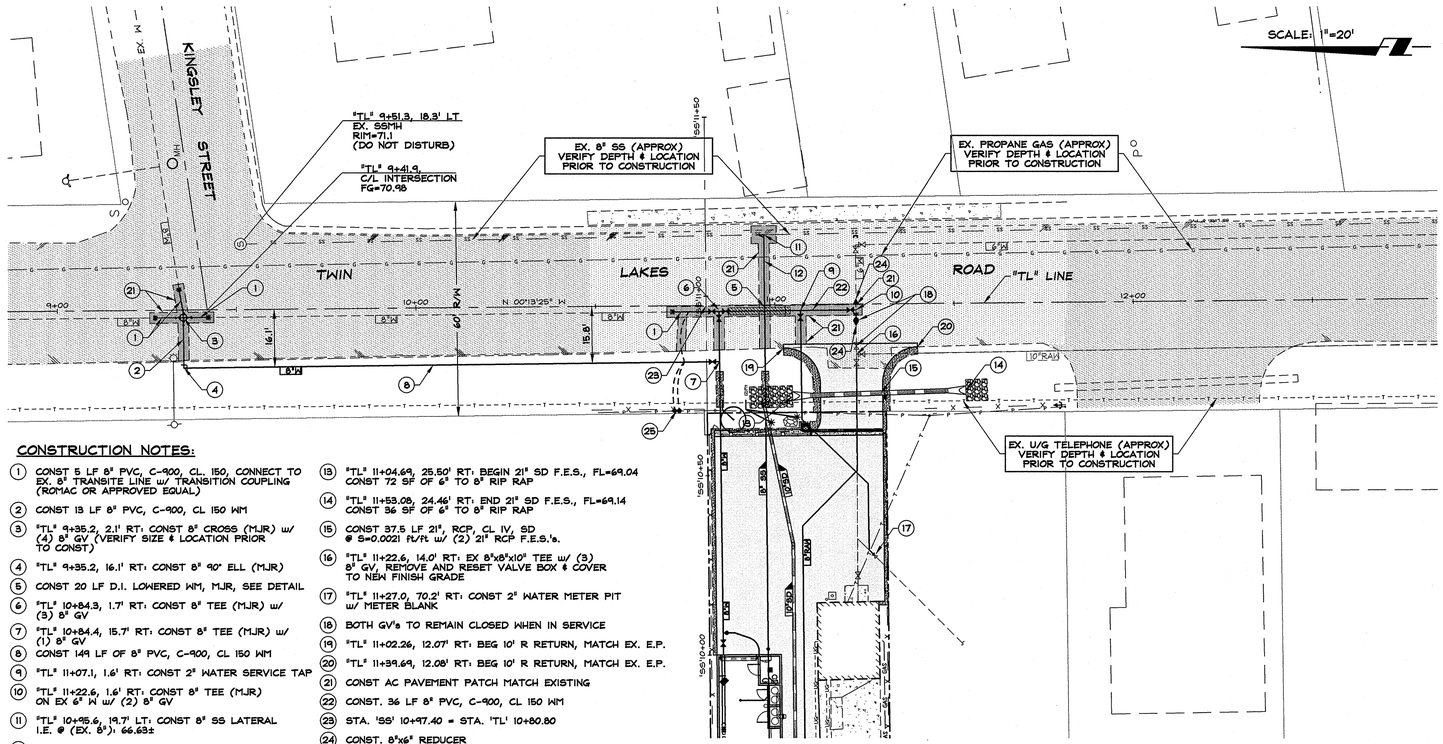
ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

BMP PLAN

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

3-24-17

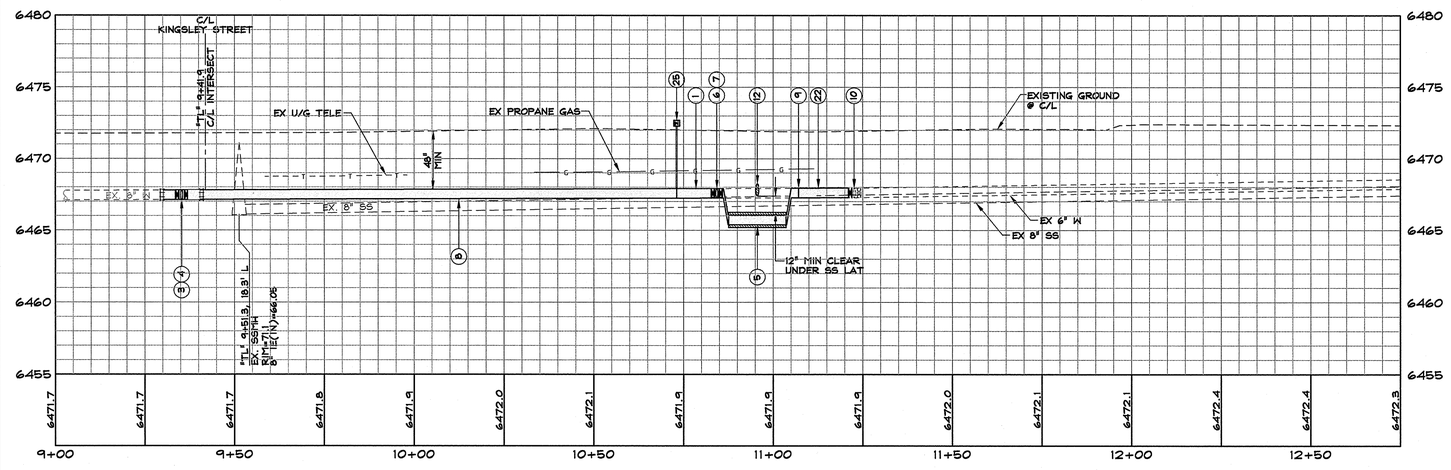
DRAWN: MCR	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: 1"=20'	SHEET: C9
DATE: 03.24.2017	OF: 30 SHEETS



CONSTRUCTION NOTES:

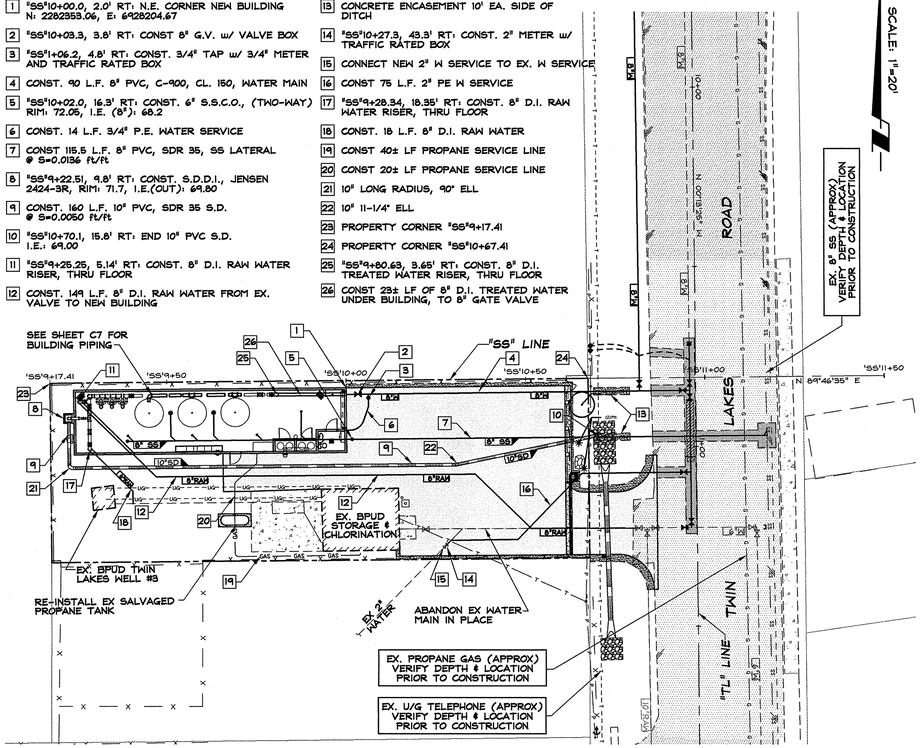
1. CONST 5 LF 8" PVC, C-900, CL. 150, CONNECT TO EX. 8" TRANSITE LINE w/ TRANSITION COUPLING (ROMAC OR APPROVED EQUAL)
2. CONST 13 LF 8" PVC, C-900, CL 150 WM
3. "TL" 9+35.2, 2.1' RT: CONST 8" CROSS (MJR) w/ (2) 8" GV (VERIFY SIZE & LOCATION PRIOR TO CONST)
4. "TL" 9+35.2, 16.1' RT: CONST 8" 90° ELL (MJR)
5. CONST 20 LF D.I. LOWERED WM, MJR, SEE DETAIL
6. "TL" 10+84.3, 1.7' RT: CONST 8" TEE (MJR) w/ (3) 8" GV
7. "TL" 10+84.4, 15.7' RT: CONST 8" TEE (MJR) w/ (1) 8" GV
8. CONST 149 LF OF 8" PVC, C-900, CL 150 WM
9. "TL" 11+07.1, 1.6' RT: CONST 2" WATER SERVICE TAP
10. "TL" 11+22.6, 1.6' RT: CONST 8" TEE (MJR) ON EX 6" W w/ (2) 8" GV
11. "TL" 10+95.6, 19.7' LT: CONST 8" SS LATERAL I.E. @ (EX. 8"): 66.63±
12. CONST. 115.5 LF 8" PVC, SDR 35, SS @ S=0.0136 Ft/Ft
13. "TL" 11+04.69, 25.50' RT: BEGIN 21" SD F.E.S., FL=69.04 CONST 72 SF OF 6" TO 8" RIP RAP
14. "TL" 11+53.08, 24.46' RT: END 21" SD F.E.S., FL=69.14 CONST 36 SF OF 6" TO 8" RIP RAP
15. CONST 37.5 LF 21", RCP, CL IV, SD @ S=0.0021 Ft/Ft w/ (2) 21" RCP F.E.S.'s.
16. "TL" 11+22.6, 14.0' RT: EX 8"x8"x10" TEE w/ (3) 8" GV, REMOVE AND RESET VALVE BOX & COVER TO NEW FINISH GRADE
17. "TL" 11+27.0, 70.2' RT: CONST 2" WATER METER PIT w/ METER BLANK
18. BOTH GV's TO REMAIN CLOSED WHEN IN SERVICE
19. "TL" 11+02.26, 12.07' RT: BEG 10' R RETURN, MATCH EX. E.P.
20. "TL" 11+39.69, 12.08' RT: BEG 10' R RETURN, MATCH EX. E.P.
21. CONST AC PAVEMENT PATCH MATCH EXISTING
22. CONST. 36 LF 8" PVC, C-900, CL 150 WM
23. STA. "SS" 10+97.40 = STA. "TL" 10+80.80
24. CONST. 8"x6" REDUCER
25. "TL" 10+71.1, 29' RT: CONST. (2) ARV ASS'Y.

TWIN LAKES ROAD

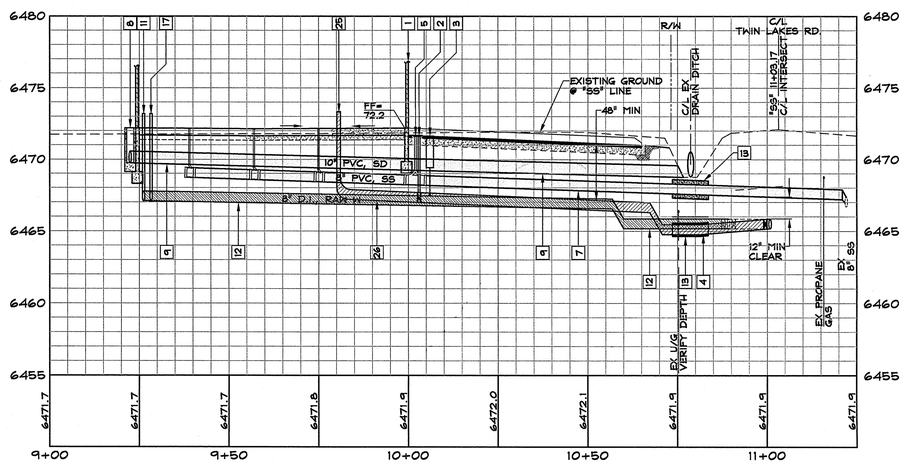


CONSTRUCTION NOTES:

1. "SS"10+00.0, 2.0' RT: N.E. CORNER NEW BUILDING N: 2282353.06, E: 6928204.67
2. "SS"10+03.3, 3.8' RT: CONST 8" G.V. w/ VALVE BOX
3. "SS"1+06.2, 4.8' RT: CONST. 3/4" TAP w/ 3/4" METER AND TRAFFIC RATED BOX
4. CONST. 90 L.F. 8" PVC, C-900, CL. 150, WATER MAIN
5. "SS"10+02.0, 16.3' RT: CONST. 6" S.S.C.O., (TWO-WAY) RIM: 72.05, I.E. (8"): 66.2
6. CONST. 14 L.F. 3/4" P.E. WATER SERVICE
7. CONST 115.5 L.F. 8" PVC, SDR 35, SS LATERAL @ S=0.0136 Ft/Ft.
8. "SS"9+22.51, 9.8' RT: CONST. S.D.D.I., JENSEN 2424-3R, RIM: 71.7, I.E.(CUT): 64.80
9. CONST. 160 L.F. 10" PVC, SDR 35 S.D. @ S=0.0050 Ft/Ft
10. "SS"10+70.1, 15.8' RT: END 10" PVC S.D. I.E.: 64.00
11. "SS"9+25.25, 5.14' RT: CONST. 8" D.I. RAW WATER RISER, THRU FLOOR
12. CONST. 149 L.F. 8" D.I. RAW WATER FROM EX. VALVE TO NEW BUILDING
13. CONCRETE ENCASEMENT 10' EA. SIDE OF DITCH
14. "SS"10+27.3, 43.3' RT: CONST. 2" METER w/ TRAFFIC RATED BOX
15. CONNECT NEW 2" W SERVICE TO EX. W SERVICE
16. CONST 75 L.F. 2" PE W SERVICE
17. "SS"9+28.34, 18.35' RT: CONST. 8" D.I. RAW WATER RISER, THRU FLOOR
18. CONST. 18 L.F. 8" D.I. RAW WATER
19. CONST 40± LF PROPANE SERVICE LINE
20. CONST 20± LF PROPANE SERVICE LINE
21. 10" LONG RADIUS, 90° ELL
22. 10" 11-1/4° ELL
23. PROPERTY CORNER "SS"9+17.41
24. PROPERTY CORNER "SS"10+67.41
25. "SS"9+80.63, 3.65' RT: CONST. 8" D.I. TREATED WATER RISER, THRU FLOOR
26. CONST 23± LF OF 8" D.I. TREATED WATER UNDER BUILDING, TO 8" GATE VALVE



SITE UTILITY PLAN



NO.	DATE	REVISION BLOCK	BY

SCALE: 1"=20'

R|O|Anderson
1603 ESMERALDA AVENUE / POST OFFICE BOX 2229
MINDEN, NEVADA 89423
PHONE: (775) 782-2322 / FAX: (775) 782-7084
WEB SITE: WWW.ROANDERSON.COM

ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

TWIN LAKES ROAD
PLAN & PROFILE

SUSAN J.R. MCREAVY No.C69438 Civil STATE OF CALIFORNIA REGISTERED ENGINEER

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: 1"=20'	SHEET: PP1
DATE: 03.24.2017	OF: 30 SHEETS

3.24.17

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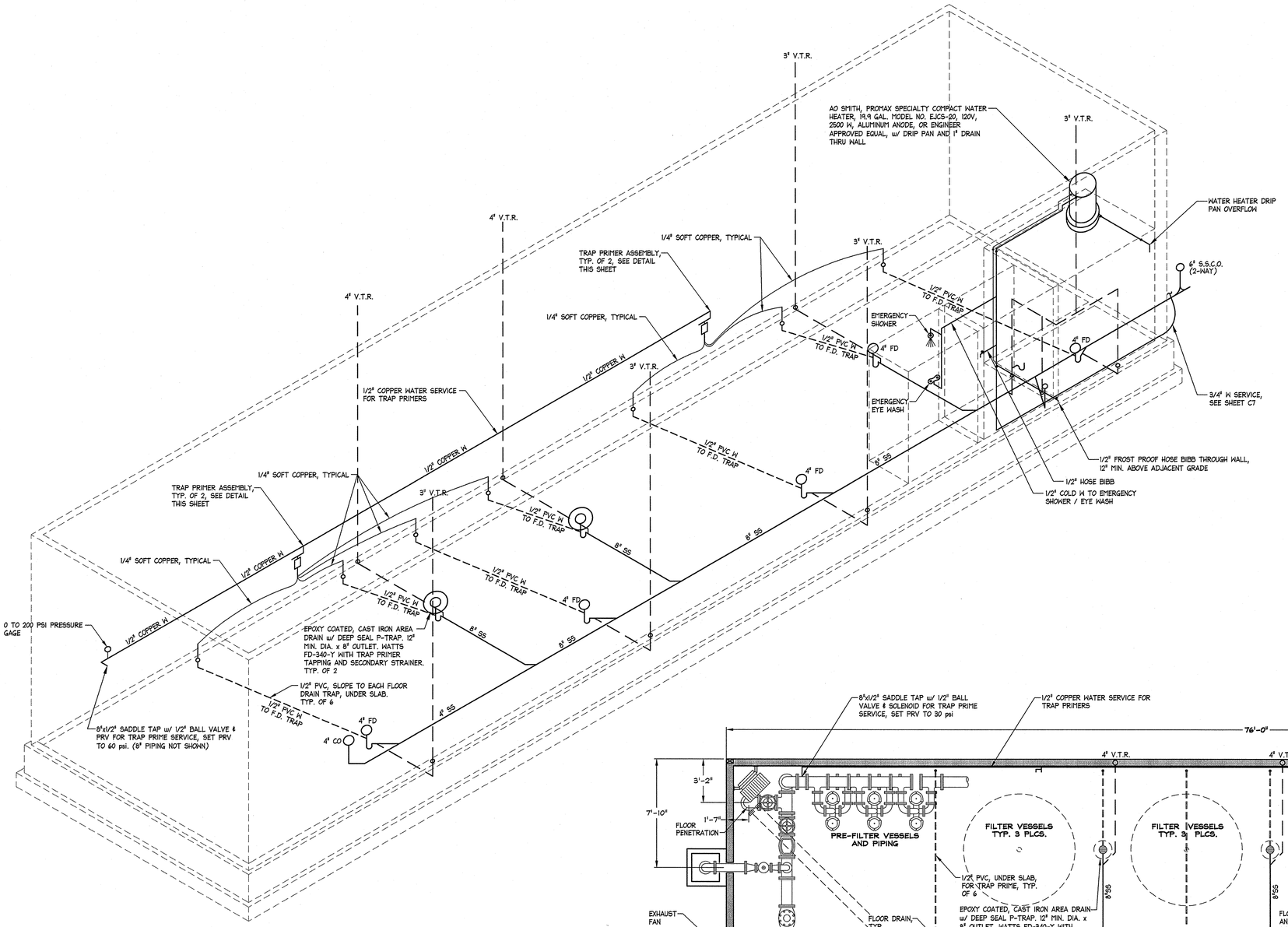
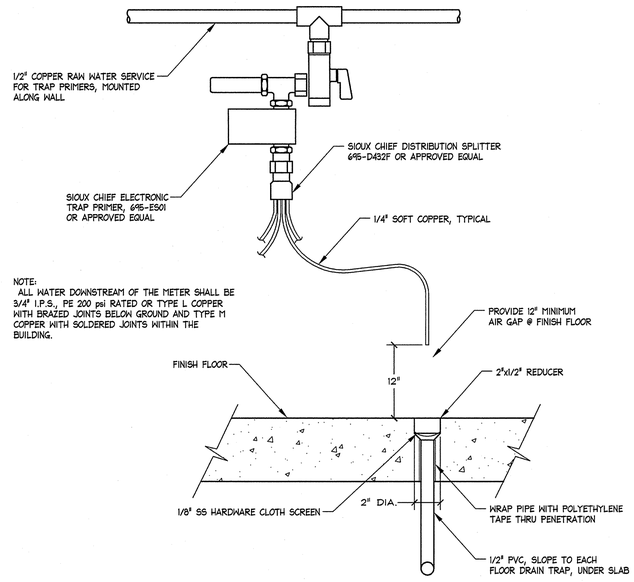


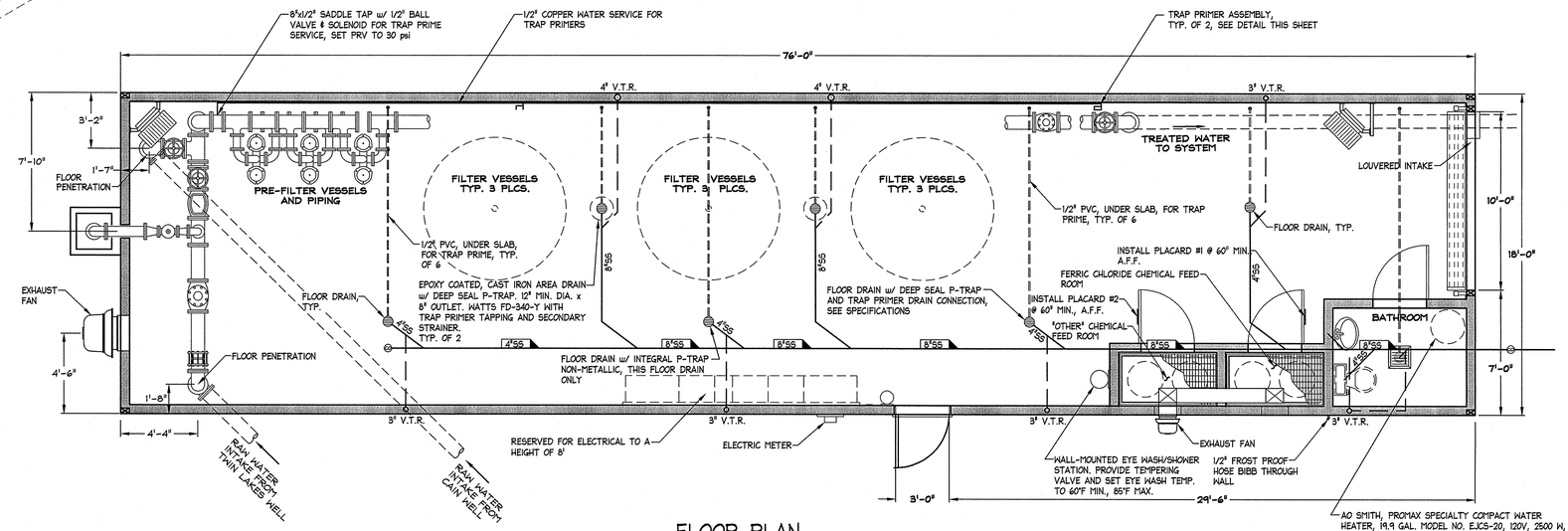
PLUMBING PLAN - ISOMETRIC

SCALE: N.T.S.



TRAP PRIMER DETAIL

SCALE: N.T.S.



FLOOR PLAN

SCALE: 1/4" = 1'

NO.	DATE	REVISION BLOCK	BY

SCALE: 1"=4'

R|O|Anderson
1603 ESMERALDA AVENUE / POST OFFICE BOX 2229
MINDEN, NEVADA 89423
PHONE: (775) 782-2322 / FAX: (775) 782-7084
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ARSENIC TREATMENT

BRIDGEPORT PUBLIC UTILITY DISTRICT

PLUMBING PLAN

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: 1"=4'	SHEET: P1
DATE: 03.24.2017	OF: 30 SHEETS

3.24.17

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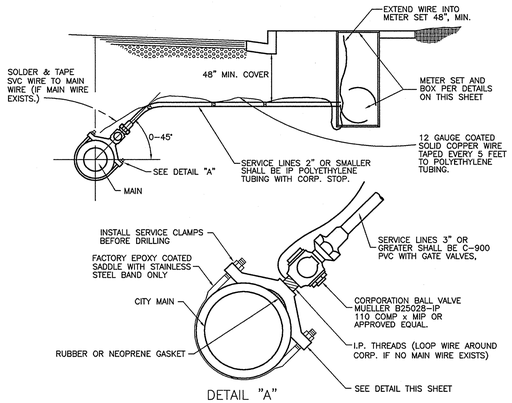


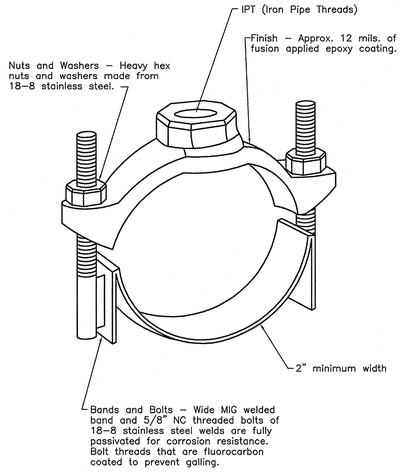
DETAIL "A"

GENERAL NOTES

1. ALL SERVICE LINE COUPLING FITTINGS SHALL BE MUELLER CTS 110 COMP. x MIP OR APPROVED EQUAL.
2. ALL SERVICE VALVES SHALL BE SAME SIZE AS SERVICE LINES (ON 3" SERVICE, USE 4" GATE VALVE AND PIPE.)
3. SERVICE CLAMPS SHALL BE FACTORY COATED EPOXY WITH STAINLESS STEEL BAND.
4. MINIMUM DISTANCE BETWEEN TAPS AND MAINLINE FITTINGS, INCLUDING BELLS SHALL BE 18".
5. TAPPING SADDLES 3" OR LARGER SHALL BE STAINLESS STEEL, HAVE A FULL CIRCUMFERENTIAL SEAL AND HAVE EITHER A STAINLESS STEEL OR DUCTILE IRON FLANGE.
6. UPON ABANDONING OF SERVICE TAP, WATER UTILITY SHALL BE NOTIFIED SO THAT METER CAN BE REMOVED.
7. ENTITY REQUESTING ABANDONMENT SHALL REMOVE EXISTING METER BOX AND EXPOSE CORP STOP FOR SHUT-OFF. ALL PLUMBING SHALL BE DISCONNECTED FROM CORP AND PLUGGED AT BOTH ENDS. WATER UTILITY SHALL BE NOTIFIED FOR INSPECTION OF CORP ASSEMBLY PRIOR TO BACKFILLING.
8. TAPPING SADDLE MUST BE AT 45° ANGLE, EXCEPTIONS MUST BE APPROVED.

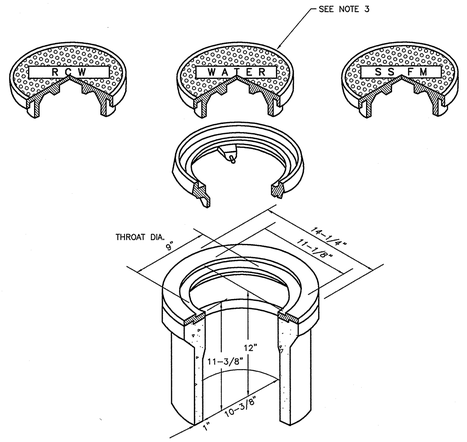
WATER SERVICE TAP DETAIL

N.T.S.



SERVICE SADDLE DETAIL

N.T.S.

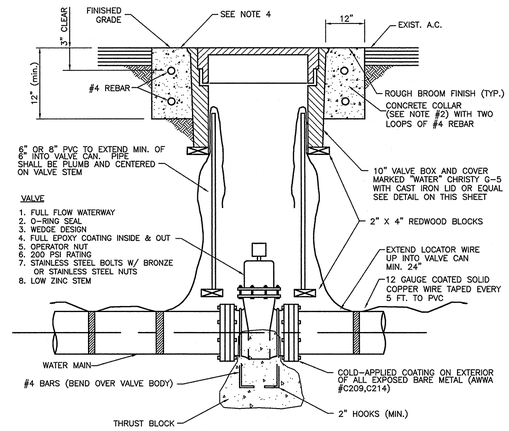


GENERAL NOTES

1. VALVE BOX MUST BE TRAFFIC RATED. (CHRISTY G-5 BOX OR EQUAL)
2. MIN. OF 10" INSIDE DIAMETER.
3. CAST IRON LID MARKED "WATER" FOR WATER LINE APPLICATIONS. CAST IRON LID MARKED "RECLAIMED WATER" OR "RCW" WHEN INSTALLED ON A RECLAIMED WATER MAIN. LID SHALL BE MARKED "SS FORCE MAIN" OR "SS FM" WHEN INSTALLED ON A SANITARY SEWER FORCE MAIN.
4. RISER OF 6" OR 8" PVC EXTENDED IN VALVE CAN MIN. OF 6".
5. TORQUE BOLTS TO MANUFACTURER'S RECOMMENDATIONS.
6. ALL NEW VALVE BOXES TO BE SET TO GRADE PER DETAIL ON THIS SHEET. ONLY ONE GRADE RING PER VALVE BOX.

VALVE BOX DETAIL

N.T.S.



GENERAL NOTES

1. SEE DETAIL ON THIS SHEET FOR THRUST BLOCK SIZE. (MATERIAL USED FOR THRUST BLOCKING SHALL NOT PREVENT ACCESS TO THE BOLT ASSEMBLY).
2. CONCRETE SHALL BE 4,000 psi COMPRESSIVE STRENGTH AND WITHSTAND FREEZE/THAW ENVIRONMENTS.
3. IN ALL AREAS, LIDS SHALL BE SET FLUSH WITH FINISHED GRADE UNLESS OTHERWISE NOTED.
4. THE CONCRETE COLLAR SHALL BE FLUSH WITH SURROUNDING PAVEMENT. APPLY BLACK COLORANT TO SURFACE OF CONCRETE.
5. SPLICES IN WIRE SHALL BE CONNECTED BY SOLDER OR WIRE NUTS AND WRAPPED WITH UL LISTED ELECTRICAL TAPE.

VALVE DETAIL

N.T.S.

MATERIAL SPECIFICATIONS

SHELL: 304 Stainless Steel

LUGS: 304 Stainless Steel

BOLTS, WASHERS and NUTS: NC Rolled Thread 304 Stainless Steel, 5/8" diameter.

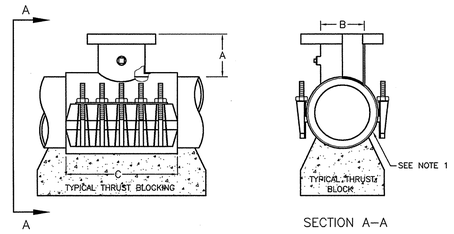
GASKETS: Virgin SBR compounded for water service. ASTM D2000-80MA 4AA607 Full Gasket. 360° Pipe coverage 150 PSI working pressure.

FLANGE: 304 Stainless steel or high tensile ductile (nodular) iron, ASTM A536-80, grade 65-45-12.

NOM. FLANGE	A	B	C	NO. BOLTS
4	4	5-1/32	16	10
6*	4-1/2	7-1/32	16	10
8*	4	9-1/32	20	14
10	5-1/2	11-1/32	24	16
12**	6-1/2	13-1/32	30	30

*Tapping sleeves in the 24" Nominal Pipe Size range with 6" or 8" flanges are 24" long (C-dimension) and have 24" bolts.

**Tapping sleeves in the 12" & 14" Nominal Pipe Size range w/ 12" flange are 24" long and have 24 bolts.



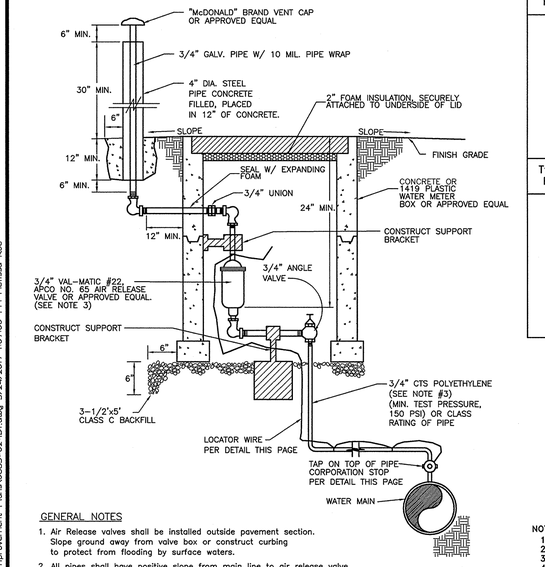
SECTION A-A

GENERAL NOTES

1. Material used for Thrust Blocking shall not not prevent the access to the bolt assembly.
2. Minimum distance between taps, collars, joints, service taps, etc. shall be 18".
3. Saddle to be pressure tested to class rating of the pipe prior to tap.

TAPPING SLEEVE DETAIL

N.T.S.

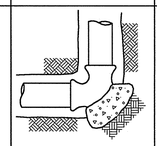
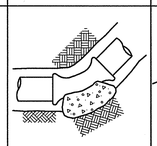
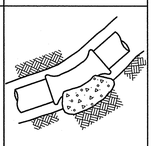
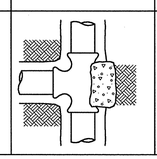
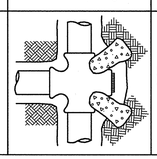


GENERAL NOTES

1. Air Release valves shall be installed outside pavement section. Slope ground away from valve box or construct curbing to protect from flooding by surface waters.
2. All pipes shall have positive slope from main line to air release valve.
3. RCW Transmission mains require special design.

AIR RELEASE VALVE DETAIL

N.T.S.

Type of Fitting	90° Bend	45° Bend	11.25° or 22.5° Bend
Typical Installation			
Type of Fitting	Tee or Dead End	Cross w/Plug	Tee w/Plug
Typical Installation			

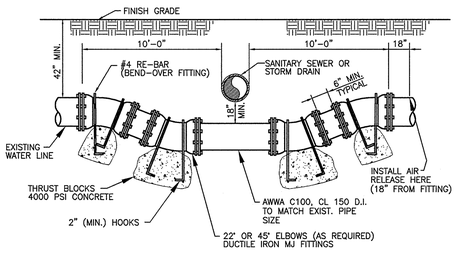
Thrust Block Bearing Area – Square Feet

Size of Pipe	Type of Fitting	90° Bend	45° Bend	11.25° or 22.5° Bend	Tee or Dead End	Cross w/Plug	Tee w/Plug
	4"	2	1	1	2	2	2
	6"	5	3	2	4	5	5
	8"	8	5	3	6	8	8
	10"	13	7	4	9	13	13
	12"	18	10	5	13	18	18
	14"	25	13	7	17	25	25
	16"	32	17	9	23	32	32

NOTE:
1. CONCRETE FOR THRUST BLOCKS SHALL BE 4,000 psi COMPRESSIVE STRENGTH.
2. THRUST BLOCKS SHALL BE PLACED AGAINST UNDISTURBED SOIL.
3. JOINTS AND FACE OF PLUGS SHALL BE KEPT CLEAR OF CONCRETE.
4. THRUST BLOCK BEARING AREAS ARE FOR A 150 PSI TEST PRESSURE WITH 2000 PSF BEARING CAPACITY, NOMINAL PIPE DIAMETER, AND A FACTOR OF SAFETY OF 1.5 INSTALLATIONS USING DIFFERENT TEST PRESSURES, AND/OR SOIL TYPES SHALL BE ADJUSTED BY THE DESIGN ENGINEER.

THRUST BLOCK DETAILS

N.T.S.



TYPICAL CROSSING DETAIL

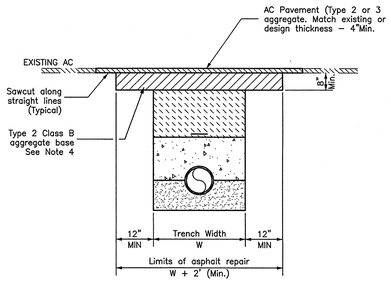
NTS

GENERAL NOTES

1. WATER LINES 12" AND LARGER SHALL REQUIRE SPECIAL DESIGN, AND APPROVAL BY BRIDGEPORT PUBLIC UTILITIES DEPARTMENT.
2. THE ASSEMBLY ABOVE WILL BE INSTALLED USING DUCTILE IRON MECHANICAL JOINT FITTINGS WITH RESTRAINING GLANDS.
3. ALL BOLTS TO BE TAR COATED.
4. UPON APPROVAL OF B.P.U.D., THE ABOVE ASSEMBLY MAY BE REPLACED WITH A WELDED STEEL "SPOOL" OF EQUIVALENT DIAMETER, PRIMED AND WRAPPED (10 MILS MIN.). CONNECT TO EXISTING LINES USING MECHANICAL JOINTS. STEEL SPOOL SHALL BE CONSTRUCTED BY A CERTIFIED WELDER AND PRESSURE CHECKED IN ACCORDANCE WITH SPECIFICATIONS. ALL BOLTS TO BE TAR COATED.
5. CONCRETE FOR THRUST BLOCKS SHALL NOT INTERFERE WITH THE REMOVAL OF BOLTED ASSEMBLIES.
6. AIR-RELEASE TO BE INSTALLED ON BOTH SIDES OF CROSSING. (18" MIN. FROM ANY FITTING). ONE AIR RELEASE MAY BE USED WITH ONE LINE TO EACH SIDE OF CROSSING.
7. ROUTING WATER LINE OVER SEWER LINE OR "ROPING" UNDER SEWER LINE REQUIRES APPROVAL BY BRIDGEPORT PUBLIC UTILITY DISTRICT.
8. FOR PURPOSES OF SEPARATION AND PROTECTION OF THE WATER SUPPLY, RECLAIMED WATER SHALL BE CONSIDERED A SEWER LINE.

LOWERING WATER MAINS

N.T.S.

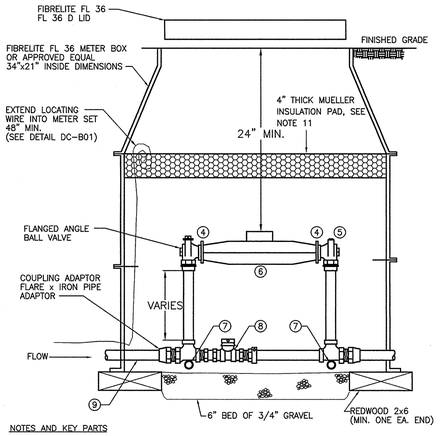


NOTE:

1. Surface tolerances for AC Pavement repair shall be determined by placing an approved metal straight edge across the repaired section. Surface tolerances shall be measured from the base of the straight edge to the existing pavement or pavement repair section and shall not exceed a vertical tolerance of 0.02" (1/4") Pavement repairs not meeting these tolerances shall be removed and replaced to establish the required tolerance.
2. Place sand seal on completed trench repair section overlapping coverage 18" minimum onto existing pavement on all sides of the repaired section.
3. If Roadway has been chip sealed within the past 2 years, repair shall also be chip sealed with minimum 12" overlap onto pavement.
4. One Sack Slurry Mix shall be used in trenches less than 12" in width.
5. Asphalt concrete and materials shall conform to the project specifications.
6. Type 2 Class B Aggregate Base shall conform to the project specifications and be mechanicaly compacted to 95% maximum dry density.

PAVEMENT PATCH DETAIL

N.T.S.



NOTES AND KEY PARTS

1. USE A TRAFFIC RATED LID AND BOX WITH READING LID IN ALL TRAFFIC AREAS.
2. METER SHALL BE INSTALLED SO AS TO ACHIEVE A WATER TIGHT SEAL.
3. CUT TWO PIECES OF 1" PIPE 18" LONG AND INSTALL THROUGH THE BRACE EYE SUPPORTS.
4. SINGLE METER GASKET.
5. FLANGED ANGLE BALL CHECK VALVE.
6. WATER METER BLANK.
7. BRACE EYE SUPPORTS.
8. BY-PASS BALL VALVE WITH LOCKABLE CAP.
9. POLETHYLENE TUBING (SIZE AS REQUIRED BY UTILITY). MINIMUM TEST 200 PSI OR CLASS RATING OF PIPE.
10. A CUSTOMER SHUT OFF VALVE ON THE DOWNSTREAM SIDE OF THE METER MAY BE REQUIRED BY WATER UTILITY, CONTRACTOR TO VERIFY WITH WATER UTILITY.
11. 4" THICK MUELLER INSULATION PAD IN TWO TIGHT FITTING PIECES TO ALLOW REMOVAL AND REINSTALLATION.

1-1/2" - 2" METER SET

N.T.S.

NO.	DATE	REVISION BLOCK	BY

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ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

DETAILS

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: MB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: NONE	SHEET: D1
DATE: 03.24.2017	OF: 30 SHEETS

3.24.17

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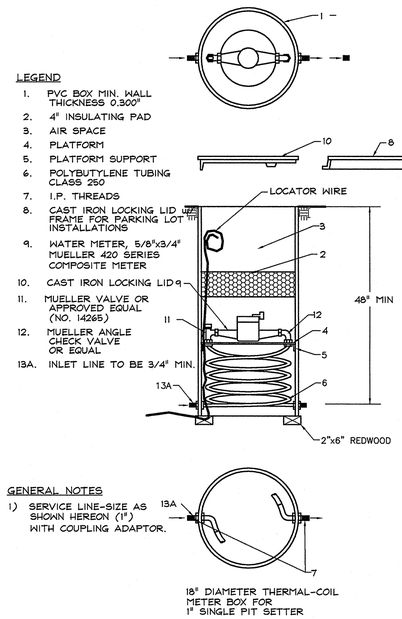


LEGEND

1. PVC BOX MIN. WALL THICKNESS 0.300"
2. 4" INSULATING PAD
3. AIR SPACE
4. PLATFORM
5. PLATFORM SUPPORT
6. POLYBUTYLENE TUBING CLASS 250
7. I.P. THREADS
8. CAST IRON LOCKING LID FRAME FOR PARKING LOT INSTALLATIONS
9. WATER METER, 5/8"x3/4" MUELLER 420 SERIES COMPOSITE METER
10. CAST IRON LOCKING LID
11. MUELLER VALVE OR APPROVED EQUAL (NO. 14265)
12. MUELLER ANGLE CHECK VALVE OR EQUAL
13A. INLET LINE TO BE 3/4" MIN.

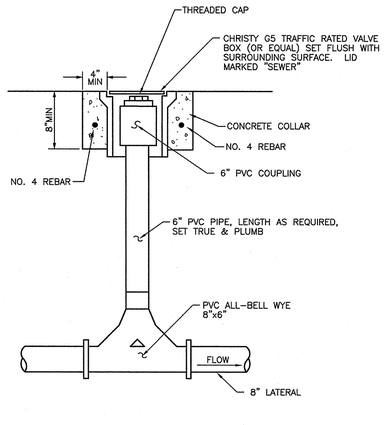
GENERAL NOTES

1) SERVICE LINE-SIZE AS SHOWN HEREON (1") WITH COUPLING ADAPTOR.

18" DIAMETER THERMAL-COIL METER BOX FOR 1" SINGLE PIT SETTER

3/4" SINGLE PIT SETTER

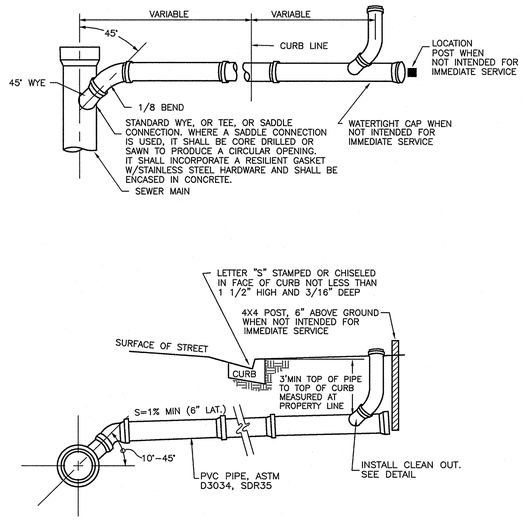
NO SCALE



NOTE: ALL JOINTS AND CONNECTIONS SHALL BE WATERTIGHT.

S.S. CLEAN-OUT (TWO WAY)

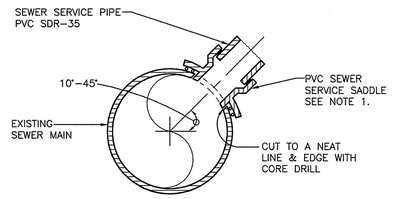
NO SCALE



NOTES:
1. ALL JOINTS AND CONNECTIONS SHALL BE WATERTIGHT.

TYPICAL SEWER LATERAL

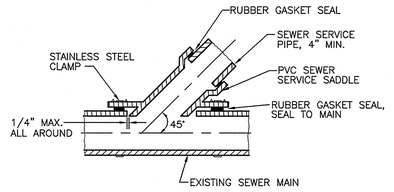
NO SCALE



NOTE:

1. ROMAC "CB" SEWER SADDLES OR EQUAL MAY BE USED ON SEWER MAINS OTHER THAN PVC.
2. SEWER SERVICE SADDLE SHALL BE ENCASED IN CONCRETE.

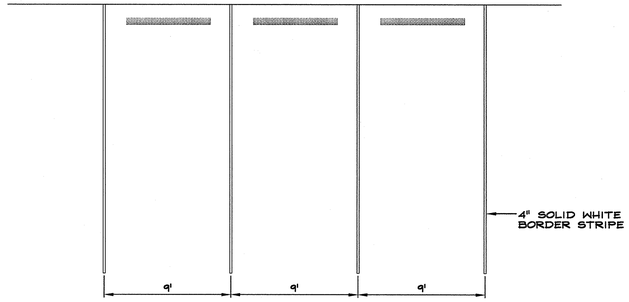
FRONT VIEW



SIDE VIEW

SEWER SERVICE SADDLE

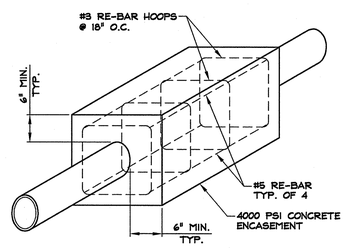
NO SCALE



#NOTES:
1. PAVEMENT MARKINGS SHALL BE COLORED AS NOTED.
2. PAINT SHALL BE READY-MIXED, LEAD-FREE, WATER-BASED & FORMULATED FOR TRAFFIC LANE STRIPING WITH REFLECTIVE GLASS BEADS.
3. PAINT SHALL MEET REQUIREMENTS OF TT-P-115228.
4. REFER TO GRADING PLAN SHEETS FOR SPECIFIC GRADES & SLOPES.

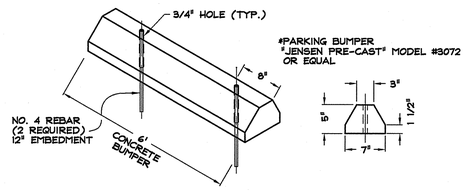
PARKING STALL DETAIL

NO SCALE



CONCRETE ENCASEMENT DETAIL

NO SCALE



WHEELSTOP

NO SCALE

NO.	DATE	REVISION BLOCK	BY

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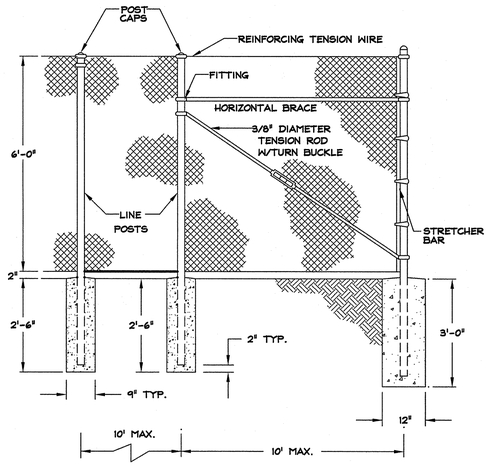
ARSENIC TREATMANT
BRIDGEPORT PUBLIC UTILITIES DISTRICT

DETAILS

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

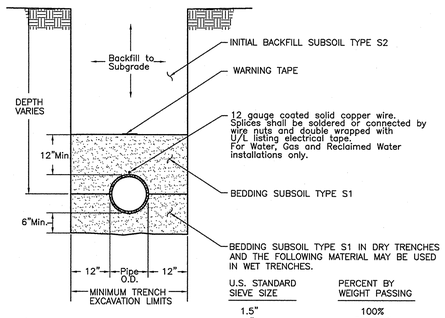
DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: N.T.S.	SHEET: D2
DATE: 03.24.2017	OF: 30 SHEETS

3.24.17



6' CHAIN LINK FENCE

N.T.S.



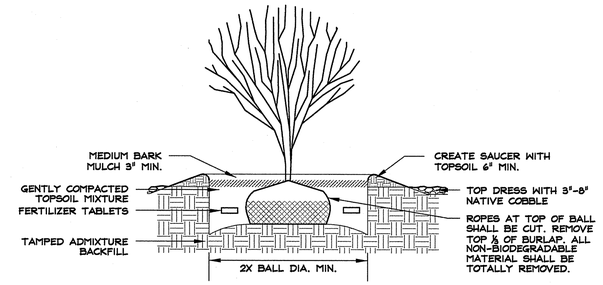
U.S. STANDARD SIEVE SIZE	PERCENT BY WEIGHT PASSING
1.5"	100%
1"	50-90%
3/4"	30-70%
3/8"	10-40%
#4	5-25%
#200	0-10%

GENERAL NOTES:

1. FOR TRENCHES IN ROADWAY SECTION, SEE PAVEMENT PATCH DETAIL.
2. SHORING OR SLOPED CUT SLOPES MAY BE NECESSARY. ALL EXCAVATIONS SHALL CONFORM TO THE MOST RECENT O.S.H.A. REQUIREMENTS.

TYPICAL TRENCH DETAIL

N.T.S.



DECIDUOUS SHRUB AND GRASS PLANTING WITH COBBLE MULCH DETAIL

NOT TO SCALE

NO.	DATE	REVISION BLOCK	BY

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ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

DETAILS

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SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

3-24-17

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: N.T.S.	SHEET: D3
DATE: 03.24.2017	OF: 30 SHEETS

GENERAL CONSTRUCTION NOTES:

1. GENERAL

a) All work shall conform to the 2016 CBC and applicable local codes.

b) Where applicable, allowable stresses have been increased 15% for snow, 33% seismic and 33% for wind and seismic connections (timber).

c) All codes and standards shall be the most current edition as of the date of the calculations.

d) The Engineer is responsible for the structural items in the plans only. Should any changes be made from the design as detailed in these calculations without written approval from the Engineer then the Engineer assumes no responsibility for the entire structure or any portion thereof. Should the results of the calculations not be fully or properly transferred to the plans, the Engineer assumes no responsibility for the structure.

e) These calculations are based upon a completed structure. Should an unfinished structure be subjected to loads, the Engineer should be consulted for an interim design or if not, will assume no responsibility.

f) The details shown on the drawings are typical. Similar details apply to similar conditions.

2. SITE WORK

a) Assumed soil bearing pressure shall be determined in accordance with IBC Table 1804.2.

b) Building sites are assumed to be drained and free of clay or expansive soil. These calculations assume stable, undisturbed soils and level or stepped footings. Any other conditions should be reported to this Engineer.

c) Foundations shall bear on non-expansive native soil or compacted structural fill. Any loose soil in the bottom of the footing excavations shall be compacted to at least 90% relative compaction or removed to expose firm, unyielding material.

d) All footings shall bear on undisturbed soil with a footing depth below frostline, (18" or 24" as per local requirements).

e) All finished grade shall slope a minimum of 2% away from foundation for a minimum of 10 ft.

f) This Engineer has not made a geotechnical review of the building site and is not responsible for general site stability or soil suitability for the proposed project.

g) Foundation design is based on minimum footing dimensions and bearing capacities set forth in Table 1804.2 of Chapter 18 in the IBC. Assume Class 4 soil with allowable soil bearing pressure of 2000 psf, uno, with a constant expansion index less than 20. Footings shall extend 18" or 24" (minimum) below finish grade at exterior walls for frost protection. Footings shall bottom 12" (minimum) below natural undisturbed grade.

3. FILL & BACKFILL

a) Fill material shall be free from debris, vegetation, and other foreign substances.

b) Backfill trenches shall be compacted to 90% density per ASTM D1557 to within 12" of finished grade. The top 12" shall be landscape fill.

c) Backfill at pipe trenches shall be compacted on both sides of pipe in 6" lifts.

d) Waterproof exterior faces of all foundation walls adjacent to usable spaces.

e) Backfill at foundation walls shall be compacted to 90% relative density, uno.

f) Use 4" diameter PVC, uno, perforated pipe sub-drain behind all retaining walls. Slope pipe to drain to daylight and drywell.

4. CONCRETE / MASONRY

a) Concrete shall have a minimum 28 day compressive strength of 2500 psi, 3000 psi at I.C.F. walls.

b) Concrete shall be air entrained to not less than 5% and not more than 7%.

c) All slabs on grade shall have a minimum thickness of 4" and be reinforced with 6x6x10WW mesh at centerline as per ASTM A185, or with fibermesh as per manufacturers specifications, uno.

d) All slabs on grade shall be placed over 4" minimum of free draining aggregate base compacted to a minimum of 95% relative compaction. Provide 2" sand above and below a 6 mil. (min.) vapor barrier at all living areas and areas requiring moisture protection.

e) All slab on grade subgrade (upper six inches) shall be scarified, moisture conditioned to within 2% of optimum, and uniformly compacted to at least 90% of maximum dry density as determined by ASTM D1557. This will not be required if slabs are to be placed directly on undisturbed compacted structural fill.

f) Waterproofing of foundations and retaining walls is the responsibility of the owner.

g) Reinforcement shall be grade 60 as per ASTM A615 uno. Lap reinforcing bar splices 40 bar diameters, uno.

h) Concrete stem walls and footings are to be a monolithic pour, uno. Provide vertical & horizontal #4's @ 18" oc. developed into footing for stemwalls over 28" in height, uno. Stemwalls 36" or greater in height shall be designed as retaining walls.

i) All masonry units shall conform to ASTM C90 grade N.

j) All masonry cells are to be solid grouted with mortar conforming to ASTM C279 Type S, with a 28 day compressive strength of 2000 psi min.

k) Reinforcement cover in cast-in-place concrete shall be as follows:

- 3" - Concrete cast against and permanently exposed to earth.
- 1 1/2" - Concrete exposed to earth or weather with #5 bars or smaller.
- 1 1/2" - Concrete not exposed to weather or in contact with ground, #11 bars and smaller.
- 1 1/2" - Beams, columns, and pilaster, cover over ties.
- 1 1/2" - Clear to top for reinforcement in slabs on grade.

l) Provide slab control joints (saw cut or plastic inserts) at 20'-0" maximum spacing each way for 4" slab. Joint depth to be 1/4 of slab depth.

m) Vertical steel placement in masonry stem walls to be #4 bars at 32" o.c. maximum spacing, uno.

n) Horizontal steel placement in masonry stem walls to be #4 bars at 24" o.c. maximum spacing, uno.

o) Reinforced concrete shall conform to applicable requirements of CBC and ACI Standards.

p) Aggregate shall conform to ASTM C33 for stone aggregate.

q) Use normal weight concrete (145 pcf) for all concrete, uno. Use Type II cement , uno. Use Type V cement if soil contains sulfate concentrations of 0.2% or more.

r) Weather protection:

1) In hot weather, follow 'Recommended Practice for Hot Weather Concreting', ACI 305.

2) In cold weather, follow 'Recommended Practice for Cold Weather Concreting', ACI 306.

s) All reinforcing steel and anchor bolts shall be accurately located and adequately secured in position before and during placement of concrete.

t) All details of fabrication and installation of reinforcing steel shall be in accordance with the ACI Manual of Standard Practice.

5. FRAMING / LUMBER

a) Roof plywood thickness is per APA load tables based upon roof live load and framing spacing. Apply face grain perpendicular to framing, stagger panels and nail with 8d Per IBC Table 2306.3.1, uno.

b) Floor plywood shall be APA rated plywood and glued and nailed with 8d or 10d @ 6" o.c. edge, 10" o.c. field, uno.

c) Plywood shall conform to APA, PS 1. Shear plywood shall be 'Exposure I' C-D or C-C. Alternate sheathing may be substituted for floors, roofs, and shear walls provided they are structurally equivalent to plywood. Plywood permanently exposed to weather and/or moisture shall be rated 'Exterior'.

d) Wood structural panel diaphragms and shear walls shall be constructed with wood structural panel sheets not less than 4 feet by 8 feet, except at boundaries and changes in framing where minimum sheet dimensions shall be 2 feet by 4 feet. Framing members or blocking shall be provided at the edges of all sheets in shear walls.

e) Headers that are not specifically addressed in the calculations shall be typical header specified on the plans. (OK by observation). Use (2) trimmers on all openings 5'-0" and larger, uno.

f) Floor joists shall be Douglas Fir #2 min. Size and space in accordance with IBC Table 2308.8. Engineer recommends using E less than 1.2. Manufactured "I" joists (such as Truss Joists) may be substituted for sawn lumber, size and spacing as per manufacturer's recommendations. Use manufactured rim joist (such as Timber Strand) with all "I" joists.

g) All foundation sill plates, nailers, and ledgers in direct contact with concrete and within 8" of ground shall be pressure treated Douglas Fir or Hem Fir.

h) Studs shall be stud grade or better. In no instance shall a stud wall be used to retain soil or resist lateral pressure due to snow loading. In the case of snow build up against a stud wall the owner shall be responsible to eliminate snow to stud wall contact.

GENERAL CONSTRUCTION NOTES (CONT.):

i) All framing lumber shall be Douglas Fir Larch with moisture content less than 19%, uno.

j) Glu-lams shall be 24F-V4 uno. Glu-lams exposed to weather must be rated for exterior use by the manufacturer or approved protection from exposure to be provided.

k) Micro-lams (laminated veneer lumber) and parallams (parallel strand lumber) specified shall have the following minimum design strengths: 1 3/4" wide : Fb=2600 psi, Fv=220 psi, E=1,800,000 psi and 2-11/16" wide & up: Fb=2900 psi, Fv=290 psi, E=2,000,000 psi.

l) Splice all beams over supports or sawcut top 1/3 at support (not @ cantilevers), uno.

m) Where multiple trimmers or studs are specified, those trimmers are to be stacked in all wall framing and solid vertical grain blocking shall be provided @ all floor levels down to the foundation, uno.

n) Where posts with column caps, straps, or bearing plates are called out for, the load is to be transferred to the foundation with posts as specified and solid vertical grain blocking shall be provided @ all floor levels down to the foundation, uno.

o) All built up, laminated double or multiple 2X joists and beams shall be nailed together with (3) rows of 16d nails at 12" oc. staggered, uno. Three piece members shall be nailed from each side.

p) All 4x and 6x posts, columns, and headers shall be D.F. #1 or better, uno. All other 4x and 6x framing members shall be D.F. #2 or better, uno.

q) All framing members specified in these calculations are minimums, and larger members may be substituted.

r) All floor openings shall be between joists, uno.

s) DO NOT drill holes, notch, or cut into beams, studs, and joists, unless detailed on the plans.

t) Provide double joists below all parallel partition walls.

u) When using 'green' lumber, care shall be taken to allow for the effects of shrinkage. If necessary to avoid sagging, joists, rafters, and beams shall be braced at midspan until lumber has dried out and reached a stable moisture content.

6. HARDWARE / STRUCTURAL STEEL

a) All hardware specified shall be Simpson Strong-Tie Co. (or equal) installed per manufacturer's specifications, uno.

b) Structural steel shall conform to ASTM A36, uno. Pipe columns shall conform to ASTM A53, Type E or S, uno. Tube sections shall conform to ASTM 500, Grade B, uno.

c) All welding shall conform to the American Welding Society specifications. All welding shall be done by welders certified by the local building authority. All shop welding shall be in an approved fabricators shop authorized by the local building authority or special inspection per the IBC shall be provided. All field welding shall require special inspection per IBC Section 1701.

d) All welding electrodes shall be E70XX or shielded wires with Fy greater than 70ksi.

e) All nails specified are common nails. No substitutions unless specified on plans or in these calculations or approved in writing by Engineer. For all hardware specified, use nails or bolts per manufacturer's recommendations.

f) The minimum nailing for all framing shall conform to IBC Table 23-II-B-1.

g) All bolts specified must meet ASTM A307. Bolt holes shall be 1/32" to 1/16" larger than the specified bolt. Washers shall be used at each bolt head and nut next to wood. All washers to be not less than standard cut washers.

h) Provide 3" x 3" x 1/4" plate washers on all foundation anchor bolts in Seismic Design Categories D, E, & F.

7. TRUSSES

a) All prefabricated trusses shall be fabricated by a code approved manufacturer. The manufacturer shall be responsible for the design and certification of the trusses.

b) It is the responsibility of the manufacturer to conform the truss design according to the loading conditions as called for in these calculations, such as (1) live and dead loads: (2) truss spacing: (3) spans and eave overhangs: (4) roof pitch: (5) bearing points: and (6) drag loads.

c) Truss manufacturer shall supply to the Engineer calculations and shop drawings for approval prior to fabrication.

d) All calculations and shop drawings shall be signed by a registered engineer in the state in which the structure is being built.

e) Trusses shall be designed in accordance with the latest local approved codes and ordinances for all loads imposed, including lateral loads and mechanical equipment loads. Truss fabricator shall review all architectural drawings and meet architectural profiles as indicated.

f) Shop drawings shall also include the following information:

1) Project name and location.

2) All design loads as set forth in these calculations.

3) Member stresses, deflections, type of joint plates, and allowable design values. Truss joints shall be designed per requirements of Truss Plate Institute (TPI).

4) Type, size, and location of hangers to be used for the project. Hangers shall be designed to support the full vertical load and a lateral load equal to 20% of the vertical reaction. All connectors shall be code approved and of adequate strength to resist stresses due to the loading involved.

g) The truss manufacturer shall be responsible for all truss to truss connections, all truss to girder connections, and if the girder truss is made up of more than one truss, all connections between these trusses.

h) The truss manufacturer shall insure that the truss package meets the profile as required by the contract documents.

i) Total load deflection shall be limited to the lesser of L/240 or 1" max. Live load deflection shall be limited to L/360.

j) Trusses are to be handled, installed, and braced in accordance with HIB-91 of the TPI. Cross bridging and/or bracing shall be provided for and detailed by truss manufacturer as required to adequately brace all trusses.

k) Where truss blocking is called out, the blocking piece shall be the same depth as the adjoining members and capable of resisting a lateral load equal to 500 pounds in its plane, or be sheathed with 1/2" CDX plywood and nailed with 10d common nails at 6" o.c. edge nailing.

l) The truss manufacturer shall be responsible for the design of all trusses used as drag or chord members and shall insure that such trusses are placed as required on the framing plans. The amount of load to be laterally transmitted by the member shall be a minimum of 2000 pounds unless otherwise shown on the framing plans.

m) The truss manufacturer shall provide a means of attic access when spacing is 16" oc or less.

n) Gable end trusses shall be structural, designed to support overhang and to allow a top chord notch of 1 1/2".

o) Girder trusses are to be supported by multiple trimmers.

p) All non-bearing walls are to have a 1/2" gap to the bottom chord of trusses.

q) When snow loads exceed 50 psf the trusses shall be stacked over wall studs at bearing points.

SHEAR WALL SCHEDULE

SYMBOL	SHEAR PLY	EDGE NAIL SPACING**	16d NAIL SPACING	3x P.T. MUDSILL AND FRAMING MEMBERS @ ALL ABUTTING PANEL EDGES**
6	3/8"	8d @ 6"	6" o.c.	NO
4	3/8"	8d @ 4"	4" o.c.	NO
3	3/8"	8d @ 3"	3" o.c. STAGG	YES
2	3/8"	8d @ 2"	2" o.c. STAGG	YES
4/2*	(2) 3/8"	8d @ 4" B/S	PER PLANS	NO
3/2*	(2) 3/8"	8d @ 3" B/S	PER PLANS	YES
2/2*	(2) 3/8"	8d @ 2" B/S	PER PLANS	YES
A	1/2"	8d @ 2"	PER PLANS	YES
B	1/2"	10d @ 2"	PER PLANS	YES
C	5/8"	10d @ 2"	PER PLANS	YES
S	5/8" GYP. BD.	6d @ 4"	8" o.c.	NO
LOUISIANA PACIFIC SMART PANEL SIDING				
L6	19/32" Smart panel siding	8d @ 6"	6" o.c.	NO
L4	19/32" Smart panel siding	8d @ 4"	4" o.c.	NO
L3	19/32" Smart panel siding	8d @ 3"	3" o.c. STAGG	YES
L2	19/32" Smart panel siding	8d @ 2"	2" o.c. STAGG	YES

- Use Minimum 3/8" APA Rated Shear Ply / OSB or Rated Equivalent U.N.O.
- Use Common Nails And Field Nail @ 12" o.c., U.N.O.
- Nail All Shear Plywood With Edge Nail Spacing @ Top ℙ, Mud Sill, All Posts, All King Studs, Sole Plates, & All Studs W/ Holdowns.

* - Double Shear Walls To Have Shear Ply With Specified Nailing Both Sides. Offset Plywood Edges Or Provide 3x Studs At Location Where Edge Nailing Is Located On Both Sides Of Wall Stud.

** - Provide 3x Minimum Foundation Sills Unless Otherwise Specified On Plans And 3x Minimum Framing Members (Top ℙ, Sole ℙ, Studs, Posts, Blocking, Etc.) Receiving Edge Nailing From Two Abutting Shear Plywood Panels. All Edge Nailing At These Members Shall Be Staggered.

- Use SIMPSON MSTC28 To Strap Top ℙ's Across All Beams And Breaks In Top Plates, U.N.O.
- Provide Blocking @ All Horizontal Edges Of Shear Plywood Or Gyp. Bd.
- Nailing Of Gyp. Bd. w/ 6d @ 4" o.c. Applies To Edge & Field Nailing.

FOOTINGS

PIER SCHEDULE

SYMBOL	WIDTH (each side)	DEPTH	STEEL (each way)
12	12"	10"	(2) #4's
14 or 16 Ø	14"	10"	(2) #4's
16 or 18 Ø	16"	10"	(2) #4's
18 or 21 Ø	18"	10"	(2) #4's
21 or 24 Ø	21"	10"	(2) #4's
24	24"	10"	(3) #4's
28	28"	12"	(3) #4's
32	32"	12"	(4) #4's
36	36"	12"	(5) #4's
42	42"	12"	(6) #4's
48	48"	14"	(7) #4's
54	54"	14"	(8) #4's
60	60"	14"	(9) #4's

PERIMETER FOOTING SCHEDULE

SYMBOL	WIDTH	DEPTH (N/A) TO MONOPOUR	STEEL (CONTINUOUS)
12	12"	10"	(2) #4's
16	16"	8"	(2) #4's
18	18"	8"	(2) #4's

SYMBOL	WIDTH	DEPTH	FOOTING STEEL	STEMWALL STEEL (HOOK @ FOOTING (ALTERNATE HOOKS))
16a	16"	18"	(2) #4's CONTINUOUS T & B & #3 SHEAR TIES @ 18" o.c.	N/A
16b	16"	24"	(2) #4's CONTINUOUS T & B & #3 SHEAR TIES @ 18" o.c.	N/A

STEMWALL

- 6" Wide w/ (1) #4 Cont. @ Top, U.N.O. Provide #4 Verticals @ 48" o.c., Hook @ Footing (Alternate Hooks). Provide #4 Vert. @ 32" o.c. & #4 Horiz. @ 24" o.c. at CMU Stemwalls.
- If Stemwall Exceeds 28" Above Top Of Footing, Use #4's @ 18" o.c. Horizontal Cont. and #4's @ 18" o.c. Vert., U.N.O. Stemwalls 36" and Greater Shall be Designed as Retaining Walls.
- All Footings Shall Bear On Undisturbed Soil, Assumed Soil Bearing Pressure Is Determined & Increased in Accordance w/ IBC Table 1804.2.
- Exterior Footings To Be Placed 18" Or 24" Below Grade Per Applicable Local Codes
- Footings Supporting Three Stories Or More Shall have a Minimum Depth of 10".
- Stemwalls Supporting Three Stories Or More Shall have a Minimum Thickness of 10".

ABBREVIATIONS

Additional	ADD'L	Footing	FTG	Pressure Treated or Preservative Treated	PT
Anchor Bolt	A.B.	Foundation	FDN	Redwood	RWD
At	@	Glued Laminated Beam	GLB	Required	REQ'D
Beam	BM	Gypsum Board	GYP BD	Schedule	SCHED
Bearing	BRG	Hanger	HGR	Shear Wall	SW
Blocking	BLKG	Header	HDR	Similar	SIM
Both Sides	B/S	Hem-Fir	HF	Specification	SPEC
Boundary Nailing	B.N.	Holdown	HD	Square	SQ
Cantilever	CANT	Horizontal	HORIZ	Square Footage	#
Centerline	℄	Interior	INT	Staggered	STAGG
Column	COL	Joist	JST	Standard	STD
Concrete	CONC	Laminated Veneer Lumber	LVL	Steel	STL
Concrete Masonry Unit	CMU	Live Load	L.L.	Structural	STRUC
Continuous	CONT	Machine Bolt	M.B.	Threaded	THR'D
Dead Load	D.L.	Manufacturer	MFR	Toe Nail	T.N.
Detail	DET/DTL	Maximum	MAX	Tongue & Groove	T&G
Diameter	Ø	Micro-Lam (Truss Joist)	ML	Top Of	T.O.
Double	DBL	Minimum	MIN	Tube Steel	T.S.
Douglas Fir, North	DF	Not Applicable	N/A	Typical	TYP
Drawing	DWG	Not to Scale	NTS	Uniform Building Code	UBC
Each	EA	Number / Pounds	#	Unless Noted Otherwise	UNO
Each End	EE	On Center	o.c.	Verify In Field	VIF
Each Side	ES	One Side	o/s	Vertical	VERT
Edge Nailing	E.N.	Over / On	o/	Welded Wire Fabric	WWF
Embedment	EMBED	Parallel Strand Lumber	PSL	Welded Wire Mesh	WWM
Equal	EQ	Plate	ℙ	With	w/
Existing	(E)	Plywood	PLY		
Exterior	EXT	Pounds Per Square Foot	PSF		
Field Nail / Face Nail	F.N.	Pounds Per Square Inch	PSI		
Floor	FLR				

HOLDOWNS

HOLDOWN SCHEDULE

- (2L) HDU2-SDS2.5 or LTT20B o/ (2) 2x STUDS, UNO. (Nail Double Studs w/ (2) 16d @ 8" o.c. Staggered)
- (2M) HDU2-SDS2.5 or MTT28B o/ (2) 2x STUDS , UNO. (Nail Double Studs w/ (2) 16d @ 6" o.c. Staggered)
- (4M) HDU4-SDS2.5 or MTT28B o/ (2) 2x STUDS UNO. (Nail Studs w/ (2) 16d @ 6" o.c.)
- (5) HDU5-SDS2.5 o/ (2) 2x STUDS UNO. (Nail Studs w/ (2) 16d @ 4" o.c.)
- (8) HDU8-SDS2.5 o/ (2) 2x STUDS UNO. (Nail Studs w/ (2) 16d @ 4" o.c.)
- (11) HDU11-SDS2.5 o/ 6x STUDS UNO.
- (14) HDU14-SDS2.5 o/ 6x STUDS UNO.
- (P2) PHD2 or HTT22 o/ (2) 2x STUD U.N.O. (Nail Studs w/ (2) 16d @ 4 1/2" o.c.)
- (P5) PHD5 or HTT22 o/ (2) STUDS U.N.O.
- (P6) PHD6 o/ (2) STUDS U.N.O.
- (P8) PHD8 o/ (2) STUDS U.N.O.
- (Q8) HDQ8-SDS3 o/ 4x STUD U.N.O.
- (Q11) HHDQ11-SDS2.5 o/ 4x STUD U.N.O.
- (Q14) HHDQ14-SDS2.5 o/ 6x STUD U.N.O.
- (HP) HPAHD22 o/ 4x4 STUD or FACE of (2) 2x STUDS, UNO. (Nail Dbl. Studs w/ (2) 16d @ 6" o.c. Stagg.)
- (PA) PAHD42 o/ 4x4 STUD or FACE of (2) 2x STUDS, UNO. (Nail Dbl. Studs w/ (2) 16d @ 12" o.c. Stagg.)
- (HT) HTT16 o/ (2) 2x STUD, UNO. (Nail Double Studs w/ (2) 16d @ 4 1/2" o.c. Staggered)
- (ST8) STHD8 (RJ) o/ (2) 2x STUDS, UNO. (Nail Dbl. Studs w/ (2) 16d @ 6" o.c. Stagg.)
- (ST10) STHD10 (RJ) o/ (2) 2x STUDS, UNO. (Nail Dbl. Studs w/ (2) 16d @ 6" o.c. Stagg.)
- (ST14) STHD14 (RJ) o/ (2) 2x STUDS, UNO. (Nail Dbl. Studs w/ (2) 16d @ 4" o.c. Stagg.)

HOLDOWN INFORMATION

- All Holdowns To Be Installed Per Manufacturers Specifications.
- All Holdown Anchor Bolts Shall Be Specified Per Plan And Shall Meet Manufacturers Minimum Installation Requirements.
- All Holdowns To Be Bolted, Nailed, Or Screwed To (2) Studs Min., U.N.O. Above.
- All Threaded Rod Options To Be Tied To (1) #4 Vertical - (2) #4 Vertical for HD10A Or HDQ8 & Greater, Developed Into Ftng. w/ 90° Bend. Provide (1) #4 Horizontal @ Top of Stemwall @ All HD Anchor Bolts.
- Holdown SSTB Anchor Bolts At Blocked Out Footings Shall Have (1) #4 Vertical - (2) #4 Vertical for HD10A Or HDQ8 & Greater, Developed Into Footing w/ 90° Bend.
- Holdown Anchor Bolts Are Designed For Uplift Only, Standard Mudsill Anchor Bolts Are Required (Spacing Per Plan)
- Provide Rim Joist Or Solid Blocking @ HD2A, HD5A, LTT20B, MTT28B, HPAHD22, PAHD42, PHD2, PHD5, HTT22, & HTT16 Holdowns.
- Provide Double Solid Blocking @ HD6A, HD10A, HD15A, HD20A, PHD6, PHD8, & Straps Across Floors.
- Screws For PHD Holdowns Shall Be Simpson SDS1/4x3.
- All End Conditions For Threaded Rods Shall Have (2) Nuts And (1) Washer Per Manufacturer.

HOLDOWN SPECIFICATION TABLE
(ALSO SEE SIMPSON STRONG-TIE CATALOG)

H. DOWN	CL	MIN. THKNESS	STUD BOLTS	FOR THREADED-ROD ANCHOR Ø	FOR THREADED-ROD EMBEDMENT	SSTB BOLT (MONOPOUR)	SSTB BOLT EMBEDMENT
HDU2-SDS2.5	1 1/4"	3"	6-SDS1/4"x2 1/2"	5/8"Ø	13"	SSTB 16	13"
HDU4-SDS2.5	1 1/4"	3"	10-SDS1/4"x2 1/2"	5/8"Ø	14"	SSTB 20	17"
HDU5-SDS2.5	1 1/4"	3"	14-SDS1/4"x2 1/2"	5/8"Ø	20"	SSTB 24	25"
HDU8-SDS2.5	1 1/4"	3"	20-SDS1/4"x2 1/2"	7/8"Ø	26"	N / A	N / A
HDU11-SDS2.5	1 1/4"	5 1/2"	30-SDS1/4"x2 1/2"	1" Ø	26"	N / A	N / A
HDU14-SDS2.5	1 9/16"	5 1/2"	36-SDS1/4"x2 1/2"	1" Ø	26"	N / A	N / A
HTT16	1 1/2"	3"	(18) 16d's	5/8"Ø	21"	SSTB 16	13"
HTT22	1 1/2"	3"	(32) 16d SINKERS	5/8"Ø	21"	SSTB 24	21"
PHD2	1 3/8"	3"	10-SDS1/4x3	5/8"Ø	13"	SSTB 16	13"
PHD5	1 3/8"	3"	14-SDS1/4x3	5/8"Ø	17"	SSTB 20	17"
PHD6	1 3/8"	3"	18-SDS1/4x3	7/8"Ø	18"	SSTB 28	25"
PHD8	1 3/8"	3"	24-SDS1/4x3	7/8"Ø	25"	SSTB 28	25"
HDQ8	1 1/4"	3"	20-SDS1/4x3	7/8"Ø	25"	SSTB 28	25"
HHDQ11	1 1/2"	3 1/2"	24-SDS1/4	1"Ø	26"	N / A	N / A
HHDQ14	1 1/2"	3 1/2"	30-SDS1/4	1"Ø	26"	N / A	N / A

DESIGN CRITERIA

SNOW, WIND, & SEISMIC DESIGN FACTORS

Site Elevation: 6410 Ft.
Ground Snow Load: 55 PSF
Design Wind Speed: 90 mph
Exposure: C
Seismic Design Category: D
Seismic Base Shear: .134 W

ROOF FRAMING DESIGN LOADS

Truss Loading:

T.C. LIVE LOAD =	55	PSF
T.C. DEAD LOAD =	10	PSF
B.C. DEAD LOAD =	10	PSF
TOTAL LOAD =	75	PSF

Truss Spacing= 24 "o.c.

Rafter Loading:

LIVE/SNOW LOAD =	55	PSF
DEAD LOAD =	15	PSF
TOTAL LOAD =	70	PSF

ROOF PLYWOOD

5 / 8 " CDX APA Rated (40/20) Or OSB Equivalent-Apply Face Grain Perpendicular To Framing. Stagger Panels And Nail w/ 8d Common Per IBC Table 2306.3.1, uno. Edge Nail At Supported Edges, Gable Ends, And Frieze Blocks.

TOP ℙ SPLICES

Use (8) 16d Nails At All Top ℙ Splices (48" Long), U.N.O.

HEADER FRAMING

Use 6 x 8 DF #2 @ Typical Header, U.N.O.
Use (2) Trimmers @ Openings 5'-0" And Greater.

WALL FRAMING

Use 2 x 6 D.F. #2 @ 16" o.c. (UNO)

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NO. S 3986
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3/20/17

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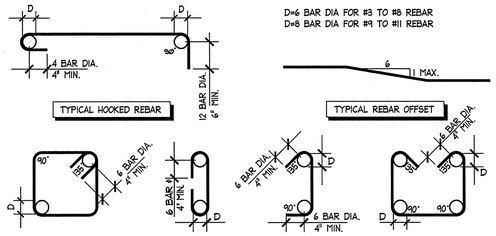
ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

STRUCTURAL SPECIFICATIONS

DRAWN: MAB	JOB: 0883-029
ENGINEER:	DRAWING: SEE PLOT STAMP
SCALE: N.T.S.	SHEET: S1
DATE: 01/26/16	OF: 29 SHEETS



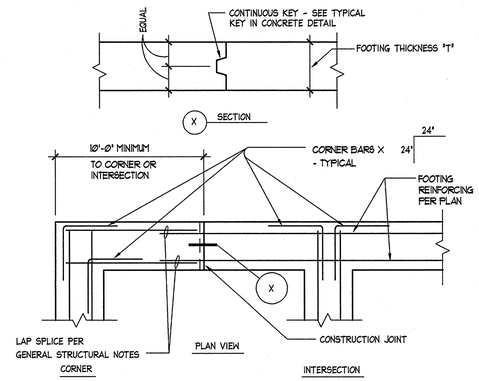
MINIMUM LAP LENGTHS @ REBAR SPLICES (f'c=3000 PSI MIN.)

SIZE OF REINFORCEMENT	#3	#4	#5	#6	#7	#8	#9	#10
CONCRETE	21"	30"	46"	65"	89"	117"	148"	186"
CMU-SINGLE CURTAIN OF REINFORCEMENT (SEE NOTE 1)								
TYPICAL	15"	20"	25"	30"	35"	40"	-	-
w/ SPLICE @ MIDHEIGHT OR SPAN	23"	30"	38"	45"	53"	60"	-	-
CMU-DOUBLE CURTAIN OF REINFORCEMENT (SEE NOTE 2)								
TYPICAL	20"	26"	33"	39"	46"	52"	-	-
w/ SPLICE @ MIDHEIGHT OR SPAN	30"	39"	50"	59"	69"	78"	-	-

NOTE 1: USE FOR SINGLE CURTAIN OR DBL. CURTAIN REINFORCEMENT WITH SPLICES STAGGERED 24".
NOTE 2: USE FOR (2) OR MORE BARS SPACED 3" OR CLOSER TOGETHER. IF SPLICES ARE STAGGERED USE SINGLE CURTAIN LAP LENGTHS.

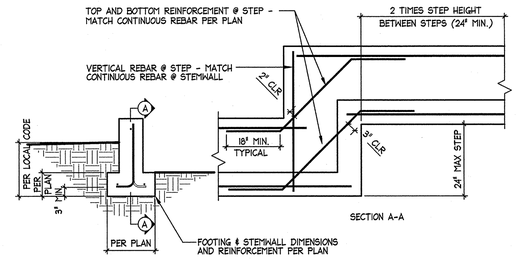
1 REBAR CONFIGURATION AND LAPS

SCALE: 1 1/2" = 1'-0"



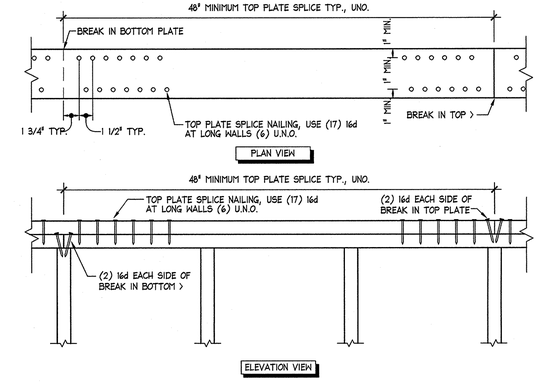
2 TYP. CORNER REINF. AND CONSTRUCTION JOINTS IN CONCRETE FOOTINGS

SCALE: N.T.S.



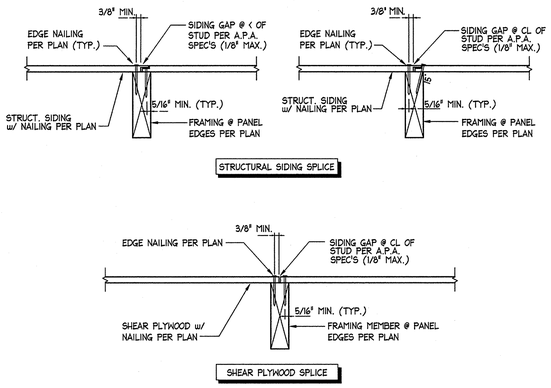
3 TYPICAL STEPPED FOOTING

SCALE: 1/2" = 1'-0"



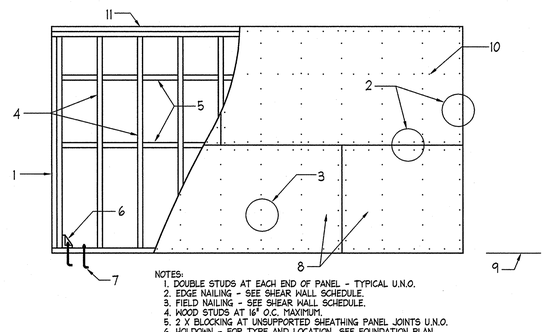
4 TYPICAL TOP PLATE SPLICE

SCALE: 1 1/2" = 1'-0"



5 TYPICAL SPLICE @ SHEAR PANELS

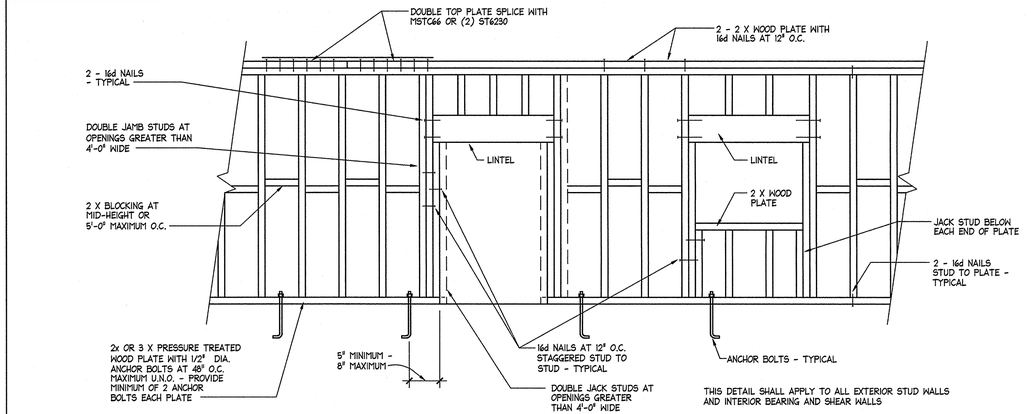
SCALE: N.T.S.



NOTES:
1. DOUBLE STUDS AT EACH END OF PANEL - TYPICAL U.N.O.
2. EDGE NAILING - SEE SHEAR WALL SCHEDULE.
3. FIELD NAILING - SEE SHEAR WALL SCHEDULE.
4. WOOD STUDS AT 16" O.C. MAXIMUM.
5. 2 X BLOCKING AT UNSUPPORTED SHEATHING PANEL JOINTS U.N.O.
6. HOLDOWN - FOR TYPE AND LOCATION, SEE FOUNDATION PLAN.
7. ANCHOR BOLTS - FOR SIZE AND SPACING, SEE SHEAR WALL SCHEDULE.
8. SHEATHING MATERIAL. SHEATHING MAY BE INSTALLED HORIZONTALLY OR VERTICALLY.
9. FLOOR LINE.
10. EDGE NAILING TO BLOCKING AT ROOF LINE.
11. 2 X BLOCKING AT ROOF LINE.

6 EXTERIOR WOOD STUD BRACE WALL ELEVATION (ONE STORY)

SCALE: N.T.S.



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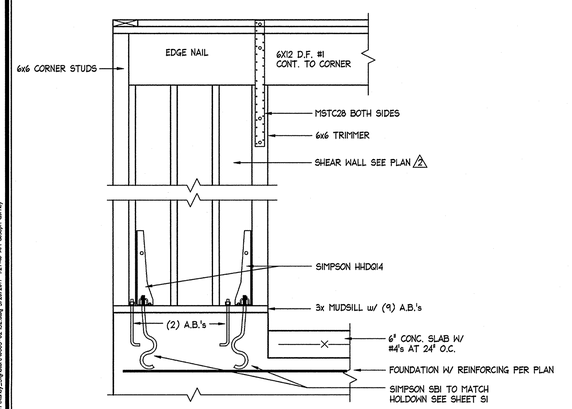
3/29/17

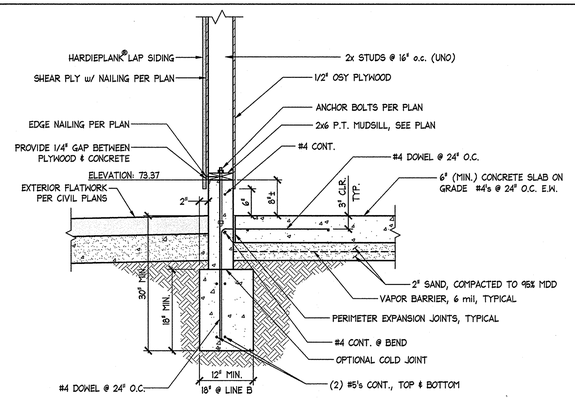
7 TYP. WOOD STUD WALL FRAMING BRACE WALL ELEVATION (ONE STORY)

SCALE: N.T.S.



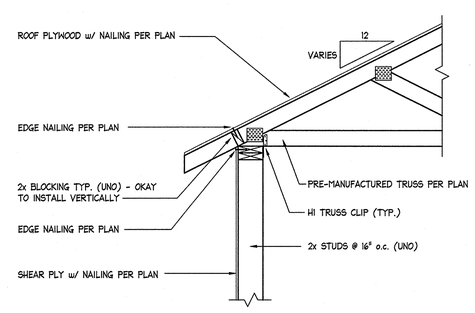
8 HOLDOWN & SHEAR AT O.H. DOOR

FND 002 SCALE: 3/4" = 1'-0"



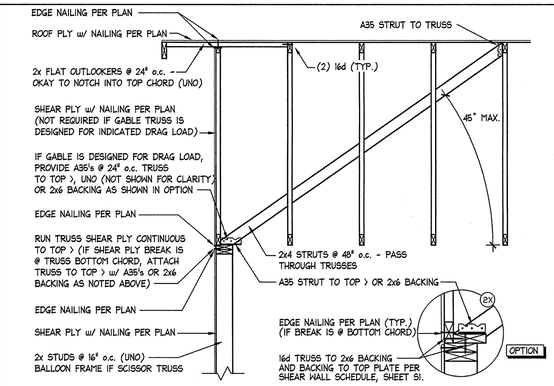
9 TYPICAL PERIMETER FOOTING @ SLAB

SCALE: 3/4" = 1'-0"



10 TRUSS TO TOP PLATE CONNECTION

RFP 001 SCALE: 3/4" = 1'-0"



11 GABLE TRUSS TO TOP PL CONNECTION

RFP 002 SCALE: 1/2" = 1'-0"

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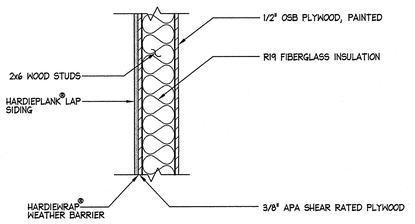
ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

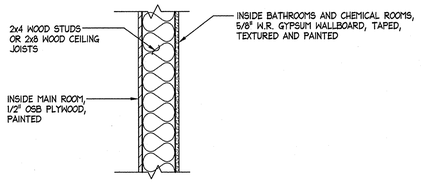
STRUCTURAL DETAILS

DRAWN: MAB	JOB: 0883-029
ENGINEER:	DRAWING: SEE PLOT STAMP
SCALE: AS NOTED	SHEET: S2
DATE: 01/26/16	OF: 29 SHEETS



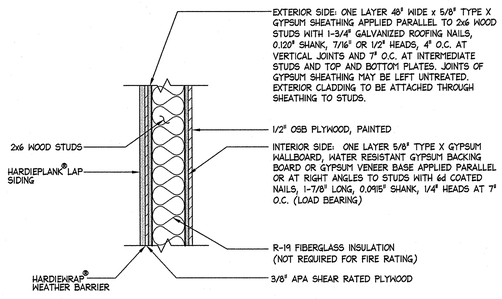
EXTERIOR WALL DETAIL

SCALE: 1" = 1'-0"



INTERIOR WALL & CEILING DETAIL

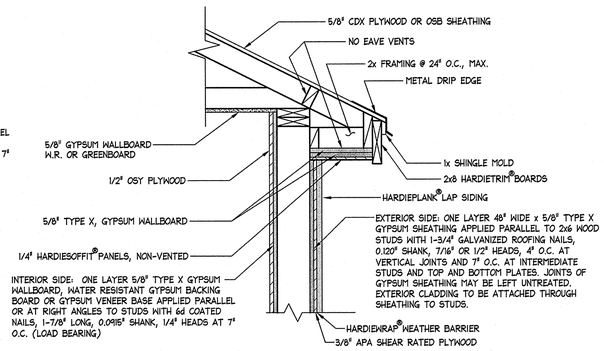
SCALE: 1" = 1'-0"



IF LOAD BEARING STAGGER 24" EACH LAYER AND SIDE

1-HR EXTERIOR WALL DETAIL

FIREWALL_002 SCALE: 1" = 1'-0"



1-HR EAVE DETAIL

SCALE: 1" = 1'-0"

SCHEDULE:

SYM.	QTY.	H	W	D	DESCRIPTION
1	1	6'-8"	3'-0"	2"	EXTERIOR, METAL, INSULATED, GLAZED, 3/4 HR. FIRE RATED
2	1	12'	10'	-	EXTERIOR, 20 MINUTE (MIN.) FIRE-RATED ROLL-UP w/ AUTOMATIC DOOR OPENER
3	1				WATER CLOSET, COMMERCIAL GRADE, HANDICAP COMPLIANCE
4	1				LAVATORY, COMMERCIAL GRADE, WALL MOUNTED
5	1				EMERGENCY SHOWER/EYEWASH
6	2	6'-8"	3'-0"	2"	INTERIOR, CORROSION RESISTANT, METAL, WITH 1.5 S.F. THROUGH VENT IN LOWER HALF OF DOOR. w/ CHEMICAL PLACARD
7	1				4 S.F. LOUVERED AIR INTAKE
8	1				FIRE EXTINGUISHER
9	1				WALL MOUNTED THERMOSTAT WITH HUMIDITY CONTROL THAT ALLOWS 50°F TEMPERATURE SETTING AND CONTROLS PUH1, PUH2 & EF1
10	2				WOOD SHELVE ABOVE CHEMICAL CONTAINERS FOR FEED PUMPS
11	1	12"	30"		METAL-GLAZED WITH STRUCTURAL SILICONE GLAZING 1/4" (MIN.) LAMINATED ANNEALED GLASS AND INSULATED GLASS UNITS WITH ONE TEMPERED PANE SLIDER WINDOW
12	1	36"	36"	12"	STEEL WALL CABINET w/ SHELVES

GENERAL NOTES:

THE BUILDING WILL BE A H-5 OCCUPANCY GROUP AND TYPE III-B CONSTRUCTION.

WORK PERFORMED SHALL COMPLY TO THE FOLLOWING:
ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES, ORDINANCES, LAWS, REGULATIONS AND PROTECTIVE COVENANTS GOVERNING THE SITE OF WORK
IN CASE OF CONFLICT, THE MORE STRINGENT REQUIREMENTS SHALL GOVERN.

THE CONTRACTOR/OWNER SHALL BE RESPONSIBLE FOR THE GENERAL SAFETY DURING CONSTRUCTION, AND ALL WORK SHALL CONFORM TO PERTINENT SAFETY REGULATIONS.

INSTALLATION OF ALL MATERIALS AND FINISHES MUST BE DONE IN STRICT ACCORDANCE WITH THE RELATED MANUFACTURER'S SPECIFICATIONS AND DETAILS.

THE OWNER SHALL SECURE AND PAY FOR THE BUILDING PERMIT AND FOR OTHER PERMITS AND GOVERNMENTAL FEE, LICENSES AND INSPECTIONS NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK, IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.

ROOFING:
COMMERCIAL GRADE STANDING SEAM METAL ROOF WITH GAFGLAS® MINERAL SURFACED CAP SHEET INSTALL PER MANUFACTURER'S SPECS. AND 2016 CBC SECTION 1507, OVER UNDERLAYMENT PER SECTION 1507.4.5

FLASHING:
ALL JOINTS AND PENETRATIONS AT EXTERIOR WALLS, CEILINGS AND FLOORS SHALL BE FULLY CAULKED AND SEALED.

ROOF FLASHING AT VERTICAL WALL JUNCTIONS BASE AND COUNTER FLASHINGS ARE REQUIRED WHERE ROOFING MATERIAL MEETS WALLS. FORM FLASHING WITH A 4" MIN. TURN-UP AGAINST THE WALL AND FORM HORIZONTAL LEG 6" MIN. AWAY FROM THE WALL BASE FLASHINGS SHOULD BE FASTENED TO THE SHEATHING TO PREVENT SLIPPAGE "RAKE" COUNTER FLASHING ALONG WALL AS REQUIRED PER SIDING CONDITION. FLASHING SHALL BE MINIMUM 26 GAGE GALVANIZED SHEET METAL.

SIDING
8" HORIZONTAL HARDIEPLANK® LAP SIDING UNDER HZ5® CLIMATE ZONE INSTALLED PER MFG. SPECS. AND PER 2016 CBC SECTION 1405 o/ HARDIEWRAP® WEATHER BARRIER. INSTALL SECTION 1404.2 o/ 3/8" P.W. SHEATHING OR EQUIVALENT (SEE SHEAR CALLOUTS)

DOORS:
EXTERIOR MAN DOOR TO BE METAL INSULATED, GLAZED, 3/4 HR. FIRE RATED
ALL DOOR HARDWARE SHALL BE COMMERCIAL GRADE SCHLAGE WITH BRUSHED ALUMINUM FINISH.

MAN DOOR SHALL BE EQUIPPED WITH PUSH-BUTTON COMBINATION LOCKS.

ALL EXTERIOR DOORS SHALL BE KEYED ALIKE.

EXIT DOOR SHALL NOT REQUIRE MORE THAN ONE OPERATION TO UNLATCH AS EXACT DOOR HARDWARE HAS NOT BEEN SPECIFIED

EXIT DOOR SHALL BE OPERABLE FROM INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT PER 2016 CBC.

FIRE SPRINKLER:
UNDER 5,000 SQ. FT. FIRE SPRINKLERS NOT REQUIRED

FRAMING:
ALL CONSTRUCTION TO BE 2x6 WOOD STUD LIGHT FRAME CONSTRUCTION. ALL STUDS TO BE 16" O.C. U.N.O. ON PLANS.

INSULATION:
FIBERGLASS BATT INSULATION SHALL BE INSTALLED THROUGHOUT THE BUILDING ENVELOPE IN ACCORDANCE WITH THE FOLLOWING:

FLAT CEILINGS WITH ATTICS OVER HEATED SPACES R-38
EXTERIOR WALLS AT HEATED SPACES R-19
CONCRETE SLAB TO BE UN-INSULATED

INTERIOR MATERIAL/FINISHES:

5/8" GYPSUM WALL BOARD INSTALLED AT INTERIOR SHALL BE TYPE W.R. OR "GREENBOARD" PER 2016 CBC

INTERIOR WALLS AND CEILINGS SHALL BE PRIMED AND PAINTED WITH SEMI-GLOSS LATEX ENAMEL

ALL FINAL INTERIOR FINISH MATERIALS SELECTIONS WILL BE MADE BY OWNER.

CARPENTRY:
CONTRACTOR MUST COORDINATE ALL PLUMBING, MECHANICAL AND ELECTRICAL ROUGH OPENING REQUIREMENTS WITH FRAMING AND FINISHES TO ALLOW FOR PROPER CLEARANCES.

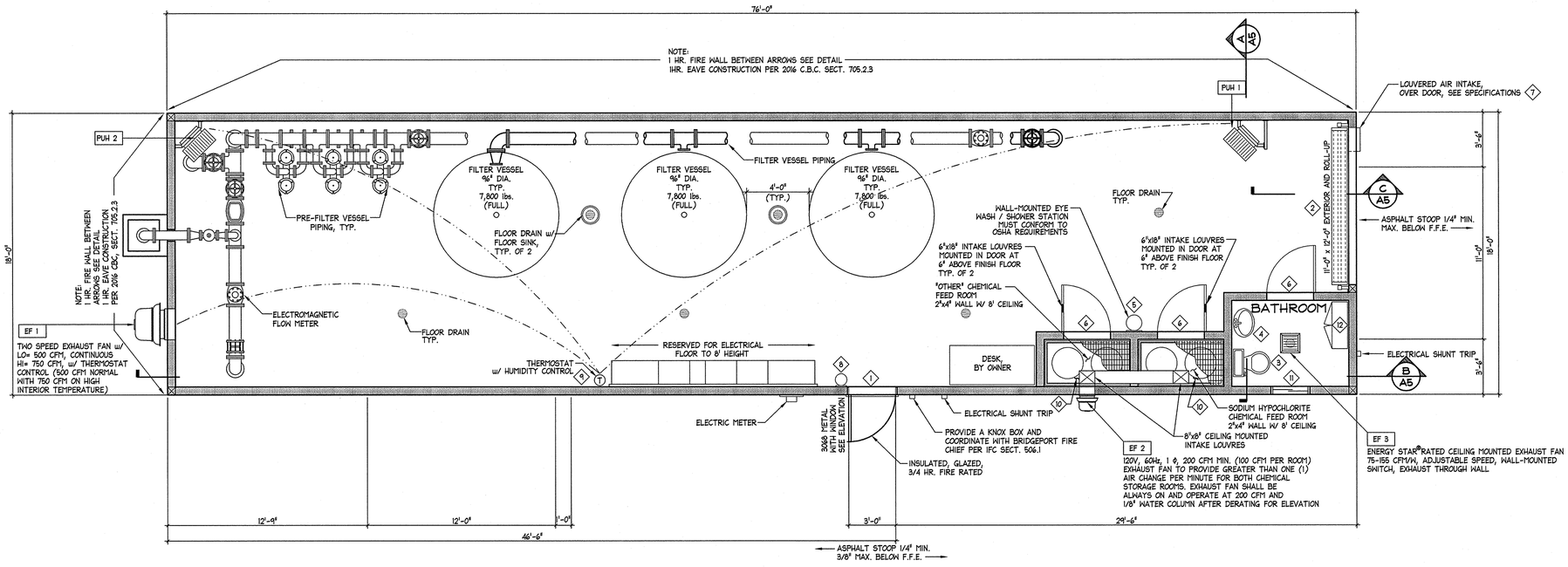
EXTERIOR FLATWORK:
SEE SITE PLAN

MISCELLANEOUS FIRE CODE:
COMBUSTIBLE WASTE MATERIAL CREATING A FIRE HAZARD SHALL NOT BE ALLOWED TO ACCUMULATE IN THE BUILDING CFC SECT. 304.1

VEGETATION SUCH AS WEEDS THAT ARE CAPABLE OF BEING IGNITED SHALL BE CUT DOWN OR REMOVED BY OWNER CFC SECT. 304.1.2

SMOKING SHALL BE PROHIBITED WHERE CONDITIONS MAKE SMOKING A HAZARD AND IN SPACES OF FLAMMABLE OR COMBUSTABLE MATERIALS CFC SECT. 310.2
OUTSIDE STORAGE OF COMBUSTABLE MATERIALS SHALL NOT BE LOCATED WITHIN 10 FEET OF A PROPERTY LINE CFC 315.3

POST, FENCES, VEHICLES, GROWTH, TRASH, STORAGE OR OTHER MATERIALS SHALL NOT BE PLACED NEAR FIRE HYDRANTS IN A MANNER THAT WOULD PREVENT FIRE HYDRANTS FROM BEING DESCRIBLE THE FIRE DEPT. SHALL NOT BE HINDERED FROM IMMEDIATE ACCESS TO FIRE HYDRANTS OR EQUIPMENT CFC SECT. 508.5.4. A 3 FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND FIRE HYDRANTS CFC SECT. 508.5.5



FLOOR PLAN

1,368 SQ. FT. SCALE: 1/4" = 1'-0"

HVAC SCHEDULE:

PUH 1 & PUH 2	PROPANE FIRED UNIT HEATERS THERMOSTATICALLY CONTROLLED 35 MBH (MIN.) REQUIRED HEATING CAPACITY 500 CFM (MIN.) AIRFLOW, SEE SPECIFICATIONS
EF 1	ELECTRIC SIDE MOUNT EXHAUST FAN 600 CFM CONTINUOUS OPERATION @ 1/8" W.C. 750 CFM HIGH SPEED ON THERMOSTAT CONTROL 120/208V, 60Hz, 1 ϕ, SEE SPECIFICATIONS
EF 2	ELECTRIC SIDE MOUNT EXHAUST FAN 300 CFM CONTINUOUS OPERATION @ 1/8" W.C. 120/208V, 60Hz, 1 DIA., SEE SPECIFICATIONS
EF 3	ENERGY STAR® RATED ELECTRIC CEILING MOUNT EXHAUST FAN, 75-155 CFM/W, ADJUSTABLE SWITCH, 120V, 60Hz, ADJUSTABLE SPEED MEET ENERGY STAR® LUMINAIRES SPEC. IF LIGHT WILL BE INTEGRATED

BRIDGEPORT: ELEVATION 6470, DERATE 0.89
DESIGN DRYBULB MINIMUM TEMPERATURE (0.2%): -15°F
DESIGN MIN. BUILDING TEMPERATURE: 50°F
ΔT: 65°F
MBH req: 600 CFM (65)(.89)= 35 MBH

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY No.C69438
STATE OF CALIFORNIA Civil

3.24.17

NO.	DATE	REVISION BLOCK	BY

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

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ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

FLOOR PLAN

DRAWN: WAN	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: 1/4" = 1'-0"	SHEET: A1
DATE: 03.24.2017	OF: 30 SHEETS

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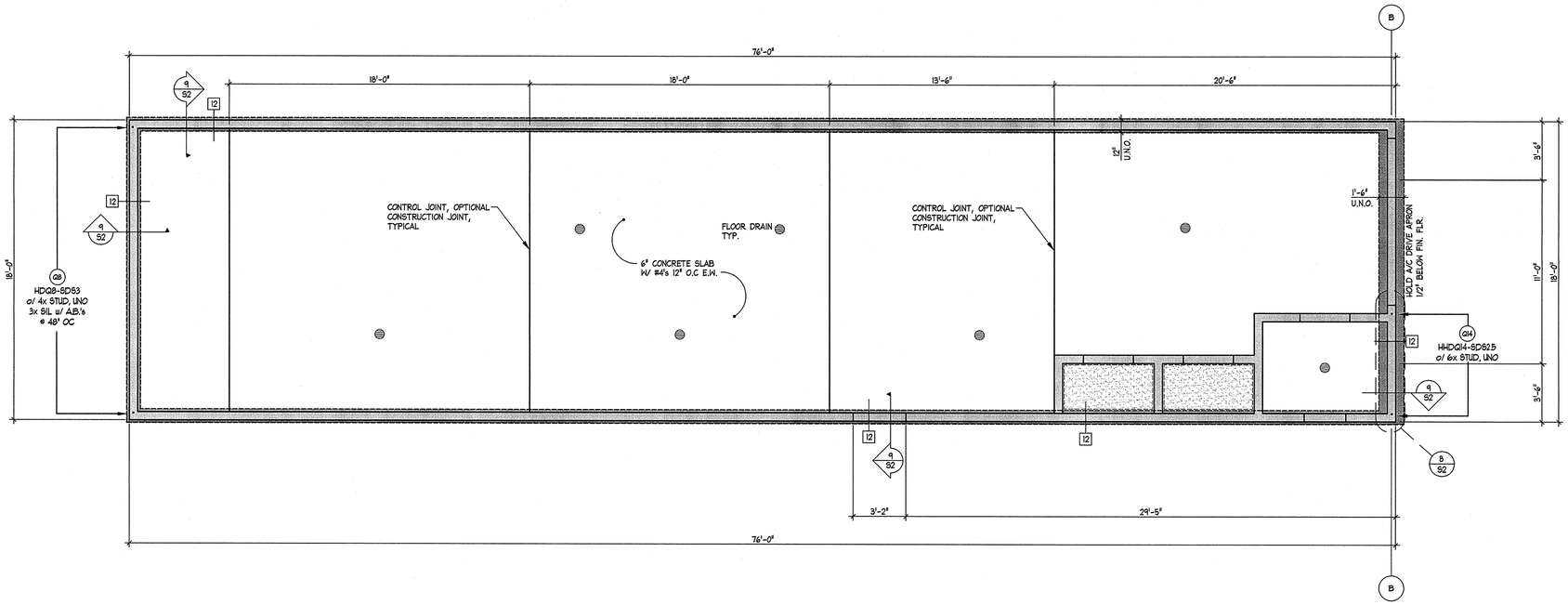
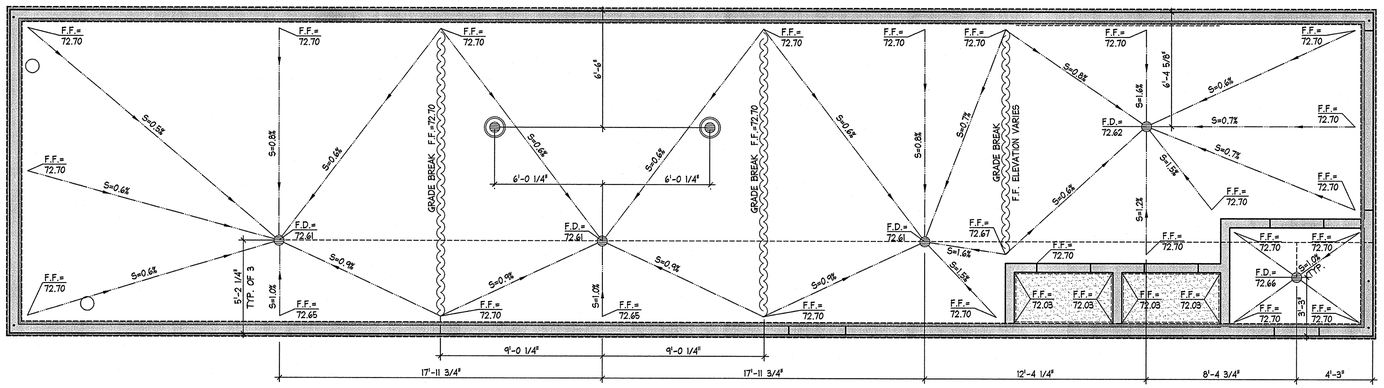


FOUNDATION PLAN

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



NOTE: MAXIMUM FLOOR SLOPE SHALL BE 2.0% AND MINIMUM FLOOR SLOPE SHALL BE 0.5%

FOUNDATION PLAN - GRADING

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

CONCRETE SLABS:

SEE SHEET C6, GRADING PLAN AND SHEETS S1 & S2, STRUCTURAL PLANS.

ANCHOR BOLTS:

5/8" DIA. x 10" A.B. @ 4'-0" o.c. (UNO). MAX. 2 ANCHOR BOLTS PER BOARD MINIMUM, 12" FROM ENDS MAXIMUM. ANCHOR BOLTS EMBEDDED 7" INTO CONC. MINIMUM. INSTALL 3" x 3" x 1/4" PLATE WASHERS ON EACH ANCHOR BOLT.

VAPOR BARRIER:

6 MIL. VISQUEEN VAPOR BARRIER (OR EQUIVALENT) LAID ON SAND.

LANDINGS:

PER 2016 CBC SECTION 1010.1.5

○ - SYMBOL INDICATES A HOLDOWN - SEE HOLDOWN SCHEDULE, SHEET S1. PROVIDE ANCHOR BOLT TO MATCH HOLDOWN SPECIFIED - SEE HOLDOWN SPECIFICATION TABLE, SHEET S1
□ - SYMBOL INDICATES A FOOTING - SEE FOOTING SCHEDULE, SHEET S1.
○ - SYMBOL INDICATES A PIER - SEE PIER SCHEDULE, SHEET S1.
- CONTRACTOR TO VERIFY HOLDOWN LOCATIONS AT SHEAR WALLS
- SEE SHEET S2 FOR STANDARD STRUCTURAL DETAILS PER APPLICATION.

NO.	DATE	REVISION BLOCK	BY

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

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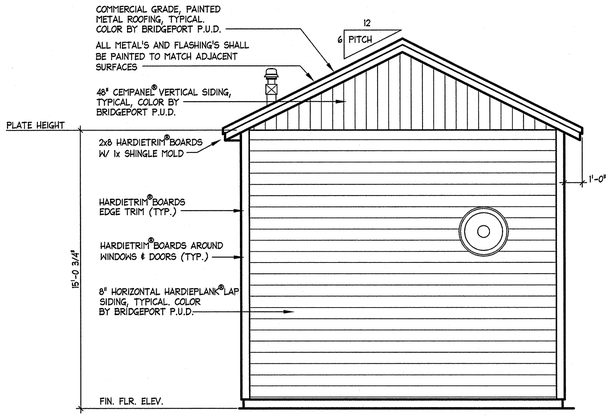
ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

FOUNDATION PLAN

SUSAN J.R. MCREAVY No.C69438 Civil STATE OF CALIFORNIA REGISTERED PROFESSIONAL ENGINEER

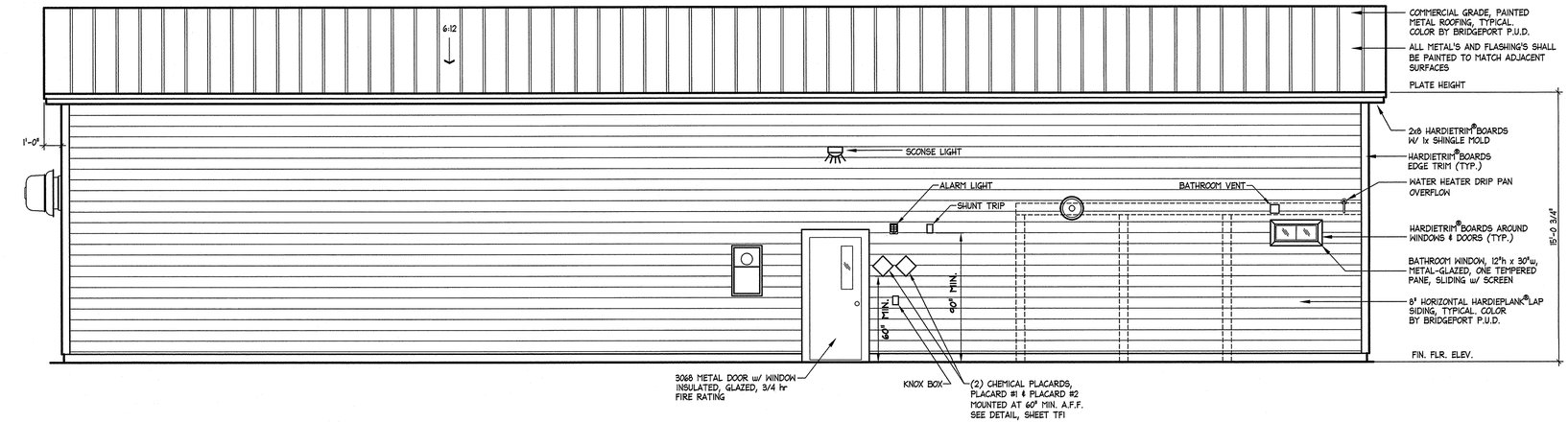
DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: 1/4" = 1'-0"	SHEET: A2
DATE: 03.24.2017	OF: 30 SHEETS

3.24.17



REAR (WEST) ELEVATION

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



SOUTH SIDE ELEVATION

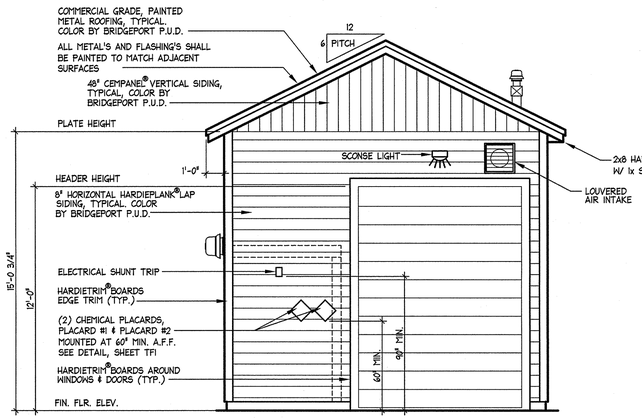
SCALE: 1/4" = 1'-0"

ATTIC VENTILATION

ATTIC VENTILATION PER 2016 CBC SECTION 1203 USE GABLE END VENTS, ROOF JACKS, AND EAVE VENTS.

DRAINAGE

PROVIDE DRAINAGE AWAY FROM BUILDING PER SITE PLAN

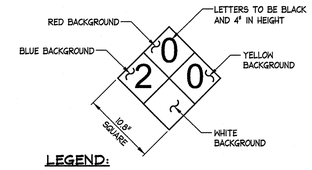


FRONT (EAST) ELEVATION

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

NORTH SIDE ELEVATION

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



LEGEND:

- 2 (Blue - Health)
- 0 (Red - Flammability)
- 0 (Yellow - Instability/Reactivity)
- The bottom square will be blank and white because there are no special conditions for this chemical

DIAMOND PLACARD DETAIL

SCALE: NTS

PLACARD #1 - FOR SODIUM HYPOCHLORITE
PLACARD #2 - FOR "OTHER" CHEMICAL

NOTE:

1. MOUNT ONE OF EACH PLACARD AT BOTH OUTSIDE DOORS WITH PLACARD #1 ON THE SODIUM HYPOCHLORITE ROOM DOOR AND PLACARD #2 ON THE "OTHER" CHEMICAL ROOM DOOR, FOR A TOTAL OF SIX (6) PLACARDS.
2. PLACARD DETAIL SHOWS COLORS AND NUMBERS FOR SODIUM HYPOCHLORITE ONLY, THE PLACARD FOR "OTHER" CHEMICAL, TO BE DETERMINED.

NO.	DATE	REVISION BLOCK	BY

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

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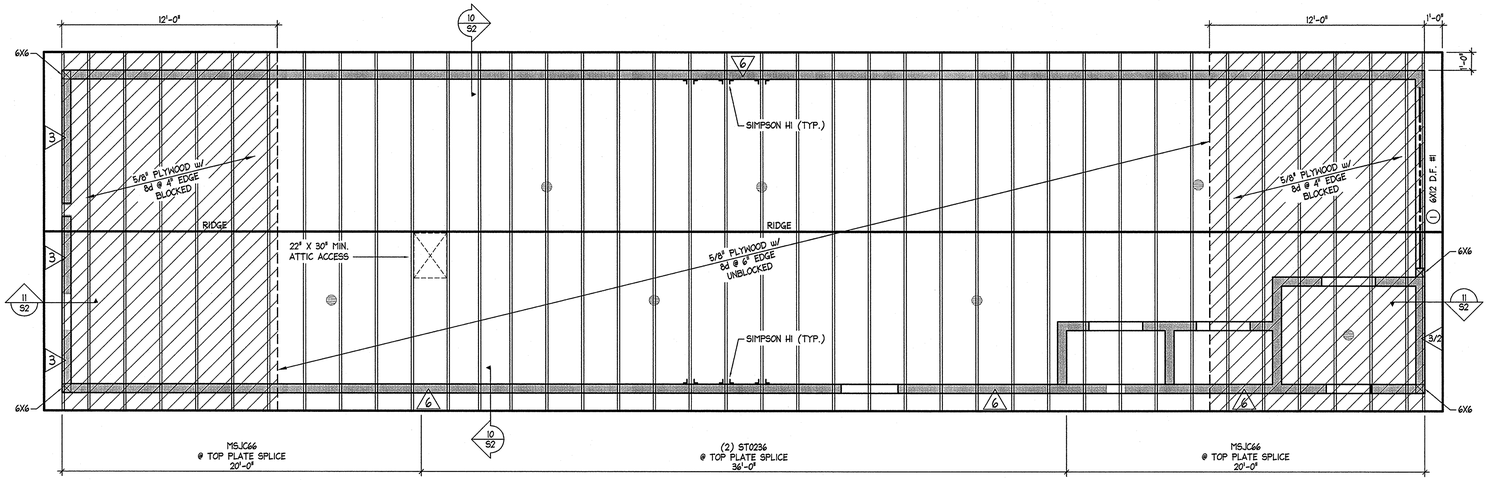
ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

EXTERIOR ELEVATIONS

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: 1/4" = 1'-0"	SHEET: A3
DATE: 03.24.2017	OF: 30 SHEETS

3.24.17



ROOF FRAMING PLAN

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

ATTIC VENTILATION CALCULATIONS:

$$\frac{1{,}368 \text{ SQ. FT.}}{150} = 9.1 \text{ SQ. FT. OF REQUIRED VENTILATION}$$

PROVIDED A MINIMUM OF 50% OF THE REQUIRED VENTILATING AREA IS PROVIDED BY VENTS LOCATED IN THE UPPER PORTION OF THE SPACE TO BE VENTILATED AT LEAST 3'-0" ABOVE EAVE OR CORNICE VENTS
PROVIDE 4.5 SQ. FT. OF VENTILATION AT OR NEAR RIDGE.
PROVIDE 4.6 SQ. FT. OF VENTILATION AT EAVE LINE.

ATTIC VENTILATION PER 2016 CBC SECTION R1203.2

NOTE: THE VENTILATING AREA MAY BE 1/300 OF THE AREA OF SPACE VENTILATED PROVIDED A VAPOR RETARDER IN ACCORDANCE WITH ASTM E 96 IS INSTALLED ON THE WARM SIDE OF THE ATTIC INSULATION

ROOFING:

STANDING SEAM METAL ROOF w/ GAFGLAS® MINERAL SURFACED CAP SHEET INSTALL PER MANUFACTURER'S SPECIFICATIONS AND 2016 CBC SECTION 1507, OVER UNDERLAYMENT PER SECTION 1507.4.5

SHEATHING:

5/8" CDX PLYWOOD (OR EQUAL) EXPOSURE 1, APA SPAN RATED (40/20). STAGGER JOINTS - NAIL WITH 8d COMMON PER 2016 CBC TABLE 2304.3(1), UNO.

TRUSSES:

PRE-MANUFACTURED ENGINEERED TRUSSES @ 24" o.c.
PROVIDE 2x STUD PER TRUSS PLY @ ALL GIRDER BRG. POINTS, U.N.O. DOWN TO HEADER OR SOLE PLATE. SOLID VERTICAL BLOCK AT FLOOR SYSTEM. STACK IN WALL FRAMING IN ALL LEVELS DOWN TO FOUNDATION.

NOTE: SEE TRUSS CALCULATIONS FOR TRUSS DESCRIPTIONS

HEADERS:

6x8 D.F. #1 (TYPICAL UNLESS OTHERWISE NOTED)

TRIMMERS:

DOUBLE TRIMMERS AT OPENINGS GREATER THAN 6'-0"
DOUBLE KING STUDS AT OPENINGS GREATER THAN 8'-0"

METAL CONNECTORS:

TRUSS HANGERS PER MANUFACTURERS
SIMPSON H1 CLIPS @ ALL TRUSS BEARING POINTS ON PLATES & BEAMS
SIMPSON H3 CLIPS (O/S) @ ALL RAFTER BEARING POINTS ON PLATES & BEAMS
SIMPSON H5 CLIPS (B/S) @ ALL GIRDER TRUSS BEARING POINTS, UNO.
SIMPSON PC & CC POST CAPS (AS NOTED)
SIMPSON ST, MST, & LSTA STRAPS (AS NOTED)

OUTLOOKERS:

2x4 D.F. #2 OUTLOOKERS AT 24" O.C.

ATTIC ACCESS:

22"x30" MIN. - PER 2016 CBC 1209.2

STRUCTURAL ENGINEERING NOTES

- SEE SHEET S2 FOR STANDARD STRUCTURAL DETAILS PER APPLICATION.
- WHERE POSTS AND MULTIPLE STUDS ARE SPECIFIED, THEY ARE TO BE STACKED IN ALL WALL FRAMING AND SOLID VERTICAL GRAIN BLOCKING SHALL BE PROVIDED AT ALL FLOOR LEVELS DOWN TO THE FOUNDATION OR HEADOUT.
- CONTRACTOR TO PROVIDE TRUSS CALCS FOR REVIEW AND APPROVAL BY PROJECT ENGINEER. DO NOT CHANGE TRUSS MANUFACTURERS OR TRUSS LAYOUT SHOWN HERE WITHOUT THE APPROVAL OF THIS PROJECT ENGINEER.
- CONTRACTOR TO VERIFY TRUSS SPANS, DEFLECTIONS, PROFILES, CONNECTIONS, ETC. WITH TRUSS MANUFACTURER PRIOR TO CONSTRUCTION. DO NOT DEVIATE FROM HANGERS SPECIFIED ON PLANS UNLESS VERIFIED BY PROJECT ENGINEER.

NO.	DATE	REVISION BLOCK	BY

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4 0 4 8
SCALE: 1/4" = 1'-0"

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ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

ROOF FRAMING PLAN

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

3.24.17

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: 1/4" = 1'-0"	SHEET: A4
DATE: 03.24.2017	OF: 30 SHEETS

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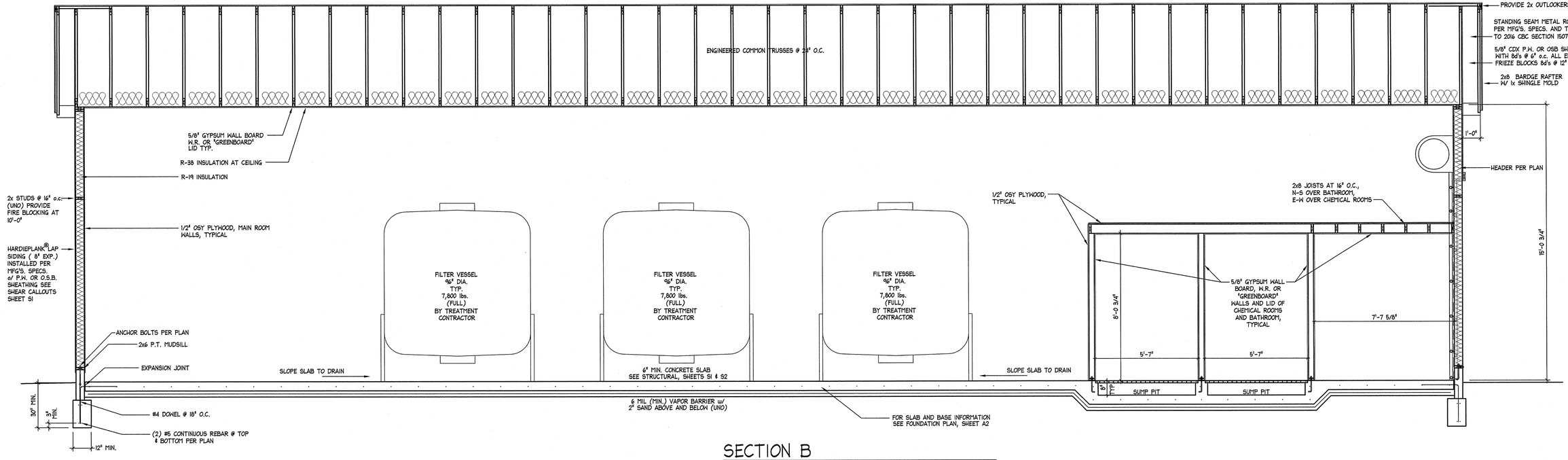
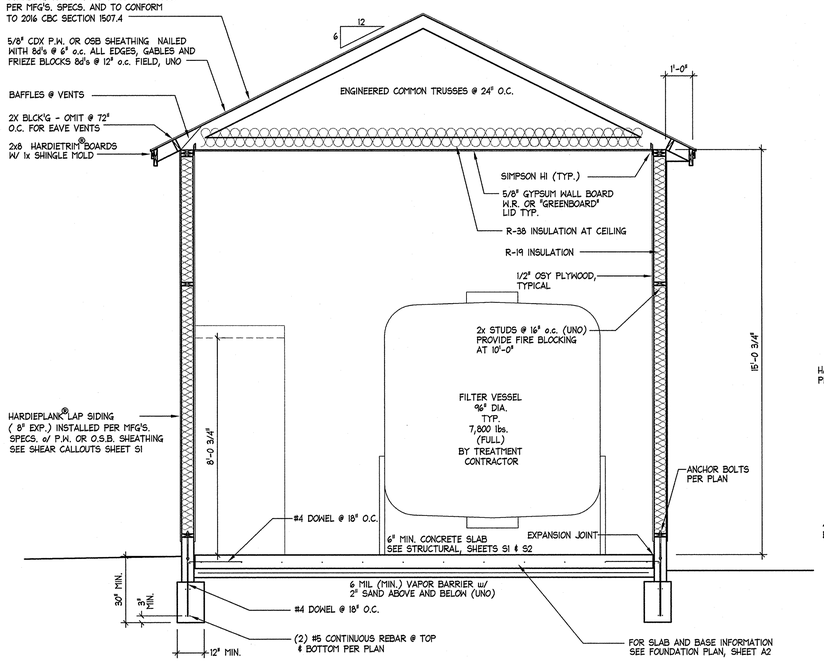


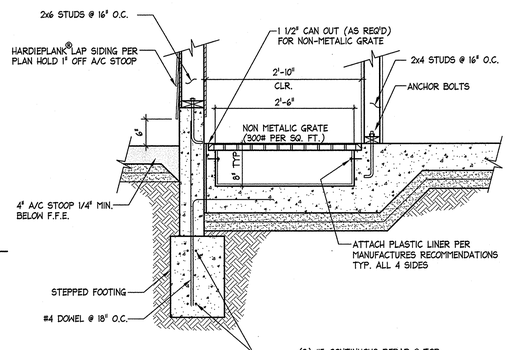
SECTION B

SCALE: 3/8" = 1'-0"



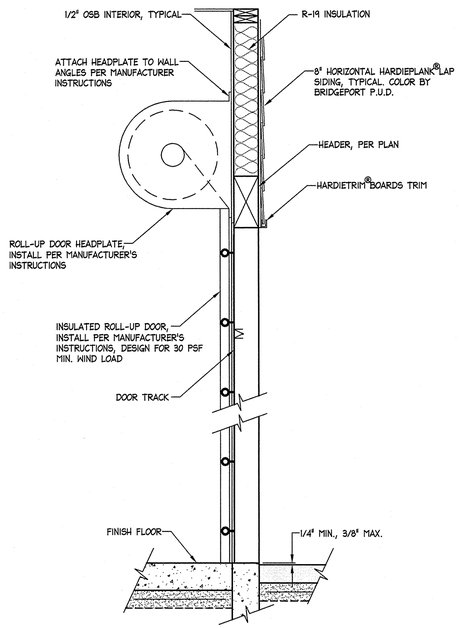
SECTION A

SCALE: 3/8" = 1'-0"



DETAIL AT SUMP

SCALE: 3/4" = 1'-0"



SECTION C

SCALE: 3/4" = 1'-0"

ROOFING:
COMMERCIAL GRADE STANDING SEAM METAL ROOF WITH GAFGLAS® MINERAL SURFACED CAP SHEET INSTALL PER MANUFACTURER'S SPECS. AND 2016 CBC SECTION 1507.4, OVER UNDERLAYMENT PER SECTION 1507.4.5

SHEATHING:
5/8" CDX PLYWOOD (OR EQUAL) EXPOSURE 1, APA SPAN RATED (40/20).
STAGGER JOINTS - NAIL WITH 8d @ 6"o.c. ALL EDGES, GABLE ENDS, AND FRIEZE BLOCKS.
8d @ 12" O.C. FIELD

TRUSSES:
PRE-MANUFACTURED ENGINEERED TRUSSES @ 24"o.c.
PROVIDE 2x STUD PER TRUSS PLY @ ALL GIRDER BRG. POINTS @ PLATES. U.N.O.
NOTE: SEE TRUSS CALCULATIONS FOR TRUSS DESCRIPTIONS

FILL SECTIONS:

RIDGE	2x8 DF #2 OR BETTER
RAFTERS	2x6 DF #2
VALLEY KICKER	2x6 DF #2

HEADERS:
6x8 D.F. #1 (TYPICAL UNLESS OTHERNISE NOTED)

TRIMMERS:
DOUBLE TRIMMERS AT OPENINGS GREATER THAN 6'-0"
DOUBLE KING STUDS AT OPENINGS GREATER THAN 8'-0"

SIDING
HARDIEPLANK® LAP SIDING (8" EXP.) INSTALLED PER MFG'S SPECS. AND PER 2016 CBC SECTION 1405.16

CONCRETE SLABS:
PROVIDE 6" CONCRETE SLAB ON GRADE WITH #4's AT 24" O.C. E.W.
PREPARE GRADE WITH 4" OF SAND & GRAVEL AGGREGATE BASE COMPACTED TO 95% OF RELATIVE COMPACTION.
PROVIDE A PERIMETER & INTERIOR EXPANSION JOINTS AS REQUIRED, AND PROVIDE CONTROL JOINTS ON AN INCREMENTAL BASIS.

EXTERIOR FLATWORK:
SEE SITE PLAN

SILLS & PADS:
2x PRESSURE TREATED LUMBER (TYP.)

ANCHOR BOLTS:
5/8" DIA. x 10" A.B. @ 4'-0" o.c. (UNO), MAX. 2 ANCHOR BOLTS PER BOARD MINIMUM, 12" FROM ENDS MAXIMUM. ANCHOR BOLTS EMBEDDED 7" INTO CONC. MINIMUM. INSTALL 3" x 3" x 1/4" PLATE WASHERS ON EACH ANCHOR BOLT.

VAPOR BARRIER:
6 MIL. VISQUEEN VAPOR BARRIER (OR EQUIVALENT) LAID ON SAND.

LANDINGS:
PER 2016 CBC SECTION 1010.1.5

METAL CONNECTORS:
ALL HANGERS SPECIFIED ARE SIMPSON STRONG TIE OR EQUIVALENT.

NO.	DATE	REVISION BLOCK	BY

SCALE: 3/8" = 1'-0"

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ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

SECTIONS

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: AS NOTED	SHEET: A5
DATE: 03.24.2017	OF: 30 SHEETS

3.24.17

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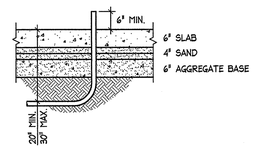
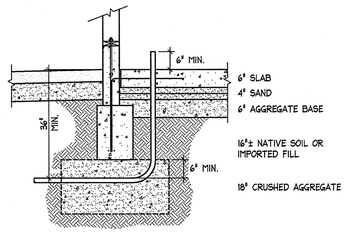


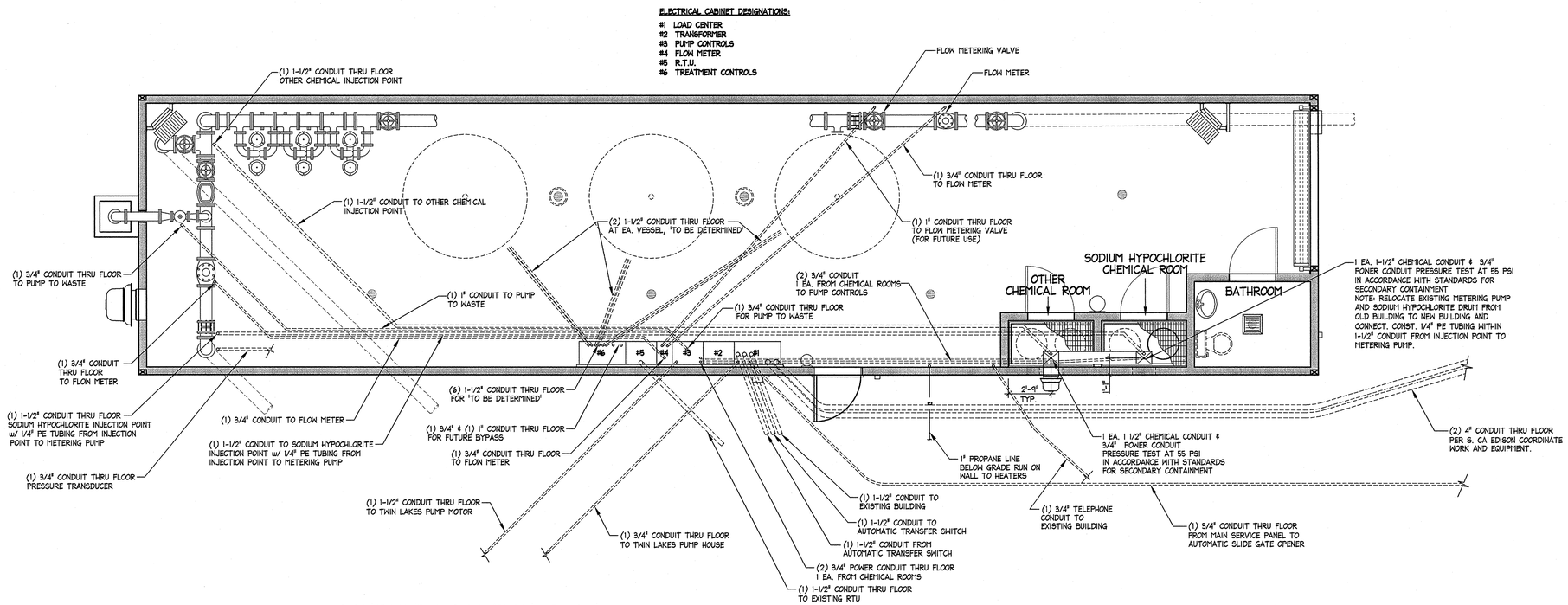
CONDUITS UNDER SLABS ONLY

SCALE: 3/8" = 1'-0"



CONDUITS UNDER SLAB & FOOTING

SCALE: 3/8" = 1'-0"



CONDUIT LOCATION PLAN

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

NOTE:
VERIFY ALL CONDUIT LOCATIONS WITH ENGINEER AND ELECTRICAL DRAWINGS BEFORE INSTALLATION

NO.	DATE	REVISION BLOCK	BY

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

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ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

CONDUIT PLAN UNDER SLAB

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: MAB	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: 1/4" = 1'-0"	SHEET: A6
DATE: 03.24.2017	OF: 30 SHEETS

3.24.17

2016 CBC APPENDIX F
RODENTPROOFING

F101.2 FOUNDATION WALL VENTILATION OPENINGS.
FOUNDATION WALL VENTILATION OPENINGS SHALL BE COVERED FOR THEIR HEIGHT AND WIDTH WITH PERFORATED SHEET METAL PLATES NO LESS THAN 0.070 INCH (1.8 MM) THICK, EXPANDED SHEET METAL PLATES NOT LESS THAN 0.047 INCH (1.2 MM) THICK, CAST-IRON GRILLS OR GRATING, EXTRUDED ALUMINUM LOAD-BEARING VENTS OR WITH HARDWARE CLOTH OF 0.035 INCH (0.89 MM) WIRE OR HEAVIER. THE OPENINGS THEREIN SHALL NOT EXCEED 0.25 INCH (6.4 MM).

F101.5.1 RODENT-ACCESSIBLE OPENINGS.
WINDOWS AND OTHER OPENINGS FOR THE PURPOSE OF LIGHT AND VENTILATION IN THE EXTERIOR WALLS NOT COVERED IN THIS CHAPTER, ACCESSIBLE TO RODENTS BY WAY OF EXPOSED PIPES, WIRES, CONDUITS AND OTHER APPURTENANCES, SHALL BE COVERED WITH WIRE CLOTH OF AT LEAST 0.035-INCH (0.89 MM) WIRE. IN LIEU OF WIRE CLOTH COVERING, SAID PIPES, WIRES, CONDUITS AND OTHER APPURTENANCES SHALL BE BLOCKED FROM RODENT USAGE BY INSTALLING SOLID SHEET METAL GUARDS 0.024 INCH (0.61 MM) THICK OR HEAVIER. GUARDS SHALL BE FITTED AROUND PIPES, WIRES, CONDUITS OR OTHER APPURTENANCES. IN ADDITION, THEY SHALL BE FASTENED SECURELY TO AND SHALL EXTEND PERPENDICULARLY FROM THE EXTERIOR WALL FOR A MINIMUM DISTANCE OF 12 INCHES (305 MM) BEYOND AND ON EITHER SIDE OF PIPES, WIRES, CONDUITS OR APPURTENANCES.

SECTION 4.505.3
MOISTURE CONTENT OF BUILDING MATERIALS

BUILDING MATERIALS WITH VISIBLE SIGNS OF WATER DAMAGE SHALL NOT BE INSTALLED. WALL AND FLOOR FRAMING SHALL NOT BE ENCLOSED WHEN THE FRAMING MEMBERS EXCEED 19-PERCENT MOISTURE CONTENT. MOISTURE CONTENT SHALL BE VERIFIED IN COMPLIANCE WITH THE FOLLOWING:

1. MOISTURE CONTENT SHALL BE DETERMINED WITH EITHER A PROBE-TYPE OR CONTACT-TYPE MOISTURE METER. EQUIVALENT MOISTURE VERIFICATION METHODS MAY BE APPROVED BY THE ENFORCING AGENCY AND SHALL SATISFY REQUIREMENTS FOUND IN SECTION 101.8 OF THIS CODE.
2. MOISTURE READINGS SHALL BE TAKEN AT A POINT 2 FEET (610 MM) TO 4 FEET (1219 MM) FROM THE GRADE STAMPED END OF EACH PIECE TO BE VERIFIED.
3. AT LEAST THREE RANDOM MOISTURE READINGS SHALL BE PERFORMED ON WALL AND FLOOR FRAMING WITH DOCUMENTATION ACCEPTABLE TO THE ENFORCING AGENCY PROVIDED AT THE TIME OF APPROVAL TO ENCLOSE THE WALL AND FLOOR FRAMING.

INSULATION PRODUCTS WHICH ARE VISIBLY WET OR HAVE A HIGH MOISUTRE CONTENT SHALL BE REPLACED OR ALLOWED TO DRY PRIOR TO ENCLOSURE IN WALL OR FLOOR CAVITIES. WET-APPLIED INSULATION PRODUCTS SHALL FOLLOW THE MANUFACTURERS' DRYING RECOMMENDATIONS PRIOR TO ENCLOSURE.

SECTION 4.505.6
INDOOR AIR QUALITY AND EXHAUST

EACH BATHROOM SHALL BE MECHANICALLY VENTILATED AND SHALL COMPLY WITH THE FOLLOWING:

1. FANS SHALL BE ENERGY STAR® COMPLIANT AND BE DUCTED TO TERMINATE OUTSIDE THE BUILDING.
2. UNLESS FUNCTIONING AS A COMPONENT OF A WHOLE HOUSE VENTILATION SYSTEM, FANS MUST BE CONTROLLED BY A HUMIDITY CONTROL.
   - 2.a. HUMIDITY CONTROLS SHALL BE CAPABLE OF ADJUSTMENT BETWEEN A RELATIVE HUMIDITY RANGE OF LESS THAN OR EQUAL TO 50-PERCENT TO A MAXIMUM OF 80 PERCENT. A HUMIDITY CONTROL MAY UTILIZE MANUAL OR AUTOMATIC MEANS OF ADJUSTMENT.
   - 2.b. A HUMIDITY CONTROL MAY BE A SEPARATE COMPONENT TO THE EXHAUST FAN AND IS NOT REQUIRED TO BE INTEGRAL (I.E., BUILT-IN).

NOTES:
1. LIGHTING INTEGRAL TO BATHROOM EXHAUST FANS SHALL COMPLY WITH THE CALIFORNIA ENERGY CODE.

TABLE 5.504.4.1
ADHESIVE VOC LIMIT

ARCHITECTURAL APPLICATIONS	CURRENT VOC LIMIT
INDOOR CARPET ADHESIVES	50
CARPET PAD ADHESIVES	50
OUTDOOR CARPET ADHESIVES	150
WOOD FLOORING ADHESIVES	100
RUBBER FLOOR ADHESIVES	60
SUBFLOOR ADHESIVES	50
CERAMIC TILE ADHESIVES	65
VCT AND ASPHALT TILE ADHESIVES	50
DRYWALL AND PANEL ADHESIVES	50
COVE BASE ADHESIVES	50
MULTIPURPOSE CONSTRUCTION ADHESIVES	70
STRUCTURAL GLAZING ADHESIVES	100
SINGLE-PLY ROOF MEMBRANE ADHESIVES	250
OTHER ADHESIVE NOT SPECIFICALLY LISTED	50
SPECIALTY APPLICATIONS	
PVC WELDING	510
CPVC WELDING	490
ABS WELDING	325
PLASTIC CEMENT WELDING	250
ADHESIVE PRIMER FOR PLASTIC	550
CONTACT ADHESIVE	80
SPECIAL PURPOSE CONTACT ADHESIVE	250
STRUCTURAL WOOD MEMBER ADHESIVE	140
TOP AND TRIM ADHESIVE	250
SUBSTRATE SPECIFIC APPLICATIONS	
METAL TO METAL	30
PLASTIC FOAMS	50
POROUS MATERIAL (EXCEPT WOOD)	50
WOOD	30
FIBERGLASS	80

TABLE 5.504.4.2
SEALANT VOC LIMIT

SEALANTS	CURRENT VOC LIMIT
ARCHITECTURAL	250
MARINE DECK	760
NONMEMBRANE ROOF	300
ROADWAY	250
SINGLE-PLY ROOF MEMBRANE	450
OTHER	420
SEALANT PRIMERS	
ARCHITECTURAL NONPOROUS	250
ARCHITECTURAL POROUS	775
MODIFIED BITUMINOUS	500
MARINE DECK	760
OTHER	750

TABLE 5.504.4.3
VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS

COATING CATEGORY	CURRENT LIMIT
FLAT COATINGS	50
NONFLAT COATINGS	100
NONFLAT-HIGH GLOSS COATINGS	150
SPECIALTY COATINGS	
ALUMINUM ROOF COATINGS	400
BASEMENT SPECIALTY COATINGS	400
BITUMINOUS ROOF COATINGS	50
BITUMINOUS ROOF PRIMERS	350
BOND BREAKERS	350
CONCRETE CURING COMPOUNDS	350
CONCRETE/MASONRY SEALERS	100
DRIVEWAY SEALERS	50
DRY FOG COATINGS	150
FAUX FINISHING COATINGS	350
FIRE RESISTIVE COATINGS	350
FLOOR COATINGS	100
FORM-RELEASE COMPOUNDS	250
GRAPHIC ARTS COATINGS (SIGN PAINTS)	500
HIGH TEMPERATURE COATINGS	420
INDUSTRIAL MAINTENANCE COATINGS	250
LOW SOLIDS COATINGS	120
MAGNESITE CEMENT COATINGS	450
MASTIC TEXTURE COATINGS	100
METALLIC PIGMENTED COATINGS	500
MULTICOLOR COATINGS	250
PRETREATMENT WASH PRIMERS	420
PRIMERS, SEALERS, AND UNDERCOATERS	100
REACTIVE PENETRATING SEALERS	350
RECYCLED COATINGS	250
ROOF COATINGS	50
RUST PREVENTATIVE COATINGS	250
SHELLACS CLEAR	730
SHELLACS OPAQUE	550
SPECIALTY PRIMERS, SEALERS AND UNDERCOATERS	100
STAINS	250
STONE CONSOLIDANTS	450
SWIMMING POOL COATINGS	340
TRAFFIC MARKING COATINGS	100
TUB AND TILE REFINISH COATINGS	420
WATERPROOFING MEMBRANES	250
WOOD COATINGS	275
WOOD PRESERVATIVES	350
ZINC-RICH PRIMERS	340

TABLE 5.504.4.5
FORMALDEHYDE LIMITS

PRODUCT	CURRENT LIMIT
HARDWOOD PLYWOOD VENEER CORE	0.05
HARDWOOD PLYWOOD COMPOSITE CORE	0.05
PARTICLEBOARD	0.09
MEDIUM DENSITY FIBERBOARD	0.11
THIN MEDIUM DENSITY FIBERBOARD	0.13

SECTION 5.504
POLLUTANT CONTROL

5.504.1 TEMPORARY VENTILATION.
THE PERMANENT HVAC SYSTEM SHALL ONLY BE USED DURING CONSTRUCTION IF NECESSARY TO CONDITION THE BUILDING OR AREAS OF ADDITION OR ALTERATION WITHIN THE REQUIRED TEMPERATURE RANGE FOR MATERIAL AND EQUIPMENT INSTALLATION. IF THE HVAC SYSTEM IS USED DURING CONSTRUCTION, USE RETURN AIR FILTERS WITH A MINIMUM EFFICIENCY REPORTING VALUE (MERV) OF 8, BASED ON ASHRAE 52.2-1999, OR AN AVERAGE EFFICIENCY OF 30 PERCENT BASED ON ASHRAE 52.1-1992. REPLACE ALL FILTERS IMMEDIATELY PRIOR TO OCCUPANCY, OR, IF THE BUILDING IS OCCUPIED DURING ALTERATION, AT THE CONCLUSION OF CONSTRUCTION.

5.504.3 COVERING OF DUCT OPENINGS AND PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION.
AT THE TIME OF ROUGH INSTALLATION AND DURING STORAGE ON THE CONSTRUCTION SITE UNTIL FINAL STARTUP OF THE HEATING, COOLING, AND VENTILATING EQUIPMENT, ALL DUCT AND OTHER RELATED AIR DISTRIBUTION COMPONENT OPENINGS SHALL BE COVERED WITH TAPE, PLASTIC, SHEETMETAL OR OTHER METHODS ACCEPTABLE TO THE ENFORCING AGENCY TO REDUCE THE AMOUNT OF DUST, WATER AND DEBRIS WHICH MAY ENTER THE SYSTEM.

SECTION 5.410.4.5
OPERATION AND MAINTENANCE (O & M) MANUAL

PROVIDE THE BUILDING OWNER OR REPSENTATIVE WITH DETAILED OPERATING AND MAINTENANCE INSTRUCTIONS AND COPIES OF GUARANTIES/WARRANTIES FOR EACH SYSTEM. O & M INSTRUCTIONS SHALL BE CONSISTENT WITH OSHA REQUIREMENTS IN CCR, TITLE 8, SECTION 5142, AND OTHER RELATED REGULATIONS.

5.410.4.5.1 INSPECTIONS AND REPORTS.
INCLUDE A COPY OF ALL INSPECTION VERIFICATIONS AND REPORTS REQUIRED BY THE ENFORCING AGENCY.

CHAPTER 8
BASELINE WATER USE AND WATER USE REDUCTION

THE PLUMBING FIXTURES DETAILED IN THIS PLAN SET REQUIRE A 20% REDUCTION FROM BASELINE FOR WATER USE. FIXTURES INCLUDE, BUT NOT LIMITED TO, LAVATORY FAUCETS AND FLUSHOMETER TANK WATER CLOSET.

5.303.3.1 WATER CLOSETS.
THE EFFECTIVE FLUSH VOLUME OF ALL WATER CLOSETS SHALL NOT EXCEED 1.28 GALLONS PER FLUSH. TANK-TYPE WATER CLOSETS SHALL BE CERTIFIED TO THE PERFORMANCE CRITERIA OF THE U.S. EPA WATERSENSE SPECIFICATION FOR TANK-TYPE TOILETS.

5.303.3.4.1 NONRESIDENTIAL LAVATORY FAUCETS.
LAVATORY FAUCETS SHALL HAVE A MAXIMUM FLOW RATE OF NOT MORE THAN 0.5 GALLONS PER MINUTE AT 60 PSI.

CPC, APPENDIX L, SECTION 402.8. EMERGENCY SAFETY SHOWERS AND EYE WASH STATIONS.
EMERGENCY SAFETY SHOWERS AND EMERGENCY EYE WASH STATIONS SHALL NOT BE LIMITED IN THEIR WATER SUPPLY FLOW RATES.

NO.	DATE	REVISION BLOCK	BY

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

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ARSENIC TREATMENT
BRIDGEPORT PUBLIC UTILITY DISTRICT

CALIFORNIA GREEN BUILDING
2016 STANDARDS CODE AND OTHERS

REGISTERED PROFESSIONAL ENGINEER
SUSAN J.R. MCREAVY
No.C69438
Civil
STATE OF CALIFORNIA

DRAWN: EYK	JOB: 0883-029
ENGINEER: SJRM	DRAWING: SEE PLOT STAMP
SCALE: NTS	SHEET: A7
DATE: 03.24.2017	OF: 30 SHEETS

3.24.17

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ELECTRICAL SYMBOL LIST

- CONDUIT RUN IN OR ON CEILING OR WALL
- CONDUIT RUN IN OR UNDER FLOOR OR UNDERGROUND
- HASH MARKS INDICATE NUMBER OF #12 AWG CONDUCTORS IN CONDUIT. NO MARKS INDICATE 2 #12'S. DOES NOT INCLUDE GROUND WIRE. IF NON-METALLIC CONDUIT ADD GROUND PER NEC.
- LA-1 — HOMERUN TO PANEL WITH PANEL AND CIRCUIT INDICATED
- L-(2,4) — HOMERUN TO PANEL WITH CIRCUIT NUMBER IN BRACKETS INDICATING MULTI-POLE BREAKER.
- RACEWAY UP
- RACEWAY DOWN
- FLEX CONDUIT TO LAY-IN FIXTURE IN CEILING
- ON HA-6 — "ON" INDICATES CIRCUITING IS SPLIT AT DIFFERENT LOCATIONS
- FLUORESCENT FIXTURE - SURFACE OR PENDANT MOUNT
- FLUORESCENT FIXTURE - LAY-IN
- FLUORESCENT FIXTURE - RECESSED
- FLUORESCENT FIXTURE - STRIP LIGHT
- NL NL — FLUORESCENT FIXTURE - WITH 90 MINTUE BATTERY PACK, NL INDICATES NIGHT LIGHT ON UNSWITCHED CIRCUIT
- CAN FIXTURE - CEILING, PENDANT OR WALL MOUNTED
- CAN FIXTURE - RECESSED
- EXIT LIGHT - WITH OR WITHOUT DIRECTIONAL ARROWS AS INDICATED (SHADED PORTION INDICATES ILLUMINATED SURFACE) - ON UNSWITCHED CIRCUIT
- TRACK LIGHT
- BOLLARD
- EMERGENCY BATTERY UNIT ON UNSWITCHED CIRCUIT
- FLOOD LIGHT
- $ — SINGLE POLE SWITCH +48" AFF
- $M — FRACTIONAL HORSEPOWER MOTOR MANUAL STARTER
- $MOM — MOMENTARY CONTACT SWITCH +48" AFF
- $W — AUTOMATIC WALL SWITCHES, GREENGATE #ONW-D-1001-MV-N. +48" AFF
- $W2 — DUAL LEVEL AUTOMATIC WALL SWITCHES, GREENGATE #ONW-P-1001-DMV-W +48"AFF
- $D — MANUAL DIMMER SWITCH, +48" AFF
- $T — AUTOMATIC TIMER SWITCH, + 48 AFF
- MOTION DETECTOR
- PHOTOCELL SENSOR
- MOTOR SYMBOL - HORSEPOWER AS INDICATED
- DISCONNECT SWITCH (30A/3P UNLESS INDICATED ON DWGS) "F" INDICATES FUSES PER MANUFACTURERS NAMEPLATE RATING
- MAGNETIC MOTOR STARTER (SIZE AS INDICATED ON DRAWINGS)
- COMBINATION STARTER / FUSED DISCONNECT SWITCH (SIZE AS INDICATED ON DRAWINGS - FUSES SIZED PER MANUFACTURER'S NAMEPLATE RATING)
- 120V DUPLEX CONVENIENCE RECEPTACLE +18" AFF
- JUNCTION BOX AS REQUIRED BY NATIONAL ELECTRIC CODE
- AUXILIARY SYSTEM TERMINAL CABINET
- PRECAST CONCRETE PULLBOX (SIZE AS INDICATED)
- REMOTE METER ENCLOSURE +6'-0" AFG TO CENTERLINE
- JUNCTION BOX AS REQUIRED BY NATIONAL ELECTRIC CODE

- ELECTRICAL PANELBOARD - SURFACE MOUNTED
- ELECTRICAL PANELBOARD - FLUSH MOUNTED
- SERVICE OR DISTRIBUTION EQUIPMENT
- T — TRANSFORMER
- AUXILIARY SYSTEM TERMINAL CABINET
- M — REMOTE METER ENCLOSURE +6'-0" AFG TO CENTERLINE
- FSD — FIRE SMOKE DAMPER
- S — COMBINATION CO2/SMOKE DETECTOR
- SMOKE DOOR CLOSURE - (HOLD OPEN DEVICE)
- EMERGENCY SHUNT TRIP DISCONNECT
- 1 — SHEET NOTE
- A / 90 — LIGHT FIXTURE DESIGNATION & WATTAGE. SEE FIXTURE SCHEDULE
- AC / 1 — MECHANICAL EQUIPMENT DESIGNATION.
- 2 — FEEDER - SIZE AS INDICATED ON SINGLE LINE DIAGRAM
- B / E3.1 — DETAIL DESIGNATION - "B" INDICATES DETAIL # ON SHEET E3.1
- A100 — ROOM NUMBER
- POWER POLE
- KP — ENTRY KEYPAD
- FM — FLOW METER
- LT — LEVEL TRANSDUCER
- MS — MOISTURE SENSOR
- PT — PRESSURE TRANSDUCER

✳ NOTE: ALL MOUNTING HEIGHTS AS INDICATED UNLESS NOTED OTHERWISE.

ALL SYMBOLS MAY NOT BE USED ON PROJECTS.

ELECTRICAL ABBREVIATIONS

1PH	SINGLE-PHASE
1P	SINGLE POLE
2/C	TWO-CONDUCTOR
3/C	THREE-CONDUCTOR
3PH	THREE-PHASE
4/C	FOUR-CONDUCTOR
4W	FOUR-WIRE
A/C UNIT	AIR CONDITIONING UNIT
A/E	ARCHITECT/ENGINEER
AAP	ALARM ANNUNCIATOR PANEL
AC	ALTERNATING CURRENT OR ARMORED CABLE
ACC	ACCESSIBLE
ADDL	ADDITIONAL
ADJ	ADJACENT, ADJOINING
ADO	AUTOMATIC DOOR OPENER
AF	AMPERE FRAME OR AMP FUSE
AFC	ABOVE FINISHED COUNTER, AUTOMATIC FREQUENCY CONTROL, OR AVAILABLE FAULT CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AH	AMPERE HOUR
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPTING CAPACITY
ALT	ALTERNATE
AMB OR A	AMBIENT
AMP	AMPERE
ARCH	ARCHITECT
ASC	AMPS SHORT CIRCUIT
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AV	AUDIO VISUAL
BAT	BATTERY
BC	BARE COPPER
BD	BOARD
BFF	BELOW FINISH FLOOR
BIL	BASIC INSULATION LEVEL
BLDG	BUILDING
BPIP	BOILER PLANT INSTRUMENTATION PANEL
BRKR	BREAKER
BYP	BY PASS
C	CONDUIT
CAB	CABINET
CALC	CALCULATE
CAP	CAPACITY
CAT	CATALOG
CATV	COMMUNITY ANTENNA TELEVISION
CCR	CONTROL CONTACTOR
CCTV	CLOSED CIRCUIT TELEVISION
cd	CANDELA
CD	CONSTRUCTION DOCUMENTS
CF	CONTRACTOR FURNISHED
CF/CI	CONTRACTOR FURNISHED/CONTRACTOR INSTALLED
CT	CURRENT TRANSFORMER
CTV	CABLE TELEVISION
CU	COPPER
CU FT	CUBIC FEET
CUR	CURRENT
DB	DECIBEL OR DIRECT BURIAL
DC	DIRECT CURRENT
DCS	DISTRIBUTED CONTROL SYSTEM
DEG C	DEGREES CELSIUS
DEG F	DEGREES FAHRENHEIT
DEMO	DEMOLITION
DIAG	DIAGRAM
DISC	DISCONNECT
DISTR	DISTRIBUTION
DISTR PNL	DISTRIBUTION PANEL
DMR SW	DIMMER SWITCH
DN	DOWN
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
DRSW	DOOR SWITCH
DS	DISCONNECT SWITCH
DWG	DRAWING
(E)	EXISTING
CF/OI	CONTRACTOR FURNISHED/OWNER INSTALLED
CFE	CONTRACTOR FURNISHED EQUIPMENT
CKT	CIRCUIT
CKT BRKR	CIRCUIT BREAKER
CLF	CURRENT LIMITING FUSE
COAX	COAX CABLE
COMM	COMMUNICATION
COMPT	COMPARTMENT
CONC	CONCRETE
CONT	CONTINUE
CONTR	CONTRACTOR
COORD	COORDINATE
CPT	CONTROL POWER TRANSFORMER
EC	EMPTY CONDUIT
EG	EQUIPMENT GROUND
EL	ELEVATION
ELEC	ELECTRIC OR ELECTRICAL
ELEV	ELEVATOR
EMCP	EMERGENCY MONITORING CONTROL PANEL
EMER	EMERGENCY
EMI	ELECTROMAGNETIC INTERFERENCE
EMT	ELECTRICAL METALLIC TUBING
ENCL	ENCLOSURE
EPO	EMERGENCY POWER OFF
EPRF	EXPLOSION PROOF
ESMT	EASEMENT
EWC	ELECTRIC WATER COOLER
EWH	ELECTRIC WATER HEATER
EXIST	EXISTING
FA	FIRE ALARM
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FABL	FIRE ALARM BELL
FABX	FIRE ALARM BOX
FACP	FIRE ALARM CONTROL PANEL
FC	FOOTCANDLE
FI	FILM ILLUMINATOR
FIXT	FIXTURE
FLA	FULL LOAD AMPS
FLEX	FLEXIBLE METALLIC CONDUIT
FLT	FLOODLIGHT
FLUOR	FLUORESCENT
FLUOR FIX	FLUORESCENT FIXTURE
FOUTT	TELEPHONE FLOOR OUTLET
FP	FIRE PROTECTION
FT	FEET OR FOOT
FU SW	FUSED SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
G OR GND	GROUND OR GENERATOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GTB	GROUND TERMINAL BOX
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTOMATIC
HP	HORSEPOWER
HT	HEIGHT
HZ	HERTZ
IESNA	ILLUMINATION ENGINEERING SOCIETY OF NORTH AMERICA
IMC	INTERMEDIATE METAL CONDUIT
INCAND	INCANDESCENT
IR	INFRARED
IWH	INSTANTANEOUS WATER HEATER
J-BOX	JUNCTION BOX
kV	KILOVOLT
kVA	KILOVOLT AMPERE
kVAH	KILOVOLT AMPERE PER HOUR
kVAR	KILOVOLT AMPERE REACTIVE
kW	KILOWATT
kWH	KILOWATT HOUR
kWHM	KILOWATT HOUR METER
LED	LIGHT EMITTING DIODE
LF	LINEAR FEET (FOOT)
LM	LUMEN
LP	LIGHT POLE
LPS	LOW PRESSURE SODIUM
LRA	LOCKED ROTOR AMPS
LTCP	LOCAL TEMPERATURE CONTROL PANEL
LT	LIGHT
LTG	LIGHTING
LTG PNL	LIGHTING PANEL
LTNG	LIGHTNING
LV	LOW VOLTAGE
MAX	MAXIMUM
MC	METAL-CLAD
MCA	MINIMUM CIRCUIT AMPS
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
MECH	MECHANICAL
MG	MOTOR GENERATOR
MH	MANHOLE
MIN	MINIMUM
MOCP	MAXIMUM OVERCURRENT PROTECTION
MLO	MAIN LUGS ONLY
MT	MOUNT
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
NA	NOT APPLICABLE
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NEUT OR N	NEUTRAL
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NS	NO SCALE
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OL	OVERLOAD
P	POLE
PA	PUBLIC ADDRESS
PB	PANELBOARD, PULL BOX, OR PUSHBUTTON
PBPU	PREFABRICATED BEDSIDE PATIENT UNIT
PCB	POLYCHLORINATED BIPHENYL
PEC	PHOTOELECTRIC CELL
PED	PEDESTAL
PEND	PENDANT
PF	POWER FACTOR
PH	PHASE
PNL	PANEL
POD	POWER OPERATED DAMPER
PT	POTENTIAL TRANSFORMER
PTRV	POWER TYPE ROOF VENTILATION
PVC	POLYVINYL CHLORIDE (PLASTIC)
PWR	POWER
(RR)	REMOVE AND RELOCATE
RCP	REFLECTED CEILING PLAN
REC	RECESSED
RECPT	RECEPTACLE
RGS	RIGID GALVANIZED STEEL
RM	ROOM
RMS	ROOT MEAN SQUARE
REQD	REQUIRED
SCC	SHORT CIRCUIT CAPACITY
SES	SERVICE ENTRANCE SECTION
SD	SMOKE DETECTOR
SF	SQUARE FOOT (FEET)
SHT	SHEET
SI	INTERNATIONAL SYSTEM OF UNITS
SPEC	SPECIFICATION
SPST	SINGLE POLE, SINGLE THROW
SURF	SURFACE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
B.P.U.D.	BRIDGEPORT PUBLIC UTILITIES DISTRICT
TP	TWISTED PAIR
TPS	TWISTED PAIR SHIELDED
TTB	TELEPHONE TERMINAL BOARD
TYP	TYPICAL
UGND	UNDERGROUND
UL	UNDERWRITERS LABORATORY
UON	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
UTIL	UTILITY
V	VOLT
VA	VOLT AMPERE
VAR	VOLT AMPERE REACTIVE
VFD	VARIABLE FREQUENCY DRIVE
VOLT	VOLTAGE
W	WATT
WP	WEATHERPROOF
XFER	TRANSFER
XFMR	TRANSFORMER

NO.	DATE	REVISION BLOCK	BY

DINTER ENGINEERING CONSULTANTS Airfield Electrical Mechanical
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J-4502

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Fax: 775.826.4190

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WEB SITE: WWW.ROANDERSON.COM

ARSENIC TREATMENT

BRIDGEPORT PUBLIC UTILITY DISTRICT

ELECTRICAL SYMBOLS

PROFESSIONAL ENGINEER — ELECTRICAL — No. E 19598 Exp. 6/30/17 — STATE OF CALIFORNIA

DRAWN: TLF	JOB: 0883-023
ENGINEER: KCH	DRAWING: 140157-E1
SCALE: NTS	SHEET: E-1
DATE: 02/08/16	OF: 28 SHEETS

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GENERAL NOTES:

1. SEE SHEET E-4 FOR TRENCH DETAILS, UNLESS NOTED OTHERWISE OR FOR UTILITY WORK.
2. SEE UTILITY WORK ORDER DRAWINGS FOR ADDITIONAL INFORMATION.
3. COORDINATE WITH CIVIL PLANS FOR EXACT EQUIPMENT LOCATIONS.

SHEET NOTES: (THIS SHEET ONLY)

1. NEW SECONDARY (2) 4"CONDUIT AND TRENCH CONNECTED AND ROUTED TO NEW WATER TREATMENT BUILDING, PER LATEST SOUTHERN CALIFORNIA EDISON STANDARDS AND QUALITY.
2. (E) SERIES 900 RTU TO REMAIN.
3. (E) MOTOR STARTER AND CONTROLS FOR TWIN LAKES WELL TO BE REMOVED AND SALVAGED TO OWNER.
4. (E) ATS, ASSOCIATED GENERATOR DISPLAY AND CONTROLS TO REMAIN, ROUTE NEW LINE/LOAD SIDE CONDUCTORS TO NEW BUILDING, SEE SINGLE LINE E4.
5. (E) SERVICE METER TO BE REMOVED.
6. (E) GENERATOR TO REMAIN, PERFORM LOAD TESTING WITH ON-SITE LOADS. PROVIDE MANUFACTURES REPRESENTATIVE, MANPOWER, TRAVEL AND FUEL FOR A MINIMUM 4 HOUR START-UP AND TEST INCLUDING SCADA NOTIFICATIONS AND PERIPHERAL CONNECTIVITY. PROVIDE LOAD TEST DATA TO OWNER FOR REVIEW.
7. NEW METER PER SCE REQUIREMENTS AND 225A, 120/208V POWER DISTRIBUTION MCC, SEE E4. PROVIDE MIN. 4" THICK HOUSEKEEPING PAD.
8. (E) WELL CASING BONDING CONDUCTOR TO BE INTERCEPTED AND BONDED TO NEW SERVICE GROUNDING SYSTEM.
9. NEW RTU AND TREATMENT SYSTEM MASTER I&C PANEL.
10. NEW 1"C SPARE.
11. NEW 2"C FOR WELL PUMP AND 3/4 "C FOR VENT SEE SINGLE E4 FOR CONDUCTOR SIZES. INTERCEPT (E) FEED TO PUMP AND VENT WITH N9 BOX, CLEAN AND SWAB EXISTING CONDUIT, PULL AND TERMINATE NEW CONDUCTORS FOR PUMP AND VENT.
12. REFEED EXISTING PANEL IN STORAGE BUILDING POWERING LIGHTING, HEAT, ETC. SEE SINGLE LINE FOR SIZES.
13. ROUTE CONDUIT THROUGH WALL INTO MSB, SEE SINGLE LINE FOR DETAILS.
14. NEW 3/4" C FOR AUTOMATIC GATE OPERATOR, CONNECT PER MANUFACTURERS REQUIREMENTS AND PROVIDE DISCONNECTING MEANS, SEE SINGLE LINE FOR SIZES.

SCALE: 1" = 4'

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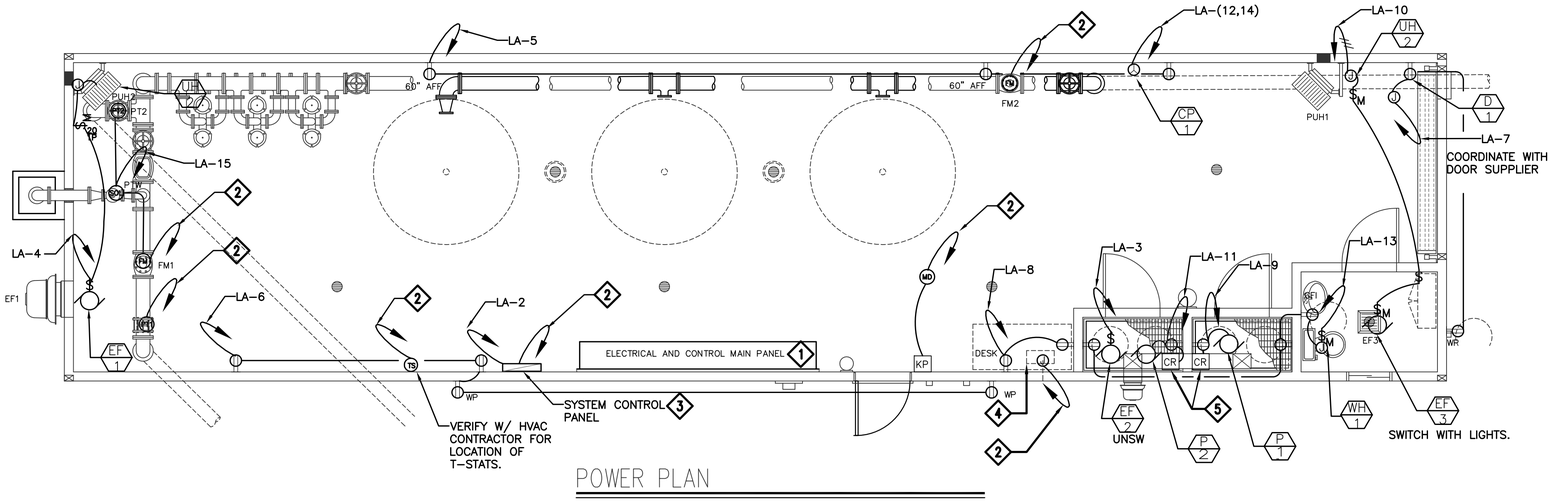
ARSENIC TREATMENT

BRIDGEPORT PUBLIC UTILITY DISTRICT

SITE PLAN
ELECTRICAL

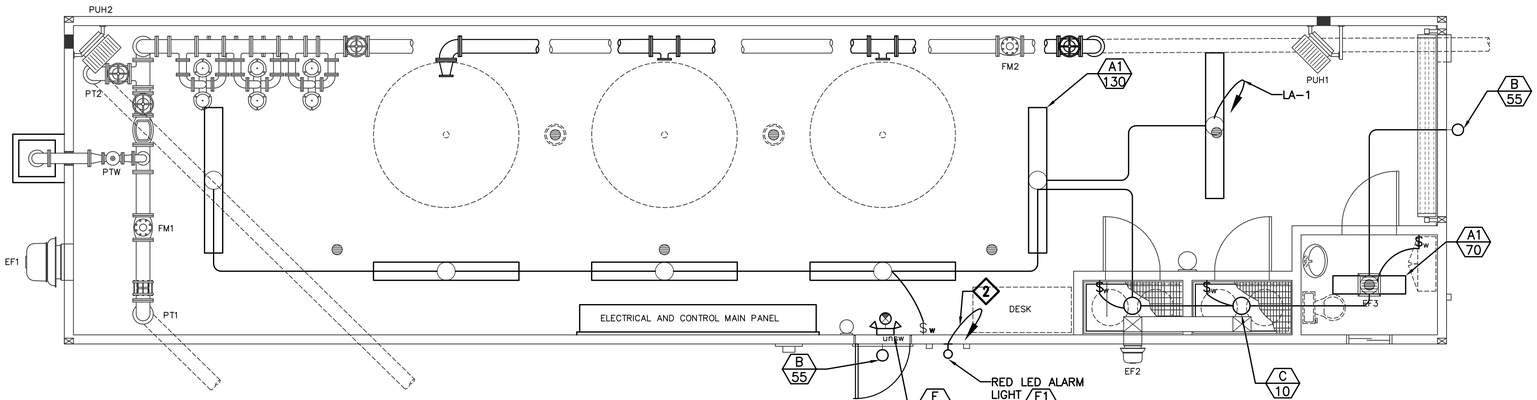
DRAWN:	TLF	JOB:	883-023
ENGINEER:	KCH	DRAWING:	SEE PLOT STAMP
SCALE:	1" = 4'	SHEET:	E-2
DATE:	02/08/16	OF:	28 SHEETS



POWER PLAN

SHEET NOTES: (THIS SHEET ONLY)

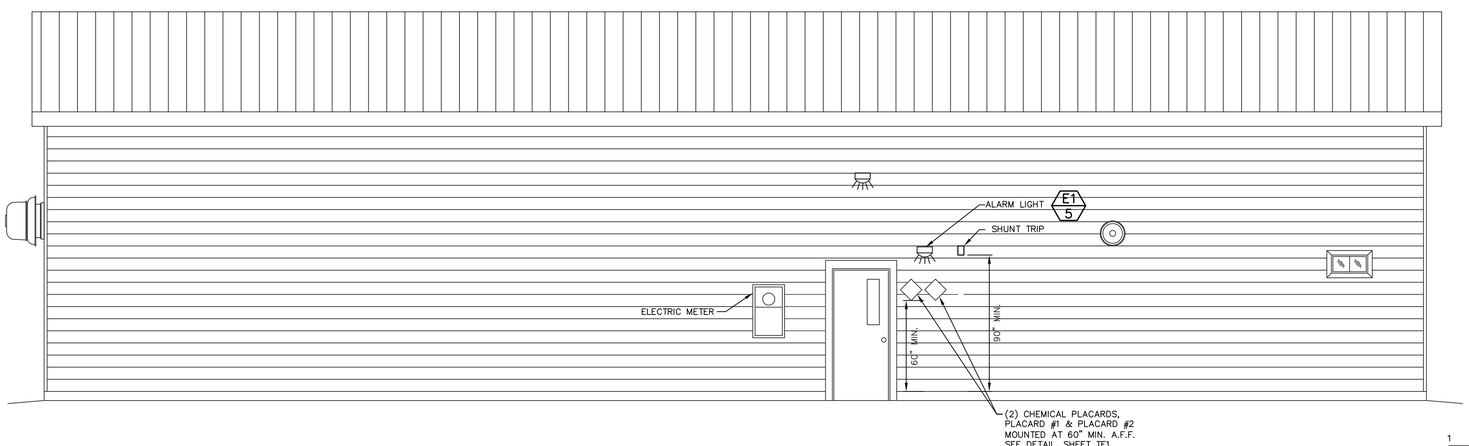
1. NEW MCC "MSB" PROVIDE HOUSEKEEPING PAD AND STRUCTURAL BRACING PER MANUFACTURERS RECOMMENDATIONS.
2. ROUTE VIA RTU/CONTROLS PROVIDE WIRING PER MANUFACTURING REQUIREMENTS.
3. WATER TREATMENT SYSTEM CONTROL PANEL, F.B.O.
4. PROVIDE A INTOUCH STANDARD PANEL PC 19" PRELOADED WITH LATEST WONDERWARE SOFTWARE. CONNECT TO PLC PER MANUFACTURERS REQUIREMENTS.
5. PROVIDE 120v CONTROL RELAY INTERLOCKED AND ENERGIZED WITH PUMP MOTOR.



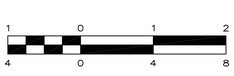
LIGHTING PLAN

LIGHT FIXTURE SCHEDULE

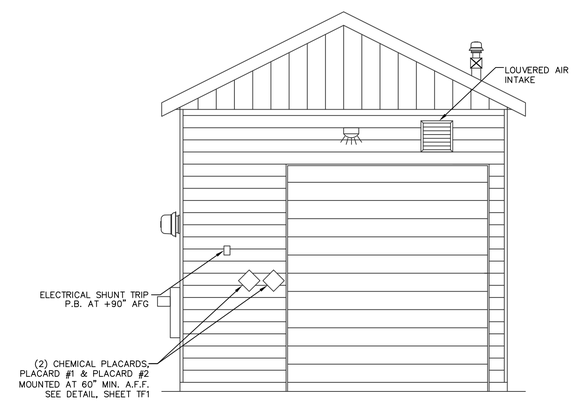
TYPE	SYMBOL	DESCRIPTION & MANUFACTURER	LAMPS
A 70		4-FOOT LED SURFACE MOUNT WRAP LITHONIA FEM4 LED 3L IMACD	LED
A1 130		4-FOOT LED SURFACE MOUNT WRAP LITHONIA FEM4 LED 3L IMACD	LED
B 55		BUILDING MOUNTED EXTERIOR WALL PACK LITHONIA WST-50S-MD-MVOLT-PC	LED
C 10		HUBBELL, KILLARK, MBL SERIES COMPACT, LED, 120V, GLOBE & GAURD,CEILING MOUNT, 3/4" BASE, MBL4530X2GLG.	LED
E 10		LITHONIA, EMERGENCY LIGHT, TITAN ELT50 H1212, TD, (2) 12W 12V SEAL-BEAM HALOGENS. LAMP,	MR 16(2)
E1 5		EDWARDS SIGNALING 48 XBRM RED, STEADY ON.	MR 16(2)



SOUTH ELEVATION



SCALE: 1" = 4'



EAST ELEVATION

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ARSENIC TREATMENT

BRIDGEPORT PUBLIC UTILITY DISTRICT

ELECTRICAL PLAN

DRAWN: TLF	JOB: 883-029
ENGINEER: KBM	DRAWING: SEE PLOT STAMP
SCALE: 1" = 4'	SHEET: E-3
DATE: 02/08/16	OF: 28 SHEETS

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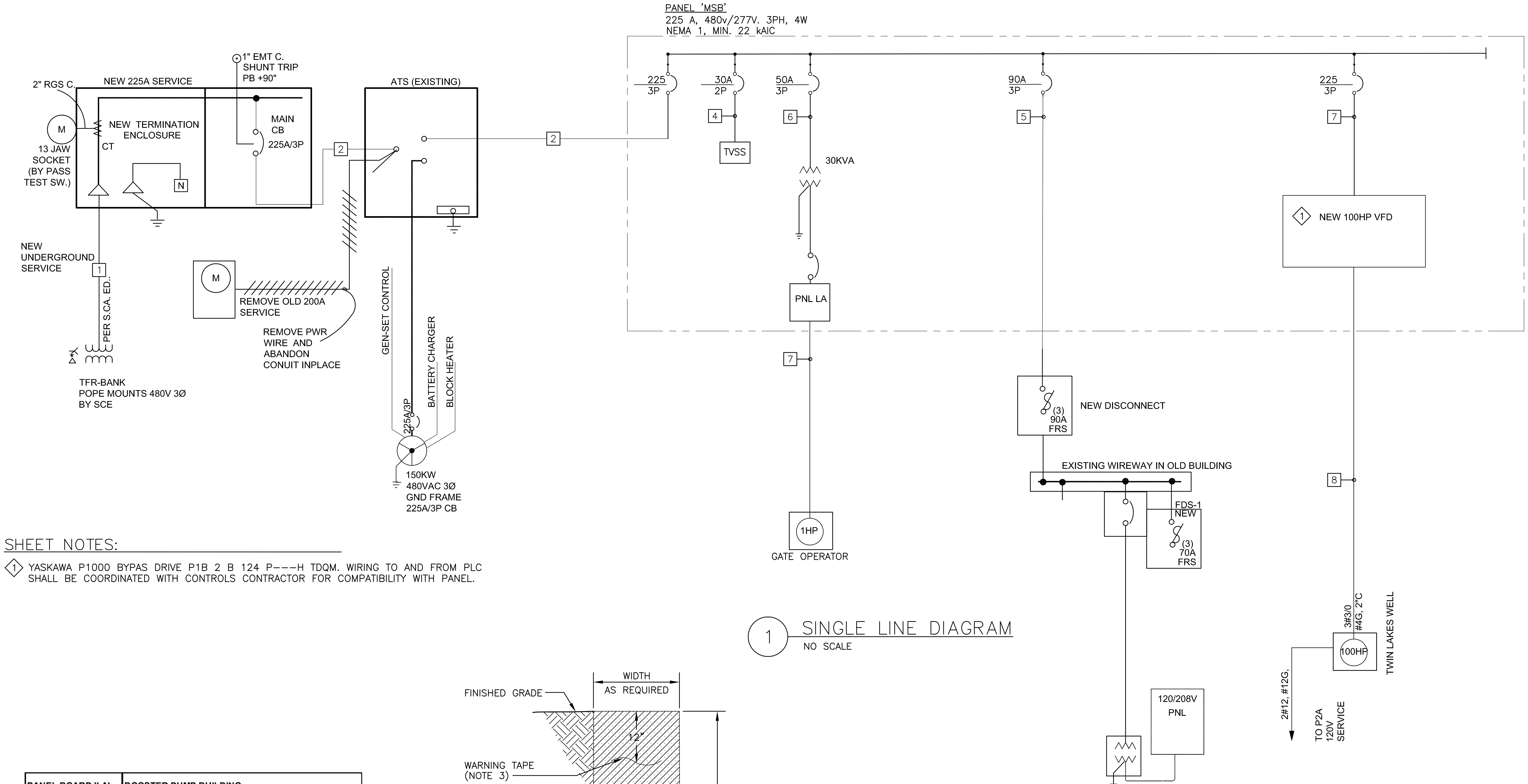
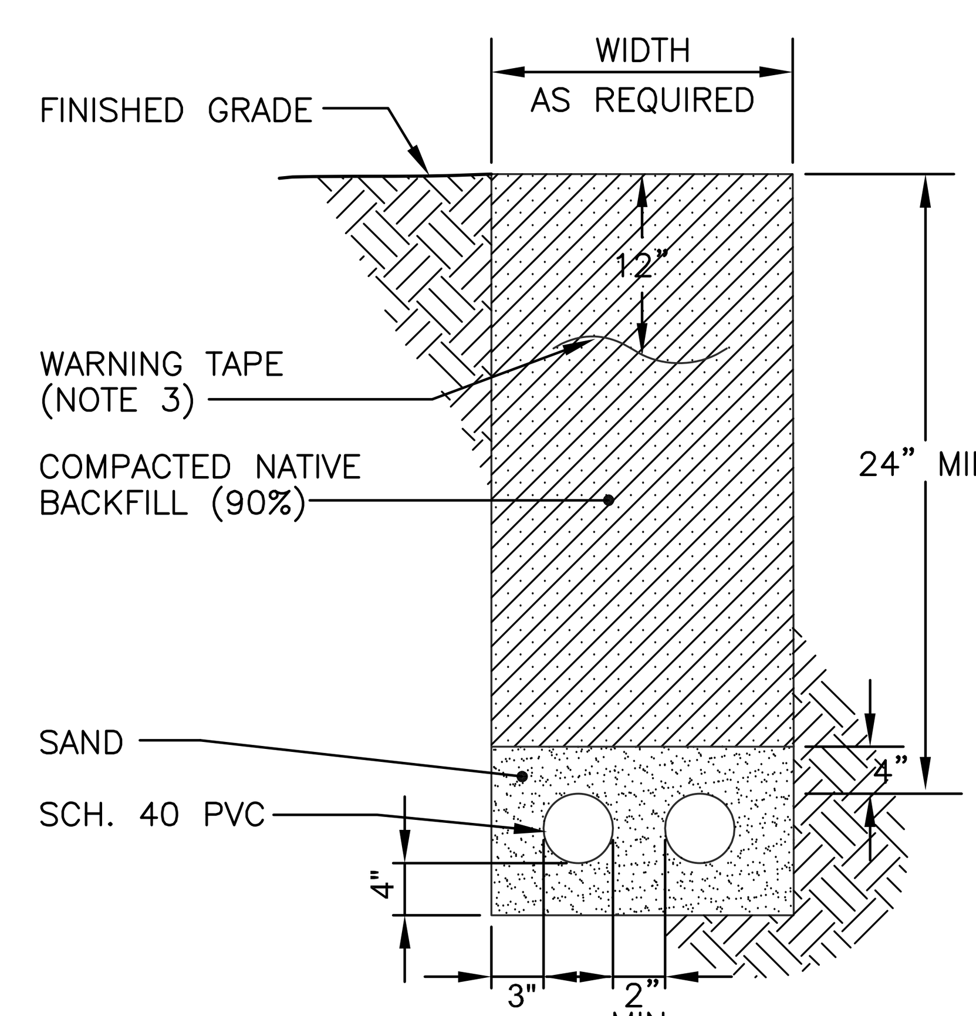


SHEET NOTES:

1. YASKAWA P1000 BYPAS DRIVE P1B 2 B 124 P---H TDQM. WIRING TO AND FROM PLC SHALL BE COORDINATED WITH CONTROLS CONTRACTOR FOR COMPATIBILITY WITH PANEL.

1 SINGLE LINE DIAGRAM

NO SCALE



DIRECT BURY

NOTES:

1. SEE PLANS FOR REQUIRED DUCT SECTIONS.
2. PROVIDE PULL WIRES IN ALL (NEW) UNUSED CONDUITS. PLUG ENDS IN HANDHOLES.
3. WARNING TAPE REQUIRED WHEN DUCTS ARE INSTALLED IN AREAS NOT BELOW FULL STRENGTH PAVEMENT.

2 TYPICAL TRENCH SECTION

NTS

PANEL BOARD 'LA'	BOOSTER PUMP BUILDING								
DIRECTORY	LOAD	BKR	CIR			CIR	BKR	LOAD	DIRECTORY
LIGHTING	400	20/1	1	A		2	20/1	600	TREATMENT CONTROLS
EF-2	600		3	B		4		1000	EF-1 & UH-2
RECEPTACLES	600		5	C		6		1440	RECEPTACLES
ROLL UP DOOR	600		7	A		8		200	INTOUCH AND RECEPT
P-1	750		9	B		10	20/1	1200	UH-1 & EF-3
P-2	750		11	C		12	30	1662	CP-1
WH-1	1250		13	A		14	2	1662	CP-1
SOLENOID	500	20/1	15	B		16	20/1	800	Gate Operator
SPARE	500	20/1	17	C		18	20/1	100	CONTROL POWER
SPARE	100	20/1	19	A		20	30	0	SPARE
SPARE	0		21	B		22		0	SPARE
SPARE	0		23	C		24	3	0	SPARE
SPARE			25	A		26			SPACE
SPACE			27	B		28			SPACE
SPACE			29	C		30			SPACE
			31	A		32			
			33	B		34			
			35	C		36			
			37	A		38			
			39	B		40			
			41	C		42			
CONNECTED LOAD	14714 VA		(41 A)						OTHER NOTES:
	A= 4812 VA		40 A						120/208V., 3PH, 4W
	B= 4850 VA		40 A						150 AMP MCB, 10kAIC
	C= 5052 VA		42 A						200 AMP BUS

FEEDER SCHEDULE					
NO.	FROM	TO	CONDUIT & WIRE THWN U.N.O.	CU	AL
1	O.H. POLE	'METER MAIN'	BY SCE	X	
2	'METER MAIN' 'MSB'	'ATS' 'ATS'	(4) 4/0 & 1#6G. – 1-1/2" C	X	
3	'ATS'	GENSET	(4) 4/0 & 1#6G. – 1-1/2" C	X	
4	'MSB'	TVSS	PER MANUFACTURER	X	
5	'MSB'	'EXISITNG BLDG'	(4) #4 & 1#8G. – 1-1/2" C	X	
6	MSB	XFMR	(3) #8 & 1# 10G. – 1"C	X	
7	PNL 'LA'	GATE OPERATOR	(2) #8 & 1# 10G. – 1"C	X	
8	MSB	(E) TWIN LAKES WELL	(3) 4/0 & 1# 4G. – 2"C	X	

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ARSENIC TREATMENT

BRIDGEPORT PUBLIC UTILITY DISTRICT

ELECTRICAL SCHEMATIC AND DETAILS

REGISTERED PROFESSIONAL ENGINEER
ELECTRICAL
STATE OF CALIFORNIA
Exp. 6/30/17

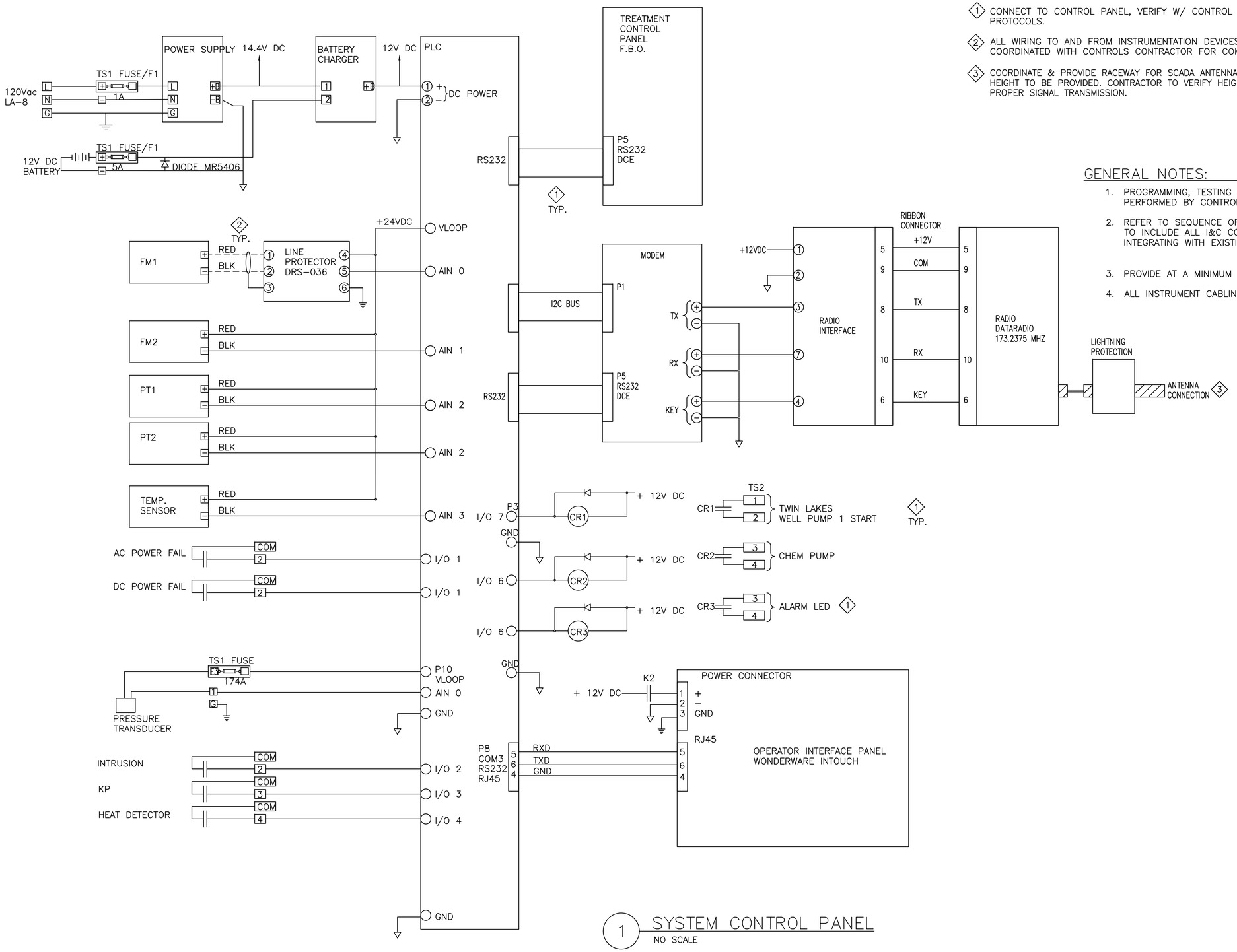
DRAWN: TLF	JOB: 0883-023
ENGINEER: KCH	DRAWING: 140157-E4C
SCALE: NTS	SHEET: E-4
DATE: 02/08/16	OF: 28 SHEETS

SHEET NOTES:

1. CONNECT TO CONTROL PANEL, VERIFY W/ CONTROL INTEGRATOR FOR COMMUNICATIONS PROTOCOLS.
2. ALL WIRING TO AND FROM INSTRUMENTATION DEVICES DRIVES, SENSORS ETC. SHALL BE COORDINATED WITH CONTROLS CONTRACTOR FOR COMPATIBILITY WITH PLC.
3. COORDINATE & PROVIDE RACEWAY FOR SCADA ANTENNA, MIN. 10' ABOVE BUILDING PEAK HEIGHT TO BE PROVIDED. CONTRACTOR TO VERIFY HEIGHT REQUIREMENTS AS NEEDED FOR PROPER SIGNAL TRANSMISSION.

GENERAL NOTES:

1. PROGRAMMING, TESTING AND TRAINING FOR CONTROL SYSTEMS WORK TO BE PERFORMED BY CONTROLS CONTRACTOR.
2. REFER TO SEQUENCE OF OPERATION IN SPEC. SECTION . SYSTEM CONTRACTOR TO INCLUDE ALL I&C COMPONENTS FOR A COMPLETE OPERATING SYSTEM INTEGRATING WITH EXISTING SCADA SYSTEM.
3. PROVIDE AT A MINIMUM 25% SPARE CONFIGURABLE I/O.
4. ALL INSTRUMENT CABLING TO BE SHIELDED UNLESS NOTED OTHERWISE.



1 SYSTEM CONTROL PANEL
NO SCALE

NO.	DATE	REVISION BLOCK	BY

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ARSENIC TREATMENT

BRIDGEPORT PUBLIC UTILITY DISTRICT

I&C SCHEMATIC

Exp. 6/30/17

DRAWN: TLF	JOB: 0883-023
ENGINEER: KCH	DRAWING: 140157-E4C
SCALE: NTS	SHEET: E-5
DATE: 02/08/16	OF: 28 SHEETS

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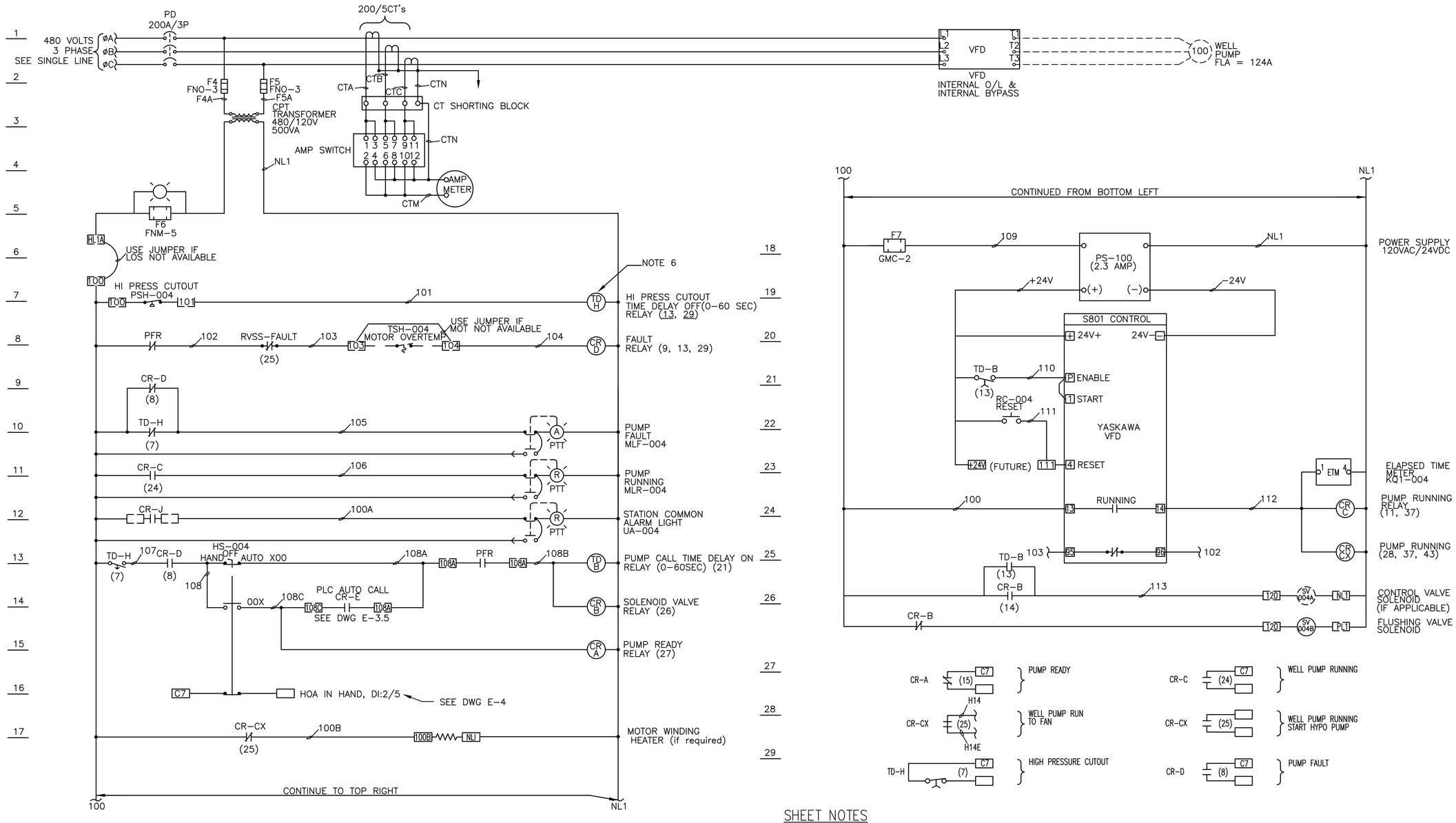

1 TWIN LAKES PUMP CONTROLLER DIAGRAM

SCALE: NO SCALE

SHEET NOTES

1. FURNISH AND INSTALL PUMP CONTROLLER AND INSTRUMENTATION.
2. FURNISH AND INSTALL TELEMETRY CONTROLS TO WORK WITH EXISTING SCADA SYSTEM AT THE CAIN WELL.
3. FURNISH AND INSTALL FLOW SENSOR, PRESSURE SWITCH AND PRESSURE TRANSDUCER. ALL RACEWAY IS TO BE PROVIDED BY ELECTRICAL CONTRACTOR AND/OR PUMP FURNISHING CONTRACTOR.
4. INTERCONNECT ALL PUMP CONTROLS SIGNALS TO PUMP CONTROLLER.
5. PROGRAM SYSTEM TO OPERATE CONCURRENTLY WITH EXISTING WATER FACILITY COMPONENTS.
6. IDEC GT3F-A20 POWER OFF TIME DELAY.

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ARSENIC TREATMENT

BRIDGEPORT PUBLIC UTILITY DISTRICT

PUMP CONTROL SCHEMATIC

REGISTERED PROFESSIONAL ENGINEER — KEVIN C. HUNTER — Exp. 6/30/17 — STATE OF CALIFORNIA — ELECTRICAL

DRAWN: TLF	JOB: 0883-023
ENGINEER: KCH	DRAWING: 140157-E4C
SCALE: NTS	SHEET: E-6
DATE: 02/08/16	OF: 28 SHEETS

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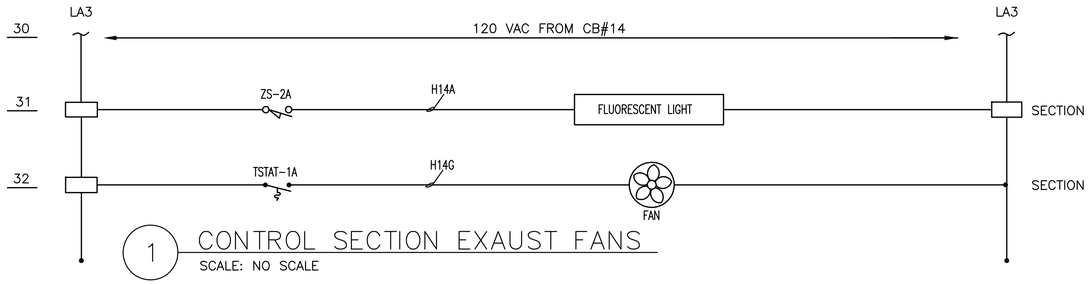
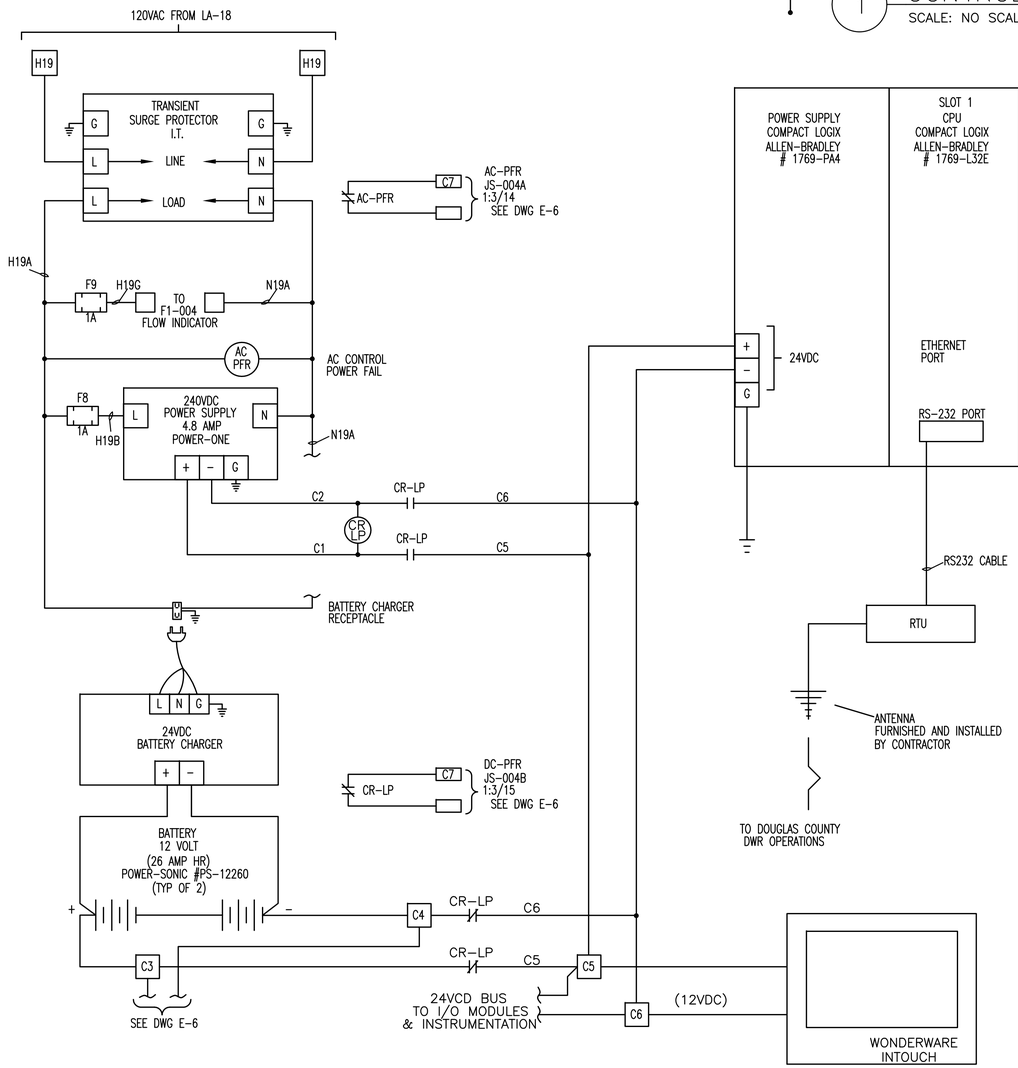


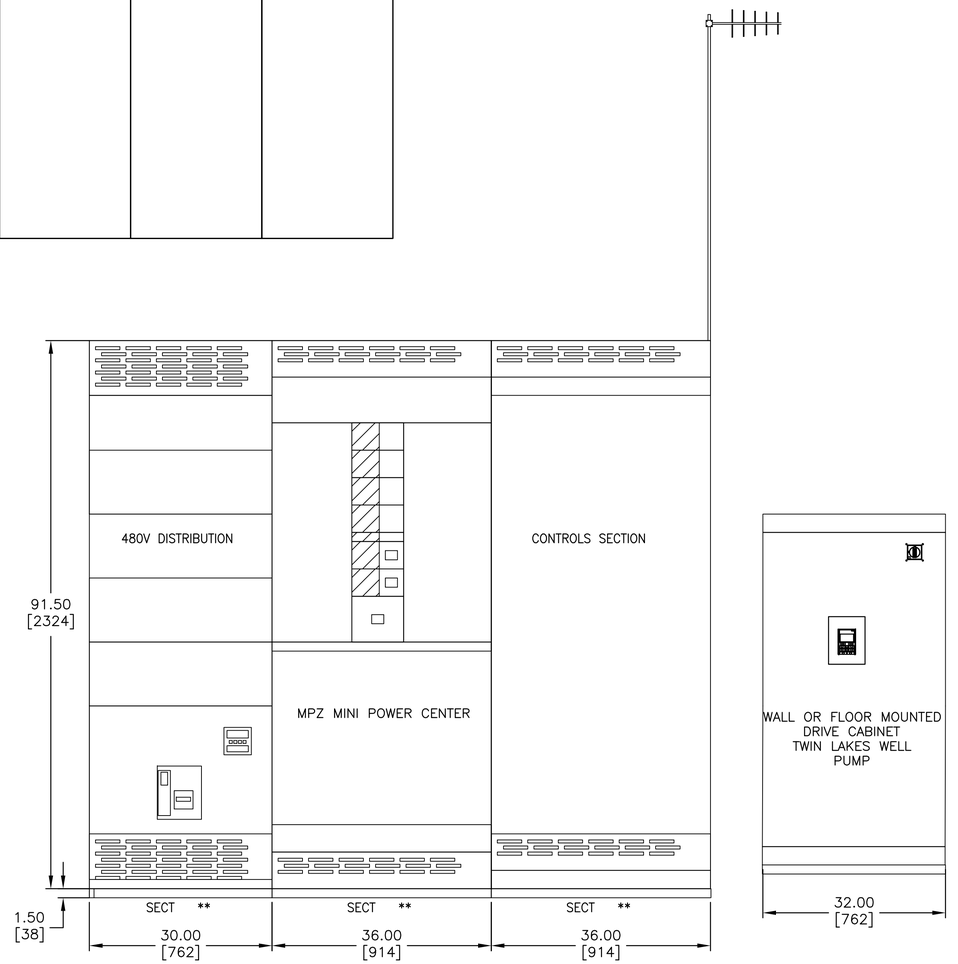
1 CONTROL SECTION EXAUST FANS

SCALE: NO SCALE



1 PLC SCHEMATIC

SCALE: N.T.S.



2 MAIN SWITCHBOARD ELEVATION

SCALE: N.T.S.

NO.	DATE	REVISION BLOCK	BY

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ARSENIC TREATMENT

BRIDGEPORT PUBLIC UTILITY DISTRICT

PLC SCHEMATIC

MSB ELEVATION

DRAWN: TLF	JOB: 0883-023
ENGINEER: KCH	DRAWING: 140157-E4C
SCALE: NTS	SHEET: E-7
DATE: 02/08/16	OF: X SHEETS