COPPER COVE
LAKE TULLOCH INTERTIE

CIP NO. 11104

PROJECT MANUAL
VOLUME 1

BID SET SUBMITTAL
May 2026

Proposal will be received at the office of:

Calaveras County Water District
120 Toma Court
San Andreas, California 95249

no later than

2pm local time July 9th, 2026

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5/29/2026

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SECTION 00 01 00
ADVERTISEMENT FOR BIDS

CALAVERAS COUNTY WATER DISTRICT
COPPER COVE
LAKE TULLOCH INTERTIE
CCWD CIP #11104

Separate sealed Bids for the construction of the Copper Cove Lake Tulloch Intertie project will be received at the office of the Calaveras County Water District at 120 Toma Court, San Andreas, CA 95249 **until 2pm local time on July 9th, 2026**, at which time Bids will be publicly opened and read aloud.

The Project for the Calaveras County Water District is located in the community of Copperopolis, California. The Project consists of the following work:

1. Construction of 12,700 LF of 12" Class 350 DIP transmission main with tracer wire that supplies the B4 Zone, located East of Lake Tulloch, from the C Tanks.
2. Installation of one (1) pressure reducing valve (PRV) station near Sanguinetti Drive, as indicated on the drawings and specifications.
3. Installation of air vacuum release valves and fire hydrant assemblies as indicated on the drawings and specifications.
4. Installation of gate valves as indicated on the drawings and specifications.

The project manual, plans and bid documents will be available as of June 1st, 2026 and may be examined at our website CCWD.org, CIPLIST.com or the following locations:

Calaveras County Water District
120 Toma Ct.
San Andreas, CA 95249
Contact: Kate Jesus / Phone: (209) 753-3181

Dodge Data & Analytics
3315 Central Ave
Hot Springs, AR 71913
Phone: (800) 393-6343

Sacramento Regional Builders Exchange
5370 Elvas Avenue
Sacramento, CA 95819
Phone: (916) 442-8991

Placer County Builders Exchange
10656 Industrial Ave, Suite 160
Roseville, CA 95678
Phone: (916) 771-7229

Builders' Exchange of San Joaquin
4561 Quail Lakes Drive, Suite B-2
Stockton, CA 95207
Phone: (209) 478-1000

Bay Area Builders Exchange
3055 Alvarado Street
San Leandro, CA 94577
Phone: (510) 483-8880

Valley Builders Exchange
1118 Kansas Avenue
Modesto, CA 95351
Phone: (209) 522-9031

Central CA Builders Exchange
1244 N Mariposa Street
Fresno, CA 93703
Phone: (559) 237-1831

The Contract Documents will be available starting June 1st, 2026 and may be obtained via the Calaveras County Water District website (https://ccwd.org/request-for-proposals-bids-rfp/). To receive addenda and

bid information updates, prospective bidders are requested to contact the District to be added to our registered planholder's list.

For further information or questions concerning these documents should be directed to:

Calaveras County Water District
120 Toma Court
San Andreas, CA 95249
Phone (209) 754-3181
Attn: Haley Airola
HaleyA@ccwd.org

A non-mandatory pre-bid meeting will be held on **June 15th at 10:00am** starting at the intersection of O'Byrnes Ferry Road and Sanguinetti Drive. Prior to submitting a bid, prospective bidders are required to inspect the site of work.

Prospective Bidders shall hold a Class A General Engineering Contractor's license issued by the State of California and be skilled, experienced and regularly engaged in the type of work called for under this Contract. All bidders and subcontractors shall be registered with the California Department of Industrial Relations (DIR) pursuant to Labor Code Section 1725.5 to be qualified to bid on this project or to be listed as a subcontractor for this project pursuant to Public Contract Code Section 4104. This project is subject to DIR requirements and accordingly must pay the most current prevailing wages for each worker classification.

Date of Initial Advertisement: **June 1st, 2026**

SECTION 00 02 00
INSTRUCTIONS TO BIDDERS

TABLE OF ARTICLES

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.

ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents in the number and for the sum, if any, stated in the Advertisement for Bids may be obtained from the Issuing Office. The cost of the Bidding Documents is non-refundable.

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 confer a license or grant for any other use.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, within five 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.

The Bidder and his subcontractors are required to have a valid, active license issued by the California, Contractors State License Board. The Bidder shall be a Class A, General Engineering Contractor. Bidders shall have experience with at least three (3) projects of similar size and complexity within the past seven (7) years.

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 of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Bidding Documents.

2. Those drawings of physical conditions in or relating to existing surface and subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Bidding Documents.

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 such reports or shown or indicated in such drawings.

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.

4.03 Hazardous Environmental Condition

A. The Supplementary Conditions identify those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that Engineer has used in preparing the Bidding Documents.

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 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 locating of excavation and utility.

4.06 Additional Owner Provided Information

A. Reference is made to 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 9.12.B of the General Conditions states 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, the other related data identified in the Bidding Documents, and any Addenda;

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 in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in Paragraph 4.02 of the General Conditions, and (2) reports and drawings of Hazardous Environmental Conditions at the Site which have been identified in the Supplementary Conditions as provided in Paragraph 4.06 of the General Conditions;

E. Obtain and carefully study (or accept consequences of not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of 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 safety precautions and programs incident thereto;

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 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. Correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;

I. 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

J. 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 non-mandatory pre-bid conference will be held on **June 15th at 10:00am** at the intersection of O'Byrnes Ferry Road and Sanguinetti Drive. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged 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 five 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 not less than 5 percent of Bidder's maximum Bid price and in the form of a certified check or bank money order or a Bid Bond (EJCDC No. C-430, 2013 Edition) 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 annul the Notice of Award and the Bid security of that Bidder will be forfeited. 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 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

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 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 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, or "or-equal" materials and equipment as described in paragraph 6.05 of the General Conditions, or those substitute materials and equipment approved by Engineer and identified by Addendum. The materials and equipment described in the Bidding Documents establish a standard of required type, function and quality to be met by any proposed substitute or "or-equal" item. Request for Engineer's clarification of materials and equipment considered "or-equal" prior to the Effective Date of Agreement must be received by the Engineer at least 10 days prior to the date for receipt of Bids. No item of material or equipment will be considered by Engineer as a substitute unless written request for approval has been submitted by Bidder and has been received by Engineer at least 15 days prior to the date for receipt of Bids. Each such request shall conform to the requirements of Paragraph 6.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any proposed substitute item, such approval will be set forth in an Addendum issued to all prospective Bidders. Bidders shall not rely upon approvals made in any other manner.

ARTICLE 12 - SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 Each bidder must submit bids identifying all subcontractors according to the Subcontractor Listing Law Section 4104 of the California Public Contract Code; nothing in this Article shall be deemed to supersede those requirements.

12.02 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, without an increase in the Bid.

12.03 If the apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest responsible 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.

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

12.05 The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 7.06.

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 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 section, Bid item, alternative, adjustment unit price item, and unit price item listed therein, or the words "No Bid," "No Change," or "Not Applicable" 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 provided on the Bid Form.

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 provided on the Bid Form.

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 business 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 must be provided on the Bid Form.

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 and dates of which shall be filled in on the Bid Form.

13.10 The postal and email 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 or locality where the Project is located or Bidder shall covenant in writing to obtain such qualification prior to award of the Contract and attach such covenant to the Bid Form. Bidder's state contractor license number shall also be shown on the Bid Form.

ARTICLE 14 - BASIS OF BID; COMPARISON OF BIDS

14.01 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 bid 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. The bid total will be used to determine whose bid is the lowest price, as provided in Section 19. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

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.

ARTICLE 15 - SUBMITTAL OF BID

15.01 The Bid Form (Section 00410) is to be completed and submitted with all of the attachments outlined in Article 7 of the Bid Form (Section 00410).

15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Advertisement for Bids and shall be enclosed in an opaque sealed envelope plainly marked 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 envelope plainly marked on the outside with the notation "BID ENCLOSED." When using the mail or other delivery system, the Bidder is totally responsible for the mail or other delivery system delivering the Bid at the place and prior to the time indicated in the Advertisement for Bid. A mailed Bid shall be addressed to Owner at the address in Article 1.01 of the Bid Form.

ARTICLE 16 - MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be modified or withdrawn by an appropriate document duly executed in the 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 After the date and time for the opening of Bids, Bids may only be withdrawn as provided in Public Contract Code Section 510 et seq.

ARTICLE 17 - OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the Advertisement for Bids and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the Bids and 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, at 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 be non-responsible. 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 to perform the Work in accordance with the Contract Documents.

19.06 If the Contract is to be awarded, Owner will award the Contract to the responsible Bidder whose Bid, conforming with all the material terms and conditions of the Instructions to Bidders, is lowest, price and other factors considered. If detailed in the Bid Form, factors such as discounts, transportation costs, and life cycle costs may be used to determine which bidder, if any, is to be offered the award.

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 gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement 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 AND USE TAXES

22.01 Contractor shall pay all sales, use and other taxes as specified in Paragraph 6.10 of the General Conditions.

ARTICLE 23 – AGENCY REQUIREMENTS

23.01 Not Used

23.02 Payment and retainage will comply with the contract agreement section 6.02 "Progress Payments; Retainage." Bidders are notified that this contract does not permit retainage to be placed in escrow nor to be invested for the benefit of the contractor.

23.03 Bidders are notified that this contract does not provide for substitution of securities for any monies withheld by the Owner to ensure performance under the contract.

23.04 Bidders are notified of the requirement for affirmative action to ensure equal employment opportunity (Executive Order No. 11246) as set forth in the Equal Opportunity Requirements found in paragraph 18.10 of the General Conditions.

ARTICLE 24 – WAGE RATE REQUIREMENTS

24.01 Prevailing Wages: Notice is hereby given that, pursuant to Section 1773 of the Labor Code of the State of California, the Owner has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holidays and overtime work for each craft, classification, or type of worker required to execute the Contract. A copy of said prevailing rate of per diem wages is on file in the principal office of the Owner, to which reference is hereby made for further particulars. Said prevailing rate of per diem wages will be made available to any interested party upon request, and a copy thereof shall be posted at each job site.

24.02 Statutory Penalty for Failure to Pay Minimum Wages: In accordance with Section 1775 (a) through (c) of the California Labor Code, the Contractor shall as a penalty to the State of political subdivision on whose behalf a Contract is made or awarded, forfeit not more than two hundred dollars ($200.00) for each calendar day or portion thereof, for each worker paid less than the prevailing wage rates as determined by the director for the work or craft in which the worker is employed for any public work done under the contract by the contractor or, except as provided in subdivision 1775 (b), by any subcontractor under the contractor.

24.03 Statutory Penalty for Unauthorized Overtime Work: In accordance with Section 1813 of the California Labor Code, the Contractor shall as a penalty to the State or political subdivision on whose behalf the Contract is made or awarded, forfeit twenty-five dollars ($25.00) for each worker employed in the execution of the Contract by the respective contractor or subcontractor for each calendar day during which said worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of provisions of Sections 1810-1815 of the California Labor Code.

24.04 Apprenticeship Requirements: Contractor agrees to comply with Sections 1777.5, 1777.6 and 1777.7 of the California Labor Code relating to the employment of apprentices. The responsibility for compliance with these provisions is fixed with the prime contractor for all apprenticeship occupations. Under these sections of the law, Contractors and Subcontractors must employ apprentices in apprenticeship occupations, where journeymen in the craft are employed on the public work, in a ratio of not less than one apprentice hour for each five journeymen hours (unless an exemption is granted in accordance with 1777.5) and Contractors and Subcontractors shall not discriminate among otherwise qualified employees as indentured apprentices on any public work solely on the ground of race, religious creed, color, national origin, ancestry, sex, or age, except as provided in 3077 of the Labor Code. Only apprentices, as defined in 3077, which provides that an apprentice must be at least 16 years of age, who are in training under apprenticeship standards and who have signed written apprentice agreements will be employed on public works in apprenticeship occupations.

24.05 Payroll Records: Contractor shall keep accurate payroll records in format specified by the Division of Labor Standards Enforcement. Said information shall include, but not be limited to, a record of the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and actual per diem wages paid to each journeyman, apprentice, or worker employed by the Contractor. Copies of such record shall be made available for inspection at all reasonable hours, and a copy shall be made available to employee or his authorized representative, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards in compliance with California Labor Code, Section 1776. Contractor and subcontractors shall furnish and submit electronic certified payroll records directly to the Labor Commissioner, and duplicate copies available to Owner.

ARTICLE 25 – REGISTRATION WITH DEPARTMENT OF INDUSTRIAL RELATIONS

25.01 This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations. No contractor or subcontractor may be listed on a bid proposal for a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code Section 1771.1(a)]. No contractor or subcontractor may be awarded a contract for public work on a public works project unless registered with the Department of Industrial Relations pursuant to Labor Code Section 1725.5.

25.02 This bid is subject to Labor Code Section 1771.1 (a) through (d) as follows:

(a) A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work, as defined in this chapter, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

(b) Notice of the requirement described in subdivision (a) shall be included in all bid invitations and public works contracts, and a bid shall not be accepted nor any contract or subcontract entered into without proof of the contractor or subcontractor's current registration to perform public work pursuant to Section 1725.5.

(c) An inadvertent error in listing a subcontractor who is not registered pursuant to Section 1725.5 in a bid proposal shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive, provided that any of the following apply: (1) The subcontractor is registered prior to the bid opening, (2) Within 24 hours after the bid opening, the subcontractor is registered and has paid the penalty registration fee specified in subparagraph (E) of paragraph (2) of subdivision (a) of Section 1725.5., (3) The subcontractor is replaced by another registered subcontractor pursuant to Section 4107 of the Public Contract Code.

(d) Failure by a subcontractor to be registered to perform public work as required by subdivision (a) shall be grounds under Section 4107 of the Public Contract Code for the contractor, with the consent of the awarding authority, to substitute a subcontractor who is registered to perform public work pursuant to Section 1725.5 in place of the unregistered subcontractor.

ARTICLE 26 – SUBCONTRACTOR LISTING LAW

26.01 In accordance with Section 4104 of the California Public Contract Code, each bidder, in his or her bid, shall set forth the name and the location of the place of business of each subcontractor who will perform work or labor or render service to the prime contractor in or about the construction of the work or improvement, or a subcontractor licensed by the State of California who, under subcontract to the prime contractor, specially

fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in an amount in excess of one-half of one percent of the prime contractor's total bid.

26.02 In accordance with Section 4107 of the California Public Contract Code, no contractor whose bid is accepted shall without consent of the owner either: (a) substitute a person as a subcontractor in place of the subcontractor listed in the original bid; or (b) permit a subcontract to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original subcontractor listed in the original bid; or (c) sublet or subcontract any portion of the work in excess of one-half of one percent of the prime contractor's total bid as to which his or her original bid did not designate a subcontractor.

26.03 Penalties for failure to comply with the foregoing sections of the California Public Contract Code are set forth in Sections 4106, 4110, and 4111 of the Public Contract Code. A prime contractor violating this law violates his or her contract and the awarding authority may exercise the option, in its own discretion, of (1) canceling his or her contract or (2) assessing the prime contractor a penalty in an amount of not more than 10 percent of the amount of the subcontract involved, and this penalty shall be deposited in the fund out of which the prime contract is awarded. In any proceedings under this section the prime contractor shall be entitled to a public hearing and to five day's notice of the time and place thereof.

END OF SECTION

SECTION 00 04 10
BID FORM

TABLE OF ARTICLES

ARTICLE 1- BID RECIPIENT

1.01 **This Bid is submitted to: Calaveras County Water District at the main office located at 120 Toma Court, San Andreas, California 95249, no later than 2pm local time, July 9th, 2026.**

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

ARTICLE 2- BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3- BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged.

Addendum No.	Addendum Date

B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.
C. Bidder is familiar with and is satisfied as to all Federal, State and local Laws and Regulations that may affect cost, progress and performance of the Work.

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

E. Bidder has considered 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 the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that any further examinations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is 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. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

J. Bidder will submit written evidence of its authority to do business in the State or other jurisdiction where the Project is located not later than the date of its execution of the Agreement.

ARTICLE 4- BIDDER'S CERTIFICATION

4.01 Bidder further represents that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "Corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.

2. "fraudulent practice" means an intentional misrepresentation of facts made to (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

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

ARTICLE 5- BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the price(s) provided in the attached bid schedule (at the end of this section).

5.02 Unit Prices have been computed in accordance with Paragraph 11.03.B of the General Conditions

5.03 Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

5.04 Bid Prices are for work that has been furnished and installed by the Contractor and is fully completed. The bid items as described and provided are for bidding and payment purposes and do not in any way limit the Contractor's responsibility to perform all work that may be reasonably inferred from the plans, specifications and other bid documents to produce the intended result.

5.05 All specified cash allowances are included in the price(s) set forth above and have been computed in accordance with Paragraph 11.02 of the General Conditions.

5.06 If "additive" or "deductive" Bid Items are included in the Bid- clearly identify the method for applying the alternates and the basis for award of the contract.

ARTICLE 6- TIME OF COMPLETION

6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

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

ARTICLE 7- ATTACHMENTS TO THIS BID

7.01 The following documents are attached to and made a condition of this Bid:

A. Non-Collusion Affidavit (**Section 00420**);

B. Required Bid security in the form of a Bid Bond **(Section 00430)** or Certified Check;

C. List of Subcontractors (**Section 00470**);

ARTICLE 8- DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders (Section 00200), General Conditions (Section 00700 and Supplementary Conditions (Section 00800).

ARTICLE 9- BID SUBMITTAL

9.01 This Bid is submitted by: _____

Bidder's Business address: _____

_____

Phone: _____ Facsimile: _____

Submitted on _____, _____.

State Contractor License No. _____

DIR Registration No. _____

Employer's Tax ID No. _____

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____
_____ (SEAL)

By: _____
(Signature of general partner – attach evidence of authority to sign)

Name (typed or printed): _____

A Corporation

Corporation Name: _____
_____ (SEAL)

State of Incorporation: _____

Type (General Business, Professional, Service, Limited Liability): _____

By: _____
(Signature – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Attest: _____
(Signature of Corporate Secretary)

Date of Qualification to do business is ____________.

A Joint Venture

Name of Joint Venturer: _____

First Joint Venturer Name: _____
_____ (SEAL)

By: _____
(Signature of first joint venture partner – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____
_____ (SEAL)

By: _____
(Signature of second joint venture partner – attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.

BID SCHEDULE

ITEM	DESCRIPTION	UNIT	QTY	UNIT PRICE	BID PRICE
1	Mobilization/Demobilization	LS	1	$	$
2	Worker Protection and Safety/Shoring	LS	1	$	$
3	Implementation of SWPPP	LS	1	$	$
4	Traffic Control	LS	1	$	$
5	Roadway Pavement Replacement (Trench)	TON	2,300	$	$
6	Microsurfacing (Full Road Width)	SF	430,400	$	$
7	12" Ductile Iron Pipe (Includes Excavation & Backfill)	LF	12,700	$	$
8	12" Gate Valves	EA	30	$	$
9	Fire Hydrants	EA	16	$	$
10	Air/Vac Valves	EA	6	$	$
11	Pressure Reducing Station	LS	1	$	$

TOTAL BID AMOUNT ALL ITEMS (1 to 11)
(NUMERICAL) $ _____

_____

_____ **DOLLARS**

TOTAL BID AMOUNT (WRITTEN)

DESCRIPTIONS OF BID ITEMS

Note: Bid items listed herein for bidding and payment purposes do not limit Contractor's responsibility to perform all work required under this contract, on drawings, in specifications, or reasonably inferred or interpreted to be necessary to complete the work. All bid items will have 5% retention in the progress payment held for final payment.

BID ITEM NO. 1 – MOBILIZATION / DEMOBILIZATION

1. The work under this bid item shall include all contract administration, project mobilization, site development activities and demobilization as required to conduct and complete the Work, as identified in the Contract Documents. The total amount shall not exceed five percent (5%) of Total Base Bid Price as provided in the Bid Schedule. Item shall include, but not be limited to, the following:
    a. Insurance premiums, bonds, permitting fees, security fencing, utilities, potholing and other facilities at the jobsite, Contractor's overhead, and costs inclusive of administering the Contract, management and quality control procedures, and coordination as required to construct and complete the Project.
    b. Supply, transportation, and/or movement of personnel, equipment, supplies and incidentals to the work site. Equipment and major materials listed in Contractor's proposal shall be staged on site in the types and quantities shown. Additional shipments of material or transportation of equipment, if required, shall be approved in writing by District in advance.
    c. Cleaning of equipment prior to mobilizing to the jobsite.
    d. Identification and protection of existing facilities/utilities.
    e. Site preparation of construction zone, vehicle/visitor parking, staging, laydown, and stockpile areas.
    f. All project demobilization, site cleanup, and removal of personnel, equipment, materials, supplies, temporary facilities, site delineators, and construction waste from the jobsite to satisfy the requirements of 01 70 00 - Execution and Closeout Requirements and other applicable elements of the Contract Documents.
2. Work will be paid for on a lump sum basis. Contractor may apply for payment for up to one-third of the total lump sum amount with the Contractor's first application for payment and after completion of the Contractor's pre-construction obligations. Contractor may apply for payment for the remaining lump sum amount on a project percent complete basis.

BID ITEM NO. 2 – WORKER PROTECTION AND SAFETY/SHORING

1. The lump sum amount shall include detailed plan for worker safety and maintaining safety during construction complying with Labor Code Sections 6700-6708, all applicable safety orders and permits and protective equipment necessary for the protection and safety of all workers, other persons, equipment and facilities during the construction period as specified in the Contract Documents.
2. Contractor may apply for payment for this Bid Item on a percent complete basis as the items covered in Worker Protection and Safety/Shoring are being completed.

BID ITEM NO. 3 – IMPLEMENTATION OF STORM WATER POLLUTION PREVENTION PLAN

1. The lump sum amount shall include a Contractor provided Storm Water Pollution Prevention Plan (SWPPP) including installation of Best Management Practices (BMP's) for erosion control, spill control, and monitoring as required by the law.
2. Contractor may apply for payment for this Bid Item on a percent complete basis as the items covered in Implementation of SWPPP are being completed.

BID ITEM NO. 4 – TRAFFIC CONTROL

1. The work under this bid item shall include all temporary traffic control measures, devices, flaggers, and any other costs associated with the traffic control plan covered in the Drawings and Contract Specifications.
2. Work will be paid for on a percent complete basis as items performed are being completed.

BID ITEM NO. 5 – ROADWAY PAVEMENT REPLACEMENT (TRENCH)

1. The work under this bid item shall include all pavement restoration including compaction, material processing and importing, aggregate base and crushed rock bases, asphaltic concrete paving, pavement striping, tack coat and sealants, and gutters associated with replacing pavement in the roadway per Calaveras County Specifications.
2. This item shall be paid in accordance with the actual tonnage that is delivered and installed. The unit price shall be full compensation per ton installed for the preparation and installation of these materials, and for all labor, equipment, tools, and incidentals to complete this item.

BID ITEM NO.6 – MICROSURFACING (FULL ROAD WIDTH)

1. The work under this bid item shall include the microsurfacing for the full width of the road associated with replacing pavement, including striping and pavement markings and removing all existing pavement markings and striping before work, in the roadway per Calaveras County Specifications.
2. Work will be paid for on a square foot basis. The unit price shall be full compensation per square footage complete for the preparation and implementation or submittal of these materials and requirements, and for furnishing and installing all labor, equipment, materials, tools, and incidentals to complete this item.

BID ITEM NO.7 – 12" CLASS 350 DUCTILE IRON PIPE (INCLUDES EXCAVATION & BACKFILL)

1. The work under this bid item shall include furnishing and installing 12,700 LF of 12" Class 350 Ductile Iron Pipe including all restrained 12" fittings, joints, taps, tracer wire, excavation, trenching, backfill and compaction and tie-ins to the existing system as shown and specified in the Contract Documents.
2. Work will be paid for on a linear foot basis. The unit price shall be full compensation per linear footage complete for the preparation and implementation or submittal of these materials and requirements, and for furnishing and installing all labor, equipment, materials, tools, and incidentals to complete this item.

BID ITEM NO.8 – 12" GATE VALVES

1. The work under this bid item shall include the furnishing and installation of 12" gate valves as shown on the Contract Documents.
2. Work will be paid for by each gate valve installed.

BID ITEM NO.9 – FIRE HYDRANTS

1. The work under this bid item shall include furnishing and installation of fire hydrants including all valves, taps, joints, fittings, excavation, trenching, backfill and compaction as shown on the Contract Documents. This bid item shall also include the hauling and disposal of removed items.
2. Work will be paid for by each fire hydrant installed.

BID ITEM NO.10 – AIR/VAC VALVES

1. The work under this bid item shall include furnishing and installation of combination air and vacuum valves including all enclosures, valves, taps, joints, fittings, slurry if applicable, excavation, trenching, backfill and compaction as shown on the Contract Documents.
2. Work will be paid for by each combination air and vacuum valve installed.

BID ITEM NO.11 – PRESSURE REDUCING STATION

1. The work under this bid item shall include the furnishing and installation of a preassembled pressure-reducing station by a single manufacturer specializing in engineered piping systems, including the precast vault and hatch and all associated piping, appurtenances, and accessories, as shown on the Contract Documents, including but not limited to all spool pieces, fittings, pressure reducing valves, isolation valves, pressure gauges, flow meters, flow controls, Y strainer, and pipe supports.
2. Work will be paid for on a lump sum basis. The lump sum price shall be full compensation per percent complete for the preparation and implementation of these materials and requirements, and for furnishing and installing all labor, equipment, materials, tools, and incidentals to complete this item.

SECTION 00 04 20
NON-COLLUSION AFFIDAVIT

NON-COLLUSION DECLARATION TO BE EXECUTED
BY
BIDDER AND SUBMITTED WITH BID
(Public Contract Code Section 7106)

State of California
County of Calaveras

The undersigned declares:

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

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

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

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed:

By _____

Subscribed and sworn to before me on _____
(date)

_____
(Notary Public)

(SEAL)

SECTION 00 04 30
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)*:

BID
Bid Due Date:
Description *(Project Name and Include Location)*:

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.

SECTION 00 04 70
LIST OF SUBCONTRACTORS

Note: In accordance with Section 4104 of the California Public Contracts Code, each Bidder shall complete the attached form and submit with their bid a complete list of all subcontractors performing work in an amount in excess of one-half of one percent of their total bid.

BIDDER: _____

Work to be Performed	Percent of Total Contract Price	Subcontractor's Name, Location of Place of Business, Contractors License, and DIR Registration Number

(ADD ADDITIONAL SHEETS IF NECESSARY)

SECTION 00 05 00
AGREEMENT BETWEEN
OWNER AND CONTRACTOR

THIS AGREEMENT is by and between **CALAVERAS COUNTY WATER DISTRICT** ("Owner") and

_____ ("Contractor").

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as designated on the Bid Form and described for the bid items and as otherwise specified or indicated in the Contract Documents. The Work is generally described as follows:

A. Construction of approximately 12,700 LF of 12" Class 350 DIP transmission main, supplying Zone B4 with water from the C Tanks.

B. Installation of one (1) pressure reducing valve (PRV) station near Sanguinetti Drive, as indicated on the drawings and specifications.

C. Installation of ARV and blowoff valve assemblies at the transmission main high-points and low-points, as indicated on the drawings and specifications.

D. Installation of gate valves inline every 2,000 feet, as indicated on the drawings and specifications.

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows:

COPPER COVE
LAKE TULLOCH INTERTIE
CIP #11104

ARTICLE 3 – ENGINEER

3.01 The part of the Project that pertains to the Work has been designed for the Calaveras County Water District by Verdantas Inc., 80 Blue Ravine Road, Suite 280, Folsom CA 95630.

3.02 The Owner has designated Verdantas Inc. (as "Engineer") to act as Owner's representative, assuming all duties and responsibilities, and having rights and authority assigned to Engineer in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Days*

A. After the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, the Work will be substantially completed within 195 calendar days, and all work completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 225 calendar days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved

within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $1,500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.
2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $1,500 for each day that expires after such time until the Work is completed and ready for final payment.
3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit with an initial contract amount of $_____.

B. As provided in Paragraph 13.03 of the General Conditions, estimated quantities for unit price work are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer and the final contact amount adjusted accordingly.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Applications for Payment shall be submitted by the Contractor in accordance with Article 15 of the General Conditions and is to be processed by Engineer as provided for in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 15th or 30th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

a. 95% percent of Work completed (with the balance being retainage).

b. 95% percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95% percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 100% percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

7.01 All amounts not paid when due shall bear interest at a rate in accordance with applicable law.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract 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 Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

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

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (00 05 00).
2. Project Manual / Divisions 0 through 16:
    a. Contractor's Bid Form (00 04 10) and Bid Bond (00 04 30).
    b. List of Subcontractors (00 04 70)
    c. Performance (00 06 10), Payment (00 06 15) and Maintenance (00 06 50) Bonds
    d. General Conditions (00 07 00) and Supplementary Conditions (00 08 00)
    e. All Other Specifications and Content of the Project Manual
    f. Appendices:
        - Project Standard Details
        - County Public Works Utility Encroachment Permit
        - Geotechnical Report
        - Construction Stormwater Pollution Prevention Plan (SWPPP)
3. Project Drawings: As issued and advertised for Bids.
4. Addenda (numbers ___ to ___, inclusive), as issued during the bid period and prior to the date of the public bid opening and as acknowledged/enumerated by the Contractor on the Bid Form.
5. Notice to Proceed, Work Change Directives, Change Orders, or Field Orders, not attached hereto, which may be delivered or issued on or after the Effective Date of the Contract.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above). There are no Contract Documents other than those listed above in Article 9, and the Contract Documents may only be amended, modified, or supplemented as provided for in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

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

10.06 *Other Provisions*

A. Owner stipulates that if the General Conditions that are made a part of this Contract are based on EJCDC® C-700, Standard General Conditions for the Construction Contract, published by the Engineers Joint Contract Documents Committee®, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

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

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

OWNER:	CONTRACTOR:
_____	_____
By: _____	By: _____
Title: _____	Title: _____
	(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)
Attest: _____	Attest: _____
Title: _____	Title: _____
Address for giving notices:	Address for giving notices:
_____	_____
_____	_____
_____	_____
	License No.: _____ *(where applicable)*

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

SECTION 00 05 10
NOTICE OF AWARD

Date: _____

Project: Copper Cove, Lake Tulloch Intertie	
Owner: Calaveras County Water District	Owner's Contract No.: CIP #11104
Contract:	Engineer's Project No.:
Bidder:	
Bidder's Address: *[send Notice of Award Certified Mail, Return Receipt Requested]*	

You are notified that your Bid dated _____ for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for _____

[Indicate total Work, alternates, or sections of Work awarded.]

The Contract Price of your Contract is _____ Dollars ($_____).

[Insert appropriate data if unit prices are used. Change language for cost-plus contracts.]

_____ copies of the proposed Contract Documents (except Drawings) accompany this Notice of Award.

_____ sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within [15] days of the date you receive this Notice of Award.

1. Deliver to the Owner [_____] fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract security [Bonds] as specified in the Instructions to Bidders (Article 20), General Conditions (Paragraph 5.01), and Supplementary Conditions (Paragraph SC-5.01).
3. Other conditions precedent:

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

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Contract Documents.

_____
Owner

By:_____
Authorized Signature

_____
Title

SECTION 00 05 50
NOTICE TO PROCEED

Date: _____

Project: Copper Cove, Lake Tulloch Intertie	
Owner: Calaveras County Water District	Owner's Contract No.: CIP #11104
Contract:	Engineer's Project No.:
Contractor:	
Contractor's Address: *[send Certified Mail, Return Receipt Requested]*	

You are notified that the Contract Times under the above Contract will commence to run on_____. On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement, the date of Substantial Completion is_____, and the date of readiness for final payment is _____ [(or) the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____].

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:

_____ *[add other requirements].*

_____
Owner

Given by:

_____
Authorized Signature

_____
Title

_____
Date

SECTION 00 06 10
PERFORMANCE BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:
Calaveras County Water District
120 Toma Court
San Andreas, CA 95249

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

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

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

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

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

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

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of

the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price 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 the Owner or its heirs, executors, administrators, successors, and assigns.

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

11. Any proceeding, legal or equitable, under this Bond 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 a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

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

14. Definitions

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

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

SECTION 00 06 15
PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

Calaveras County Water District
120 Toma Court
San Andreas, CA 95249

CONSTRUCTION CONTRACT
Effective Date of the Agreement:
Amount:
Description *(name and location)*:

BOND
Bond Number:
Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:
Amount:
Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment 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

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond shall arise after the following:

    5.1 Claimants who do not have a direct contract with the Contractor,

        5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2 Pay or arrange for payment of any undisputed amounts.

    7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the

Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work including, but not limited to, costs to repair or replace Contractor's defective work, and any amounts owed to Owner, including amounts owed for damages Owner incurred, or for liquidated damages.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

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

12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

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

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. **Definitions**

16.1 **Claim:** A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has the right to assert a stop notice or bond claim as provided in the California Civil Code. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat,

oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 **Owner Default**: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

SECTION 00 06 25
CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	CALAVERAS COUNTY WATER DISTRICT	Owner's Contract No.:	CIP #11104
Contractor:	_____	Contractor's Project No.:	
Engineer:	Verdantas Inc.	Engineer's Project No.:	
Project:	Copper Cove, Lake Tulloch Intertie	Contract Ref.:	

This [preliminary] [final] Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's responsibilities:
☐ None
☐ As follows

Amendments to Contractor's responsibilities:
☐ None
☐ As follows:

The following documents are attached to and made a part of this Certificate: *[Refer to attached Punch List]*

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____	By: _____	By: _____
(Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

SECTION 00 06 50
MAINTENANCE BOND

The CALAVERAS COUNTY WATER DISTRICT, State of California, on _____, 2025, awarded to _____ hereinafter designated as the "Principal", a Construction Agreement for the construction of the project

COPPER COVE
LAKE TULLOCH INTERTIE
CCWD CIP #11104

The Principal and _____ as Surety, are held and firmly bound unto **CALAVERAS COUNTY WATER DISTRICT**, in the amount of _____Dollars ($_____), which is equivalent to ten percent (10%) of the Construction Agreement amount, lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

The condition of this obligation is such that if the above bonded Principal, his or its heirs, executors, administrators, successors, or assigns, shall in all things stand to and abide by, and well and truly keep and faithfully perform the covenants, conditions and agreements in the said Construction Agreement and any alterations made as therein provided, on his or their part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their true intent and meaning and shall indemnify and save harmless, the CALAVERAS COUNTY WATER DISTRICT, its officers and agents as therein stipulated, then this obligation shall become null and void; otherwise, it shall be and remain in full force and virtue, and Principal and Surety, in the event suit is brought on this bond, will pay to the CALAVERAS COUNTY WATER DISTRICT such reasonable attorney's fees as shall be fixed by the court.

As a condition precedent to satisfactory completion of the said Construction Agreement, the above obligation in said amount shall hold good for a period of two (2) years after completion and acceptance of the said work, during which time if the above bonded Principal, his or its heirs, executors, administrators, successors or assigns shall fail to make full, complete, and satisfactory repair and replacements or totally protect the CALAVERAS COUNTY WATER DISTRICT from loss or damage made evident during said period of two (2) years from the date of acceptance of said work, and resulting from or caused by defective materials or faulty workmanship in the execution of the work done, the above obligation in the said sum shall remain in full force and effect. However, anything in this paragraph to the contrary notwithstanding, the obligation of the Surety thereunder shall continue so long as any obligation of the Principal remains.

The said Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Construction Agreement or to the work to be performed thereunder or the specifications accompanying the same shall, in any way, affect its obligations on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Construction Agreement or to the work or specifications. Said Surety hereby waives the provisions of Sections 2819 and 2845 of the Civil Code of the State of California.

The above parties have executed this instrument under their seals on _____, _____, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

(SEAL)

_____
Principal

_____
Signature for Principal

_____
Title of Signature

(SEAL)

_____
Surety

_____
Signature for Surety

_____
Title of Signature

(SEAL AND NOTARIAL ACKNOWLEDGMENT OF SURETY)

SECTION 00 07 00
STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to Owner.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or

imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Engineer*—The individual or entity named as such in the Agreement.

21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.

33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.

35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.

38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.

42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby

defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

46. *Unit Price Work*—Work to be paid for on the basis of unit prices.

47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*:

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered," "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*:

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*:

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

a. does not conform to the Contract Documents; or

b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. *Furnish, Install, Perform, Provide*:

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Contractor's Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

C. *Evidence of Owner's Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*:

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*:

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be

responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. abnormal weather conditions;

3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and

4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent 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); and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or

2. is of such a nature as to require a change in the Drawings or Specifications; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the

resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

    b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

    c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

    a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or

    b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

    c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

    a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

    b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;

    c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

C. *Engineer's Review*: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and

d. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

2. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.

H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 *Contractor's Insurance*

A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.

2. claims for damages insured by reasonably available personal injury liability coverage.

3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:

a. Such insurance shall be maintained for three years after final payment.

b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.

3. Broad form property damage coverage.

4. Severability of interest.

5. Underground, explosion, and collapse coverage.

6. Personal injury coverage.

7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.

8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.

2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.

3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.

4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.

5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk

policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

6. extend to cover damage or loss to insured property while in transit.

7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

8. allow for the waiver of the insurer's subrogation rights, as set forth below.

9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.

10. not include a co-insurance clause.

11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.

12. include performance/hot testing and start-up.

13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.

B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) it has a proven record of performance and availability of responsive service; and

4) it is not objectionable to Owner.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

    a. shall certify that the proposed substitute item will:

        1) perform adequately the functions and achieve the results called for by the general design,

        2) be similar in substance to that specified, and

        3) be suited to the same use as that specified.

    b. will state:

        1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,

        2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

        3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

    c. will identify:

        1) all variations of the proposed substitute item from that specified, and

        2) available engineering, sales, maintenance, repair, and replacement services.

    d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.

N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor

2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.10 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.11 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements*:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings*:

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples*:

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Other Submittals*: Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

D. *Engineer's Review*:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures*:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal;

6. the issuance of a notice of acceptability by Engineer;

7. any inspection, test, or approval by others; or

8. any correction of defective Work by Owner.

D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.

B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. an itemization of the specific matters to be covered by such authority and responsibility; and

3. the extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit

any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis

of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

C. Engineer's authority as to Change Orders is set forth in Article 11.

D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. *Change Orders*:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives*: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by

Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures*: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.

2. *Engineer's Action*: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. *Binding Decision*: Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

B. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12 – CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*:

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is

unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

    c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

    d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

    e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

    f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

    g. The cost of utilities, fuel, and sanitary facilities at the Site.

    h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

    i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by

Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.

E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make

available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*:

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

   a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

a. the Work is defective, requiring correction or replacement;

b. the Contract Price has been reduced by Change Orders;

c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*:

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. the Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. the Contract Price has been reduced by Change Orders;

i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

l. there are other items entitling Owner to a set off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents;

b. consent of the surety, if any, to final payment;

c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

d. a list of all disputes that Contractor believes are unsettled; and

e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance*:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due*: Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;

2. correct such defective Work;

3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and

4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for

30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs,

losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SECTION 00 08 00
SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC No. C-700 (2013 Edition). All provisions which are not so amended or supplemented remain in full force and effect. The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof. The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

SC-1.01.A.8 Add the following language to the end of Paragraph 1.01.A.8:

The Change Order form to be used on this Project is EJCDC No. C-941 (Section 00840). Agency approval is required before Change Orders are effective.

SC-1.01.A.48 Add the following language at the end of the last sentence of Paragraph 1.01.A.48:

A Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

SC-1.01.A.49 Add the following new Paragraph after Paragraph 1.01.A.48:

Abnormal Weather Conditions- Conditions of extreme or unusual weather for a given region, elevation, or season as determined by Engineer. Extreme or unusual weather that is typical for a given region, elevation or season should not be considered Abnormal Weather Conditions.

SC-2.01 Delete Paragraphs 2.01 B. and C. in their entirety and insert the following in their place:

B. *Evidence of Contractor's Insurance:* When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies of insurance (including all endorsements, and identification of applicable self-insured retentions and deductibles) required to be provided by Contractor in Article 6. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

C. *Evidence of Owner's Insurance*: After receipt from Contractor of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor copies of the policies of insurance to be provided by Owner under Article 6 (if any). Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

SC-2.02.A Amend the first sentence of Paragraph 2.02.A to read as follows:

Owner shall furnish to Contractor three copies of the Contract Documents (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF).

SC-2.03 A.2 Add for preliminary schedule of submittals:

The Contractor shall provide a preliminary submittal log and list of shop drawings for all equipment and materials to be furnished on the project; and any other submittals as may be specifically called for by the contract documents.

SC-4.01.A Amend the last Paragraph of 4.01.A by striking out the following words:

In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

SC-4.04.A Add the following requirement for "look ahead" schedules:

3. Not less than frequent than every two (2) weeks, the Contractor shall provide an updated three (3) week "look ahead" schedule that details in advance the activities scheduled to occur on the project in the subsequent three (3) week period; this schedule shall allow reasonable time for coordinating construction activities with required public and agency notifications, scheduling Owner's personnel requirements, calling in advance for special inspection dates, and scheduling surveyors, technicians and other professionals necessary to monitor and facilitate the work. The Owner may hold progress payments if Contractor refuses to provide necessary "look ahead" schedules; these schedules are not necessary if Owner and Contractor agree no work will be occurring within a specific period.

SC-5.03. Add the following new paragraphs immediately after Paragraph 5.03.B

C. In the preparation of Drawings and Specifications, Engineer relied upon the following reports of exploration and tests of subsurface conditions at the Site:

1. Geotechnical Study (Refer to Appendix)

D. In the preparation of Drawings and Specifications, Engineer relied upon the following drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities) which are at or contiguous to the Site:

1. 6" Sewer Force Main As-Builts.

E. Copies of reports and drawings itemized in SC-5.03.C and SC-5.03.D that are not included with Bidding Documents may be examined at the office of the Calaveras County Water District, 120 Toma Court, San Andreas, CA 95249 / Phone: (209) 754-3543 during regular business hours (8:00 AM to 4:00 PM). These reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which the Contractor may rely as identified and established above are incorporated therein by reference. Contractor is not entitled to rely upon other information and data utilized by Engineer in the preparation of the Drawings and Specifications.

SC-5.06. Delete Paragraphs 5.06.A and 5.06.B in their entirety and replace with following:

A. No reports or explorations or tests of Hazardous Environmental Conditions at or contiguous to the Site are known to the Owner or Engineer.

SC-6.03. Add the following new paragraph immediately after Paragraph 6.03.J:

K. The limits of liability for insurance required by paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under paragraphs 6.03.A.1 and A.2 of the General Conditions:

a.	State:	Statutory
b.	Employer's Liability	$2,000,000

2. Contractor's *Commercial General Liability* under paragraphs 6.03.B and 6.03.C of the General Conditions:

a.	General Aggregate	$2,000,000
b.	Products – Completed Operations Aggregate	$2,000,000
c.	Personal and Advertising Injury	$2,000,000
d.	Each Occurrence (Bodily Injury & Property Damage)	$2,000,000
e.	Excess or Umbrella Liability	
	1) General Aggregate	$2,000,000
	2) Each Occurrence	$2,000,000

3. *Automobile Liability* under paragraph 6.03.D of the General Conditions:

a. Combined Single Limit $1,000,000

4. Property Damage liability insurance will provide Explosion, Collapse and Underground (X, C, U) coverages where applicable.
5. Contractual Liability coverage required by paragraph 6.03.C.2 of the General Conditions shall be provided as part of the *Commercial General Liability* coverage.

6. The Owner and Engineer (including all their designated officers, employees, representatives and agents) are to be included as additional insureds including but not limited to:
   a. Calaveras County Water District
   b. County of Calaveras / Encroachment Permit
   c. Verdantas Inc. / Civil Engineering
   d. Dewberry / Environmental Scientists
   e. Psomas / Land Surveying
   f. Mid-Pacific Engineering Inc. / Geotechnical Engineer
   g. Compliance First, LLC / SWPPP
   h. Resident Engineer/Resident Project Representative (as designated by Owner).

SC-6.06 Delete paragraph 6.06B. and 6.06C. in its entirety.

SC-7.03-A Add the following requirement at end of paragraph 7.03-A.

For construction water on this project, the Contractor shall rent a fire hydrant meter(s) from the District and meter all construction water use. The Contractor is responsible for securing hydrant meter(s) and preventing any loss or damage to them. While all construction water is to be metered by the Contractor, the rental charges will be reimbursed by Owner and there will be no charges for project construction water use. Contractor will be responsible for replacing lost or damaged meters.

SC-7.04.A Amend the third sentence of the paragraph by striking out the following words:

Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item is permitted.

SC-7.04.A.1 Amend the last sentence of Paragraph a.3 by striking out "and:" and adding a period at the end of Paragraph a.3.

SC-7.04.A.1 Delete paragraph 7.04.A.1.a.4 in its entirety.

SC-7.06.A Amend Paragraph 7.06.A by adding the following text to the end of the Paragraph:

The Contractor shall not award work valued at more than fifty percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

SC-7.06.B Delete Paragraph 7.06.B in its entirety.

SC-7.08 Amend Paragraph 7.0 8 by adding the following text to the end of the Paragraph:

For encroachments on County roads, the Contractor shall obtain permits except the District will pay direct governmental charges and inspection fees. In submitting a bid, the Contractor shall fully assess encroachments and traffic control needs and include associated costs in the bid items.

SC-7.11.A Amend Record Documents as follows:

The Contractor shall maintain in a safe place at the Site one printed record copy (or in electronic format on a laptop computer or tablet device) of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and neatly and accurately annotated in red ink to show changes made

during construction. These record documents, together with all approved Samples, will be available to Engineer for reference in the field. Owner may require that copies of markups and annotations on drawings be submitted along with monthly progress payment requests to allow Owner to incorporate changes in to the record drawings. Upon completion of the Work, Contractor shall deliver copies of all remaining record documents to Engineer that are not previously submitted.

SC-7.18 Replace Paragraph 7.18 in entirety with the following text:

Indemnification

To the fullest extent permitted by law, Contractor shall indemnify, defend, and hold harmless Owner, and any of their agents and consultants, and each of their directors, officers, agents, and employees ("Indemnitees") for any actual or alleged damage or losses relating to or arising out of Contractor's performance under this Contract or in any way relating to the Work. Contractor's defense and indemnity obligation shall include, but not be limited to, Contractor indemnifying, defending, and holding Indemnitees harmless from all actual or alleged liability, claims, damages, losses, expenses, and other costs, including costs of defense and attorneys' and expert fees, arising out of or resulting from or in connection with the performance of the Work, both on and off the project site. However, Contractor shall not be liable for any such claims, damages, losses, expenses, liability and other costs that are caused by the sole negligence, willful misconduct, or active negligence of Indemnitees.

In any and all claims against the Indemnitees by any employee of Contractor, any Subcontractor, any supplier, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligations under this Agreement shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor, or any Subcontractor, or any Supplier or other person under Worker's Compensation acts, disability benefit acts, or other employee acts.

Additionally, Contractor shall defend, indemnify, and hold Indemnitees harmless from and against: (1) any and all claims, liabilities, loss, damage, costs, or expenses, including reasonable attorneys' fees, awards, and judgments, arising by reason of any claims, liens, stop notices, or bond claims for labor, materials, or equipment used or furnished to be used in connection with the Work, or union trust fund payments arising from or relating to the Work, and (2) all incidental or consequential damages resulting to Owner from such claims, liens, stop notices or bond claims. Contractor shall cause the effect of any such claim, suit, stop notice, or lien to be removed from the Project within ten days after written demand to do so is made by Owner. If Contractor fails to do so, Owner may use whatever means it deems appropriate to cause the suit, stop notice or lien to be removed or dismissed. All resulting cost and expense incurred by Owner shall be immediately due and payable to Owner by Contractor.

SC-7.20 Add the following new Paragraph after Paragraph 7.19.

Contractor shall either provide electronic transmittal or provide three (3) printed copies of each submittal; one (1) copy to be returned with Engineer's comments. Submittals shall be organized, securely bound, accompanied by a transmittal, and systematically numbered and titled adding postscript letters "A", "B" or "C" for each subsequent resubmittal. Shop drawings containing unrelated items are not acceptable unless taken together comprise a manufacturer's package or closely related scope of supply. Contractor may fax or email information with approval of Engineer. Engineer will complete review and return comments for each submittal or resubmittal within seven (7) to fourteen (14) days and up to thirty (30) days if more complex (e.g. electrical equipment, process equipment, structural systems). Engineer will return comments marked with one course of action to be carried out by Contractor as follows:

A. No Exceptions Taken: Shop drawing is approved to be furnished as submitted
B. Furnish As Noted: Shop drawing is approved and resubmittal is not required given that the Contractor makes corrections as noted by Engineer's comments.
C. Revise & Resubmit: Shop drawing is not approved by the Engineer; Contractor shall resubmit the shop drawing after revising information according to Engineer's comments.
D. Rejected/Resubmit: Shop drawing rejected because Engineer finds it materially differs from specifications and contract requirements; Contractor is to verify requirements and resubmit shop drawing accordingly.

SC-10.03. Add the following language at the end of paragraph 10.03:

The Duties, Responsibilities, and Limitations of Authority of the Resident Project Representative will be stated in the Agreement for Engineering Services executed for this specific Project.

SC-11.06.A Amend the first sentence of Paragraph 11.06.A. to read as follows:

Procedures: Contractor shall submit each Change Proposal to the Engineer prior to commencing any work for which Contractor believes it is entitled to an adjustment in Contract Time or Contract Price. If the need for an adjustment in Contract Time or Contract Price arises after the scope of work has commenced then Contractor shall notify Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision.

SC-11.07.C Add the following new Paragraph after Paragraph 11.07.B:

All Contract Change Orders must be concurred in by Agency before they are effective.

SC-13.02.C Delete Paragraph 13.02.C in its entirety.

SC-15.01.B Replace Paragraph 15.01.B in entirety with the following text:

B. *Applications for Payments*

1. Applications for Payment shall indicate the percentage of completion of each portion of the Work as of the end of the period covered by the application for payment.

2. Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

Take that portion of the Contract Price properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Price allocated to that portion of the Work in the schedule of values, less retainage of five percent (5%);

Add that portion of the Contract Price properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less five percent (5%) retainage;

Subtract the aggregate of previous payments made by the Owner.

3. Each Application for payment shall be in such form and contain such information and substantiation of the portion of the Contract Price allocable to the portion of the Work covered thereby as herein required and as the Owner may reasonably require, and shall, include, without limitation, the following:

(a) A lien waiver in compliance with the requirements of California Civil Code Section 8132 from Contractor and from each Subcontractor and vendor of any tier for the Work and materials that are subject of the Application for Payment and that matches invoice amount. The lien waiver may be conditioned upon receipt of the payment applied for less applicable retention.

(b) An unconditional lien waiver in compliance with the requirements of California Civil Code Section 8134 from Contractor and from each Subcontractor and vendor of any tier covering Work and materials which covers all previous Applications for Payment.

(c) Contractor's certification that the Work covered by the Application for Payment has been completed in accordance with the Contact Documents and all applicable laws.

(d) A detailed, current lien release log, listing all lien releases (both conditional and unconditional) provided to date by Contractor, Subcontractors and Vendors listing the individual amounts by pay period and the total received by each.

(e) A detailed, current change order log that includes all potential, approved and voided change orders.

(f) An updated overall Project schedule for review and approval by the Owner. The update should include all activities with percent completes through the current pay period. Any logic changes should be clearly identified with a detailed explanation and list of reasons for each change.

4. The Contractor warrants and guarantees that title to all Work, materials and equipment covered by an application for payment, whether incorporated in the Project or not, will pass to the Owner upon receipt of such payment by the Contractor free and clear of all liens, claims, security interests or encumbrances, hereinafter referred to as "liens."

5. The Owner's progress payment, occupancy or use of the Project, whether in whole or in part, shall not be deemed an acceptance of any Work not conforming to the requirements of the Contract Documents.

SC-15.01.D.1 Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:

The Application for Payment with Engineer's recommendation will be presented to the Owner and Agency for consideration. If both the Owner and Agency find the Application for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 15.01.E will become due thirty (30) days after the Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor.

SC-15.02.A Amend Paragraph 15.02.A by striking out the following text:

"no later than seven days after the time of payment by Owner" and insert "no later than the time of payment by Owner."

SC-15.06.A.3 Delete the language in Paragraph 15.06A.3. in its entirety and replace the paragraph with the following language:

Before issuance of final payment, Contractor must provide to the Owner satisfactory evidence that all payrolls, materials bills and other indebtedness connected with the Work have been paid or otherwise satisfied.

SC-19 Add Article 19 titled "FEDERAL REQUIREMENTS"

SC 19.03 Conflict of Interest

A. 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.

SC 19.04 Gratuities

A. 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 Agency 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 reviewed in proceedings under the dispute resolution provisions of this Contract.

B. In the event this Contract is terminated as provided in paragraph 19.04.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.

SC-19.05 Audit and Access to Records

A. Owner, Agency, the Comptroller General of the United States, or any of their duly authorized representatives shall have access to any books, documents, papers, and records of the Engineer which are pertinent to the Agreement, for the purpose of making audits, examinations, excerpts, and transcriptions. Engineer shall maintain all required records for three years after final payment is made and all other pending matters are closed.

SC- 19.06 Small, Minority and Women's Businesses

A. For projects that receive funding from USDA Rural Development or other Federal sources. If Contractor intends to let any subcontracts for a portion of the work, Contractor shall take affirmative steps to assure that small, minority and women's businesses are used when possible as sources of supplies, equipment, construction, and services. Affirmative steps shall consist of: (1) including qualified small, minority and women's businesses on solicitation lists; (2) assuring that small, minority and women's businesses are solicited whenever they are potential sources; (3) dividing total requirements when economically feasible, into small tasks or quantities to permit maximum participation of small, minority, and women's businesses; (4) establishing delivery schedules, where the requirements for the work permit, which will encourage participation by small, minority and women's businesses; (5) using the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce; (6) requiring each party to a subcontract to take the affirmative steps of this section; and (7) Contractor is encouraged to procure goods and services from labor surplus area firms.

SC-19.07 Anti-Kickback

A. Contractor shall comply with the Copeland Anti-Kickback Act (18 U.S.C. 874 and 40 U.S.C. 276c) as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Buildings or Public Works Financed in Whole or in Part by Loans and Grants of the United States.") The Act provides that Contractor or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public facilities, to give up any part of the compensation to which they are otherwise entitled. Owner shall report all suspected or reported violations to Agency.

SC-19.08 Clean Air and Pollution Control Acts

A. If this Contract exceeds $100,000, Compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857(h) and 42 U.S.C. 7401 et.seq.), section 508 of the Clean Water Act (33 U.S.C. 1368) and Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR part 15) is required. Contractor will report violations to the Agency and the Regional Office of the EPA.

SC-19.09 State Energy Policy

A. Contractor shall comply with the Energy Policy and Conservation Act (P.L. 94-163) and utilize mandatory standards and policies relating to energy efficiency, contained in any applicable State Energy Conservation Plan.

SC-19.10 Equal Opportunity Requirements

A. This contract does not mandate specific equal opportunity goals or quotas.

SC-19.11 Restrictions on Lobbying

A. Contractor and each subcontractor shall comply with Restrictions on Lobbying (Public Law 101-121, Section 319) as supplemented by applicable Agency regulations. 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 the Owner. Necessary certification and disclosure forms shall be provided by Owner.

SC-19.12 Environmental Requirements

When constructing a project involving trenching and/or other related earth excavations, 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 Owner and a representative of Agency. Construction shall be temporarily halted pending the notification process and further direction issued by Agency 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 Owner and a representative of Agency. Construction shall be temporarily halted pending notification process and further directions issued by Agency after consultation with the U.S. Fish and Wildlife Service.

E. Mitigation Measures - If the project had an Environmental Report, Environmental Assessment, or Environmental Impact Statement to meet Federal NEPA or State CEQA environmental requirements, compliance with the mitigation measures, if any, in that document are hereby included as a condition of this contract.

F. The contractor is required to comply with the environmental permits and documents listed below.

1. Initial Study/Mitigated Negative Declaration and adopted Mitigation, Monitoring and Reporting Plan (adopted Mitigation, Monitoring and Reporting Plan included in Appendix).

2. Construction General Permit 2022-0057-DWQ for Storm Water Discharges Associated with Construction and Land Disturbance
https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction/docs/2022-0057-dwq-with-attachments/cgp2022_order.pdf

3. Statewide Low Risk General Order 2003-0003-DWQ for Discharges to Land (e.g. construction dewatering of excavations) with a Low Threat to Water Quality or Low Risk Waiver R5-2013-0145
www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/wqo2003-0003.pdf

4. Central Valley Regional Water Quality Control Board, Low or Limited Threat General NPDES Permit
https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2022-0006-01.pdf

SC-20 Add the following new paragraph: "ARTICLE 20 - PROJECT SIGN"

SC-20.01 Contractor will place a temporary construction project sign at a location designated by the District. This sign measuring 4' x 8', will be made of 3/4" exterior grade plywood and adhere to the format and details given in Section 00810. The sign will be prepared by a professional sign maker.

SC-21 Add Article 21 titled "CALIFORNIA STATE REQUIREMENTS"

SC-21.01 This project is a "public works" project as defined in California Labor Code Section 1720 through 1743. In accordance with California Labor Code Article 1725.5, Contractor and all subcontractors are required to be registered with the California Department of Industrial Relations (DIR) in order to bid or be listed on a bid and/or work on a public works project.

SC-21.02 Specific contract clauses mandated by Department of Industrial Relations (DIR):

A. Every Contractor *[and subcontractor]* will be required to secure the payment of workers compensation to his or her employees conforming to Labor Code Section 1860.

B. The Contractor shall post the applicable prevailing wage rate on the project site according to Labor Code Section 1771.4.

SC-21.03 In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the 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 the Contractor, without further acknowledgment by the parties.

SC-21.04 Prevailing Wages: Notice is hereby given that, pursuant to Section 1773 of the Labor Code of the State of California, the Owner has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holidays and overtime work for each craft, classification, or type of worker required to execute the Contract. A copy of said prevailing rate of per diem wages is on file in the principal office of the Owner, to which reference is hereby made for further particulars. Said prevailing rate of per diem wages will be made available to any interested party upon request, and a copy thereof shall be posted at each job site.

SC-21.05 Statutory Penalty for Failure to Pay Minimum Wages: In accordance with Section 1775 (a) through (c) of the California Labor Code, the Contractor shall as a penalty to the State of political subdivision on whose behalf a Contract is made or awarded, forfeit not more than two hundred dollars ($200.00) for each calendar day or portion thereof, for each worker paid less than the prevailing wage rates as determined by the director for the work or craft in which the worker is employed for any public work done under the contract by the contractor or, except as provided in subdivision 1775 (b), by any subcontractor under the contractor.

SC-21.06 Statutory Penalty for Unauthorized Overtime Work: In accordance with Section 1813 of the California Labor Code, the Contractor shall as a penalty to the State or political subdivision on whose behalf the Contract is made or awarded, forfeit twenty-five dollars ($25.00) for each worker employed in the execution of the Contract by the respective contractor or subcontractor for each calendar day during which said worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of provisions of Sections 1810-1815 of the Labor Code.

SC-21.06 Apprenticeship Requirements: Contractor agrees to comply with Sections 1777.5, 1777.6 and 1777.7 of the California Labor Code relating to the employment of apprentices. The responsibility for compliance with these provisions is fixed with the prime contractor for all apprenticeship occupations. Under these sections of the law, Contractors and Subcontractors must employ apprentices in apprenticeship occupations, where journeymen in the craft are employed on the public work, in a ratio of not less than one apprentice hour for each five journeymen hours (unless an exemption is granted in accordance with 1777.5) and Contractors and Subcontractors shall not discriminate among otherwise qualified employees as indentured apprentices on any public work solely on the ground of race, religious creed, color, national origin, ancestry, sex, or age, except as provided in 3077 of the Labor Code. Only apprentices, as defined in 3077, which provides that an apprentice must be at least 16 years of age, who are in training under apprenticeship standards and who have signed written apprentice agreements will be employed on public works in apprenticeship occupations.

SC-21.07 Payroll Records: Contractor shall keep accurate payroll records in format specified by the Division of Labor Standards Enforcement. Said information shall include, but not be limited to, a record of the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and actual per diem wages paid to each journeyman, apprentice, or worker employed by the Contractor. Copies of such record shall be made available for inspection at all reasonable hours, and a copy shall be made available to employee or his authorized representative, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards in compliance with California Labor Code, Section 1776. Contractor and subcontractors shall furnish and submit electronic certified payroll records directly to the Labor Commissioner, and duplicate copies available to Owner.

SC-21.08 Contractor shall be responsible for marking all excavations and notifying Underground Service Alert (USA) North at least 48-hours before digging, and follow all other provisions of California Government Code Sections 4216 through 4216.9. Contractor shall maintain an active USA North ticket number for the entire duration of the excavation. The definition of "approximate location of subsurface installations" under government code Section 4216, is amended herein as "a strip of land not more than 36-inches on either side of the exterior surface of the subsurface installation and/or related trench/excavations limits."

SC-21.09 Unless otherwise indicated in the Contract Documents, all utility lines, conduits, wires, or structures shall be maintained by the Contractor and shall not be disturbed, disconnected, or damaged by him during the progress of the Work, provided, that should the 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 the Contractor. However, in accordance with Section 4215 of the California Government Code, the Contractor shall be compensated for all costs of relocating and repairing damage to main or trunkline utility facilities located on the work site and for costs of operating equipment on the work site necessarily idled during such work where the Contractor has exercised reasonable care in removing or relocating utility facilities which are inaccurately indicated in the Contract Documents.

SC-21.10 This project is subject to provisions of Assembly Bill 626 regarding resolution of change orders as set forth in Public Contract Code §9204.

SECTION 00 08 10
PROJECT SIGN

For the duration of the construction project, the Contractor shall furnish and install at the job site for public view a temporary project sign on ¾" APA rated A-B or A-C grade, exterior plywood panel with design shown below. The Contractor shall provide a submittal of the draft/proof for District approval. The District will be allowed the opportunity to revise and change the exact wording, text and logos before fabricating the sign. The sign background shall be painted white on both faces and colored logos and text shall appear on the smooth (A grade) face. Paints and other materials used for sign construction, text and logos shall be weather resistant and not sustain fading, cracking, chipping or other abrupt damage by normal exposure to rain, snow, sun UV exposure, etc. The sign shall be located as directed by the District and, if within highway right-of-way, only in locations authorized by Caltrans. The sign shall be supported and mounted on two 4x4 or 4x6 lumber posts 12-ft in length securely anchored and embedded into the ground. Upon completion of the project and notification by the District staff, the Contractor shall remove the project sign and wood posts and restore the ground surface to a good, prior condition.

COPPER COVE WATER SYSTEM
LAKE TULLOCH INTERTIE PROJECT

Your rate dollars at work!

CONTRACTOR LOGO HERE

CALAVERAS COUNTY WATER DISTRICT

verdantas

CALAVERAS COUNTY WATER DISTRICT
120 Toma Court, San Andreas, CA 95248
Phone: (209) 754-3543 / Website: www.CCWD.org

SECTION 00 08 20
PAY REQUEST FORM

1.0 PURPOSE AND INTENDED USE OF THE DOCUMENT

The Application for Payment is used to facilitate periodic progress payments to the Contractor for Work completed and for stored materials and equipment. This worksheet will be provided by Owner in Microsoft Excel format and Contractor shall complete the form when submitting monthly progress payments.

1.0 APPLICATION FOR PAYMENT OVERVIEW

This document was prepared in Microsoft Excel due to the number of calculations involved in the preparation of the Application for Payment. The application consists of a Summary worksheet, and 3 supporting worksheets: Lump Sum worksheet, Unit Price worksheet, and Stored Materials worksheet.

1.1 *Summary Worksheet* — calculates the amount to be paid to the Contractor at the end of each Application for Payment period. This calculation imports numbers from the supporting worksheets to determine the value of the Work completed and Stored Materials, calculate retainage, and deduct amounts previously paid to determine the amount the Contractor should be paid for the current application period. Application periods are typically one month; however these periods may be extended when Contractor's efforts do not result in the billable completion of Work or storage of materials and equipment during the payment period.

1.2 *Lump Sum Worksheet* — calculates the total value for completed Work for which compensation is paid on a Lump Sum basis. The schedule of values included in this worksheet reflects a breakdown of lump sum Work items to which Contractor and Engineer have agreed, pursuant to Article 2 of the General Conditions. Costs for Stored Materials associated with lump sum items are included on this worksheet to calculate the total value for completed lump sum Work and associated Stored Materials. This total is exported to the Summary worksheet. Separate totals for Work Completed and for materials currently stored are also exported to the Summary worksheet for use in calculating the amount of retainage to be held for each.

1.3 *Unit Price Worksheet* — calculates the total value for completed Work for which compensation is paid on a Unit Price basis. The schedule of values included in this spreadsheet is typically a tabulation of Unit Price items from the Agreement. Costs for Stored Materials associated with unit price items are included in this worksheet to calculate the total value for completed Unit Price Work and associated Stored Materials. This total is exported to the Summary worksheet. Separate totals for Work Completed and for Materials Currently Stored are also exported to the Summary worksheet for use in calculating the amount of retainage to be held for each.

1.4 *Stored Materials Worksheet* — calculates the total value for materials and equipment that have been purchased and are being stored until they are incorporated into the Work. This worksheet adds materials and equipment to the worksheet as they are brought to the site and stored; such Stored Materials are then deducted from the Stored Materials worksheet total as they are incorporated into the Work, providing a running net value for the materials and equipment remaining in storage. The values of Stored Materials must be manually added to the Lump Sum or Unit Price line items. These do not automatically update when changes are made. The amount of materials remaining in storage is eligible for payment but must be tracked separately from Work completed since different retainage rates may apply to Work completed and Stored Materials.

3.0 INSTRUCTIONS FOR FILLING OUT THE PAYMENT APPLICATION FORM

3.1 Project-specific information is to be entered in the top portion (header) of the Summary worksheet. This same information will automatically be copied to the other worksheets to complete the headers on all other worksheets.

3.2 Outside of the header, data can be entered in non-shaded cells when the sheet is protected. Cells shaded light blue contain equations that will automatically transfer data from other cells or make calculations to complete the worksheet. Altering any of these cells can result in errors in the Application for Payment. It is recommended

that the worksheets be protected at all times unless alterations are deliberately being made to the Application for Payment form other than to enter data. See Paragraph 4.0 below for information on Protection of Worksheets.

3.3 Enter information regarding each item in the Lump Sum and/or Unit Price worksheets. For Lump Sum projects, each item should represent an item in the schedule of values prepared by the Contractor and approved by the Engineer/Owner, breaking down the Lump Sum amount into measurable components. For Unit Price contracts, use numbers from the Agreement as the schedule of values. Specific information on the data to be entered into each column may be seen by clicking on the header description for that column. Similar comments may be seen for cells in the "Totals" row that indicates how the number is calculated and where this number is exported to another part of the spreadsheet. See the Commentary for additional information.

3.4 The equations in the Summary worksheet use numbers imported from both the Lump Sum and Unit Price worksheets. Projects will typically either use the Lump Sum or the Unit Price worksheet, but some projects may use both. If one of the worksheets is not used, it should be hidden and not deleted. If it is deleted, Users will need to correct the equations in the Summary worksheet by unprotecting the worksheet and editing the equations. To hide a worksheet, right click on the worksheet tab at the bottom of the worksheet and select "Hide." To unhide a worksheet, right click on any worksheet tab and select "Unhide," and then select the worksheet to unhide and click "Okay." This same process may be used to hide these Guidelines for Use.

4.0 PROTECTION OF WORKSHEETS

4.1 The cells in this Workbook that create the forms or contain equations have been coded to "lock" the cells that should not be altered. It is recommended that the Workbook be Protected (cells locked) at all times unless it is necessary to add or delete rows. Directions for adding and deleting rows are provided in the next section. Passwords can be used to lock the Protect / Unprotect settings on spreadsheets, however the worksheets in this workbook do not require a password.

4.2 To unprotect a worksheet, click on the "Review" menu tab at the top of Excel, then click "Unprotect Sheet." To protect a worksheet, click on the "Review" menu tab at the top of Excel, then click "Protect Sheet." This will open a dialog box in which the User is allowed to select protection options. It is recommended that only the top two checkboxes for "Select Locked Cells" and "Select Unlocked Cells" be checked. This will reset the protection for the Worksheet.

5.0 ADDING AND DELETING ROWS

5.1 A limited number of blank rows are provided in the Lump Sum, Unit Price, and Stored Material worksheets. Additional rows may be added to these worksheets by the User. The first step in this process is to unprotect the worksheet as previously discussed. After the sheet is unprotected, move with caution to prevent inadvertently deleting any cells that contain equations. To insert a row, right click in the row heading at the left of the spreadsheet and select "Insert." A new row will be inserted at the location where the cursor was placed in the row heading. If more than one new row is desired, left click and drag the cursor to include the desired number of rows, right click in the selected row headings and then select "Insert." It is important that the line immediately above the "Totals" row not be included in the rows selected. Doing so will require that equations in the "Totals" row be adjusted. When rows are inserted, Excel automatically adjusts the equations to include the new rows, unless the row directly above the "Totals" row is also selected.

5.2 After new rows are inserted, it is important to copy a line from one of the original rows so correct formatting and equations are copied into each new row. To do this, select the row to be copied by clicking the cell in Column A and dragging the cursor to the last column in the table. Then select "Copy" from the menu or type CTRL+C to copy the cells. Excel will show that this row has been copied by showing a moving dashed line around the cells that are to be copied. Then select the new rows into which the information is to be copied as before and select Paste from the menu or type CTRL+V.

5.3 To delete an unused row, right click in the row heading on the left of the spreadsheet for the row to be deleted and select "Delete." The selected row will be deleted. If more than one row is to be deleted, left click and drag

the cursor to the desired number of rows to be deleted and then right click to open the menu and select "Delete." Unlike the admonition on adding new rows, it is okay to delete the row just above the "Totals" row.

5.4 After rows have been added or deleted, it is important reset the worksheet protection.

6.0 SAVING FILES

This file is provided as a Microsoft ® Excel Open XML workbook template (.xltx) to prevent this file from being inadvertently changed. When an application for payment is created for a specific project it should be saved as an Excel workbook (.xlxs) file. To do this, select Save As (F12), type in a new file name and select Excel Workbook (.xlxs) from the drop down Save As Type menu.

7.0 LICENSE AGREEMENT

- END OF SECTION -

SECTION 00 08 30
WORK CHANGE DIRECTIVE

Work Change Directive No.

Date of Issuance:		Effective Date:	
Owner:	Calaveras County Water District	Owner's Contract No.: CIP #11104	
Contractor:		Contractor's Project No.:	
Engineer:	Verdantas Inc.	Engineer's Project No.:	
Project:	Lake Tulloch Intertie	Contract Name:	

Contractor is directed to proceed promptly with the following change(s):

Description:

Attachments: *[List documents supporting change]*

Purpose for Work Change Directive:
Directive to proceed promptly with the Work described herein, prior to agreeing to changes on Contract Price and Contract Time, is issued due to: *[check one or both of the following]*

☐ Non-agreement on pricing of proposed change.

☐ Necessity to proceed for schedule or other Project reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price $ _____ [increase] [decrease].

Contract Time _____ days [increase] [decrease].

Basis of estimated change in Contract Price:

☐ Lump Sum ☐ Unit Price

☐ Cost of the Work ☐ Other

RECOMMENDED:	AUTHORIZED:	RECEIVED:
By: _____	By: _____	By: _____
Engineer (Authorized Signature)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: _____ Date: _____

Title: _____

SECTION 00 8 40
CHANGE ORDER FORM

Change Order No. _____

Date of Issuance:		Effective Date:	
Owner:	Calaveras County Water District	Owner's Contract No.: CIP #11104	
Contractor:		Contractor's Project No.:	
Engineer:	Verdantas Inc.	Engineer's Project No.:	
Project:	Lake Tulloch Intertie	Contract Name:	

The Contract is modified as follows upon execution of this Change Order:

Description:

Attachments: *[List documents supporting change]*

CHANGE IN CONTRACT PRICE	**CHANGE IN CONTRACT TIMES** *[note changes in Milestones if applicable]*
Original Contract Price: $ _____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: $ _____	[Increase] [Decrease] from previously approved Change Orders No. to No. ___: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order: $ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order: $ _____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order: $ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____	By: _____	By: _____
Engineer (if required)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency

By: _____ Date: _____

Title: _____

SECTION 01 10 00
SUMMARY

PART 1 - GENERAL

1.01 WORK UNDER CONTRACT

A. Furnish all labor, materials, equipment, and means to construct the project titled “Lake Tulloch Inter-tie” as shown on the Contract Drawings and described herein. Pricing shall be per the Contractor’s submitted Bid Form.

B. The Work to be performed under this Contract shall consist of furnishing all tools, equipment, materials, supplies, and manufactured articles and furnishing all labor, transportation, and services including fuel, power, water, and essential communications, and performing all Work, or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents.

C. The Contractor shall perform all work necessary to construct and deliver to Calaveras County Water District (District) a complete Project conforming to these Contract Documents. Details not shown or provided in the Contract Drawings and Specifications, such as shop drawings, but required for a complete and operational Project, shall be provided by the Contractor for District approval.

1.02 SUMMARY

A. The Project consists of the following work:

1. Construction of approximately 12,612 LF of 12” Class 350 DIP transmission main and a pressure reducing station.The pipeline includes connections to an existing 12” C900 PVC transmission main at O'Byrnes Ferry Rd, south of Cosmic Ct, an 12" C900 PVC transmission main at Sanguinetti Drive, and a 12" C900 PVC transmission main at the intersection of Conner Estates Drive and Calypso Beach Drive.

1.03 PROJECT LOCATION

A. The Project is located at the intersection of O'Byrnes Ferry Rd, south of Cosmic Ct, and runs along O'Byrnes Ferry Road to Sanguinetti Drive and Conner Estates Dr.

1.04 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work defined by the Contract Documents includes furnishing all labor, materials, equipment, services, testing and start-up, permits, temporary controls and construction facilities, and all general conditions, general requirements and incidentals required to complete the Work in its entirety as described in the Contract Documents. The Work includes demolition, site preparation, modifications of existing facilities and installation of new facilities as outlined in Bid Items 1 through 12 as outlined in Section 01 20 00 - Price and Payment Procedures.

1.05 SUPPLEMENTAL WORK REQUIREMENTS

A. Additional requirements that are brought to the Contractor’s attention are:

1. The District is not responsible for any local agency or utility permits required for temporary facilities during construction such as field office trailers and temporary electrical service for construction operations. Obtaining all such permits and the costs associated with such permits are the responsibility of the Contractor and shall be included in the Contractor’s Bid Price.
2. The 1972 amendments to the Federal Water Pollution Control Act established the National Pollutant Discharge Elimination System (NPDES) permit program to control discharges of pollutants from point sources. The 1987 amendments to the Clean Water Act (CWA) created a new section of the CWA devoted to storm water permitting (Section 402(p)). The EPA has delegated permitting authority to the State Water Resources Control Board (SWRCB). The SWRCB issues both general and individual permits. Construction activities are regulated under the NPDES General Permit for Storm Water Discharges Associated with Construction Activity (General Permit). The appropriate Regional Water Quality Control Board (RWQCB) enforces the General Permit. The Engineer will provide a Storm Water Pollution Prevention Plan (SWPPP) to be implemented by the contractor. All stormwater pollution prevention best management practices (BMPs) shall be in accordance with Calaveras County standards.

3. Contractor shall provide a fuel storage and refueling plan for supplying fuel to equipment and portable generators. Material Safety Data Sheets for all substances used shall be maintained on the job site as required by the Hazard Communication Law, General Industry Safety Orders, Sec. 5194. Hazardous waste products shall be placed in proper containers and transported from the job site to an authorized Hazardous Waste Collection Site. Trucks and equipment shall be refueled as required from deliveries by a fuel truck. No fuel staging on site shall be allowed.
4. Contractor shall cover all open excavations and re-open roadways at the end of each work day.
5. Other work such as Contractor obtained permits, material procurement, submittals, and Contractor-initiated survey and layout (beyond the survey mapping and control provided by District).
6. Site clean-up and demobilization to include removal of all temporary erosion controls, water bypass, site delineators, temporary facilities, equipment, material and construction waste from the project site.

1.06 WORK BY OTHERS

A. The District and others may perform activities within Project area while the Work is in progress. Schedule the Work with the District and others to minimize mutual interference. Cooperate with others to minimize interference and delays. When cooperation fails, submit recommendations and perform Work in coordination with work of others as directed.

1.07 UTILITY COORDINATION

A. Contractor is responsible to coordinate the field verification and location of all existing utilities, either known or unknown, with the respective utility owner. Contractor shall contact Underground Service Alert (USA) and obtain a ticket number in advance of commencing construction operations.

1.08 LANDS FOR CONSTRUCTION PURPOSES

A. Contractor shall be solely responsible for making any other arrangements for the use of lands by the Contractor, whether inclusive or exclusive of the areas designated for Contractor's use. This shall not be construed as a guarantee that all uses and lands will be available for the Contractor's proposed use.
B. The Contractor shall at no time restrict entrance or egress of adjacent Property Owner or District Personnel.
C. The Contractor shall be responsible for providing all off-site lands and staging areas required for construction at its expense and in accordance with all Federal, State, and local ordinances and codes.
D. The Contractor shall be responsible for maintaining safe conditions and emergency exiting for the District's and Contractor's personnel and adjacent Property Owners in all areas affected by the Contractor's work.

1.09 DOCUMENTING EXISTING CONDITIONS

A. Prior to commencement of the Work, the Contractor shall tour the site with the District and document existing conditions.
B. The Contractor shall examine and document photographically and in writing the condition of existing structures, equipment, improvements, and landscape planting on or adjacent to the site and video tape the project work site including offsite water, sewer, storm drain, telephone and electrical service alignment and access. This record shall serve as a basis for determination of subsequent damage due to the Contractor's operations and shall be signed by all parties making the tour.
C. Record existing conditions by making a minimum of 24 color photographs on digital electronic file and video as required. Contractor shall provide a copy of the digital electronic file to the District within 5 working days of site tour.

1.10 CONNECTIONS TO EXISTING FACILITIES

A. The District intends to continue operation of any existing utilities during all of the construction period. The Contractor shall plan and schedule its work to minimize impacting the District's continued operations and shall, at all times, maintain safe access for the District's operating personnel and equipment.

B. Contractor shall make all necessary connections to existing facilities, including structures and utilities. In each case, Contractor shall receive permission from the District prior to undertaking connections. Contractor shall protect facilities against deleterious substances and damage.

C. Connections to existing facilities which are in service shall be thoroughly planned in advance, and all required equipment, materials, and labor shall be on hand at the time of undertaking the connections. Work shall proceed continuously (around the clock) if necessary to complete connections in the minimum time.

D. Obtain District approval at least seven (7) days prior to the shutdown of service or operation of any existing utility.

E. Schedule utility service or operations shutdowns for periods of minimum use and at the District's convenience. Have all required material, equipment and workers on site prior to beginning any work involving a possible shutdown. Perform work as required to reduce shutdown time to the minimum. In some cases, this may require increased numbers of workers and/or premium time night or weekend work. The Contractor's bid shall include the cost associated with additional workers and/or premium time night or weekend work.

1.11 UNFAVORABLE CONSTRUCTION CONDITIONS

A. During unfavorable weather, wet ground, or other unsuitable construction conditions, Contractor shall confine his operations to work which will not be affected adversely by such conditions. No portion of the Work shall be constructed under conditions which would affect adversely the quality or efficiency thereof, unless special means or precautions are taken by Contractor to perform the Work in a proper and satisfactory manner.

1.12 CONSTRUCTION SEQUENCE

A. Construction Plan: Before start of construction, submit 3 copies of construction plan regarding access to Work, sequence of work, and utility outages for acceptance by District. After acceptance of plan, construction operations shall comply with accepted plan unless deviations are accepted by District in writing. Construction plan shall be in accordance with Section 01 14 00 - Work Restrictions.

B. Work shall be performed according to the schedule at the end of this paragraph. The Contractor is encouraged to expand upon, suggest modification and adjust the schedule to improve construction sequencing. Any revisions to the following schedule shall require District review and approval. Some sequencing may be subject to change as dictated by plant operations staff due to unforeseeable weather and water demand changes. Work shall tentatively be performed as follows:

1. Construction of 12" Class 350 Ductile Iron Pipe transmission main from Conner Estates Drive to Cosmic Ct.
    a. Throughout transmission main construction, remove debris, and asphalt as needed. Restore roadways to previous condition.
    b. Construct new 12" Ductile Iron Pipe transmission main from station 100+00 to station 212+88 and tie into existing 12" PVC at station 212+88. Construct new 12" Ductile Iron Pipe transmission main from station 400+00 to station 413+18 and tie into existing 12" AC at station 413+18.
    c. Install preassembled 8"x4" pressure reducing station vault at station 117+69.
2. Conduct pressure testing per District requirements and specifications.
3. Disinfect the new 12" Ductile Iron Pipe transmission main system and prepare for placing in service.

PART 2 - PRODUCTS - NOT USED
PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 14 00
WORK RESTRICTIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Work Sequence and Constraints described hereinafter are critical events in work sequence which are presented to underscore the importance of proper sequencing, scheduling, and coordination so that it is integrated with the required distribution system operation. The work sequence and constraints presented do not describe all items affecting the completion of the Work but are intended to describe important events necessary to minimize disruption of the existing facilities and to ensure compliance with water quality permit requirements.

1.02 SUBMITTALS

A. Specification Section 01 33 00 - Submittal Procedures.

B. The Contractor shall submit to the Construction Manager a detailed outage or bypass plan. The detailed plan shall meet the restrictions and conditions found in the Contract Documents. A System Outage Request (SOR) shall accompany each outage or bypass plan. The outage plans shall be coordinated with the construction schedule and shall meet the Contractor's planned method; the length of time required to complete said operation; any necessary temporary power, controls, instrumentation, or alarms required to maintain control, monitoring and alarms; and the manpower, plant, and equipment which the Contractor shall provide to ensure proper operation of affected facilities. In addition, the outage plan shall describe the Contractor's contingency plan that shall be initiated if its temporary facilities fail, or it becomes apparent that the time constraints described in the approved SOR cannot be met. The contingency plan shall conform to all specified outage requirements. All costs for preparing and implementing both the outage and contingency plans shall be borne by the Contractor.

C. The Contractor shall attend a meeting with the Construction Manager and District 1 day before the scheduled outage to review the SOR. Any changes to the SOR must be approved by the Construction Manager and the District prior to the outage.

1.03 ENCROACHMENT PERMIT AND COUNTY PERFORMANCE BOND

A. The Contractor is responsible for adhering to the conditions of the Calaveras County Encroachment Permit.

B. The Contractor is responsible for procuring the Calaveras County Performance Bond as described and required by the Calaveras County Encroachment Permit.

1.04 INTERRUPTION OF FACILITY OPERATIONS

A. The Work shall be bid, scheduled, and constructed in such a manner as to result in the least possible disruption to the operations and staff of the existing facility. The Contractor must fully understand all possible reductions on facility production and/or water quality as they plan the Work.

B. The Contractor shall note that not all valves and gates that may be used to isolate lines and facilities will completely seal. The Contractor shall allow for leakage in planning its work and may, with the District's concurrence, test certain valves and gates before work involving isolation is begun. Shutdown and isolation of existing facilities by closing existing valves/gates and operating electrical control panels, or as specifically provided for in the Contract Documents, will be performed by District personnel.

C. Prior to any shutdown or flow diversion all materials, fittings, supports, equipment, and tools shall be on the site and all necessary skilled labor scheduled prior to starting any connection work. The Contractor shall provide staff following shutdowns to monitor and ensure the proper operation of systems.

D. The Contractor shall program work so that service will be restored in the minimum possible time and shall cooperate with the District in reducing shutdowns of the utility to a minimum. No utility shall be disconnected without prior written approval from the utility owner and Construction Manager.

E. Contractor shall provide written notice to the District 7 days before the proposed shutdown. Facility shutdowns will be for a maximum of 8 hours. Contractor must allow 48 hours between the end of one shutdown and the start of another shutdown. Contractors SOR for facility shutdown shall at a minimum include the following:
   1. Date, start time, and end time of proposed shutdown.
   2. What work will be performed and where on site this will occur.
   3. Detailed work plan on how the facilities will be removed and replaced within the allotted shutdown time.
   4. Time, date, and onsite location for meeting 1 day before proposed shutdown.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Coordination and Project conditions.
B. Preconstruction meeting.
C. Progress meetings.
D. Closeout meeting.

1.02 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work to ensure efficient and orderly sequence of installation of interdependent construction elements.
B. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.

1.03 PRECONSTRUCTION MEETING

A. Engineer will schedule and preside over meeting after Notice to Proceed.
B. Attendance Required: Engineer, Owner, and Contractor.
C. Minimum Agenda:
    1. Submission of executed bonds and insurance certificates.
    2. Distribution of Contract Documents.
    3. Submission of schedule of values and Progress Schedule.
    4. Designation of personnel representing parties in Contract and Engineer.
    5. Communication procedures.
    6. Procedures and processing of requests for interpretations, field decisions, field orders, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
    7. Scheduling.
    8. Critical Work sequencing.
D. Engineer: Record minutes and distribute copies to participants within two (2) days after meeting, to District, Engineer, and Contractor, and those affected by decisions made.

1.04 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum weekly intervals.
B. Construction Manager will arrange meetings, prepare agenda with copies for participants, and preside over meetings.
C. Attendance Required: Engineer, Owner, Job superintendent, Construction manager, and major Subcontractors as appropriate to agenda topics for each meeting.
D. Minimum Agenda:
    1. Review minutes of previous meetings.
    2. Review of Work progress.
    3. Field observations, problems, and decisions.
    4. Identification of problems impeding planned progress.
    5. Review of submittal schedule and status of submittals.
    6. Review of off-Site fabrication and delivery schedules.
    7. Maintenance of Progress Schedule.
    8. Corrective measures to regain projected schedules.
    9. Planned progress during succeeding work period.
    10. Coordination of projected progress.
    11. Maintenance of quality and work standards.
    12. Effect of proposed changes on Progress Schedule and coordination.
    13. Other business relating to Work.
E. Construction Manager: Record minutes and distribute copies to participants within 2 days after meeting to Engineer and District, and those affected by decisions made.

1.05 CLOSEOUT MEETING

A. Schedule Project closeout meeting with sufficient time to prepare for requesting Substantial Completion. Preside over meeting and be responsible for minutes.
B. Attendance Required: Engineer, Owner, Construction manager, and Contractor.
C. Notify Engineer 5 days in advance of meeting date.
D. Minimum Agenda:
    1. Start-up of facilities and systems.
    2. Operations and maintenance manuals.
    3. Testing, adjusting, and balancing.
    4. System demonstration and observation.
    5. Operation and maintenance instructions for District's personnel.
    6. Contractor's inspection of Work.
    7. Contractor's preparation of an initial "punch list."
    8. Procedure to request Engineer inspection to determine date of Substantial Completion.
    9. Completion time for correcting deficiencies.
    10. Inspections by authorities having jurisdiction.
    11. Certificate of Occupancy and transfer of insurance responsibilities.
    12. Partial release of retainage.
    13. Final cleaning.
    14. Preparation for final inspection.
    15. Closeout Submittals:
        a. Project record documents.
        b. Operating and maintenance documents.
        c. Operating and maintenance materials.
        d. Affidavits.
    16. Final Application for Payment.
    17. Contractorractor's demobilization of Site.
    18. Maintenance.
E. Construction Manager: Record minutes and distribute copies to participants within 2 days after meeting to District, Engineer, and Contractor, and those affected by decisions made.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION-NOT USED

END OF SECTION

SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Submittals.
B. Quality assurance.
C. Bar chart schedules.
D. Review and evaluation.
E. Updating schedules.

1.02 SUBMITTALS

A. Within 7 days after date of District-Contractor Agreement, submit proposed preliminary critical path method bar chart schedule defining planned operations for the entire project.

1.03 BAR CHART SCHEDULES

A. Prepare bar chart Schedule in Microsoft Project using critical path method (CPM) and demonstrate completion of the project within the construction duration specified in the Contract Agreement – Contract Times.
B. The activity time schedule shall indicate the chronological sequence in which the Contractor proposes to carry out each aspect of the work, defined areas of work (phase number), the calendar dates on which the Contractor will begin the discrete elements of the work, and the contemplated completion dates for said salient elements. These discrete elements for this project shall include, but are not limited to:
    1. Work sequences, constraints, and milestones
    2. Subcontract work
    3. Procurement and delivery of materials
    4. Posting of “No Parking” signs
    5. Scheduling of equipment
    6. Excavation of trenches
    7. Placement of pipe and appurtenances
    8. Trench back fill and pavement restoration
    9. Planned water main outages
    10. Project closeout and cleanup
C. The Contractor shall contact the Engineer at least 48 hours in advance of any change in the work schedule. If the Contractor desires to make a major change in his method or operations after commencing construction, or if the activity time schedule fails to reflect the actual progress of the work, the Contractor shall submit a revised schedule to the Engineer in advance of beginning revised operations. If the Contractor’s schedule is rejected by the Engineer, the Contractor will have 3 days to make revisions and resubmit a revised schedule. Failure to comply may result in the suspension of all work.
D. Identification of the following:
    1. Horizontal time frame by year, month, and week.
    2. Duration, early start, and completion for each activity and subactivity.
    3. Critical activities and Project float.
    4. Subschedules to further define critical portions of Work.

1.04 REVIEW AND EVALUATION

A. After review, revise schedules incorporating results of review, and resubmit within 5 days.

1.05 UPDATING SCHEDULES

A. Maintain schedules to record actual start and finish dates of completed activities.
B. Indicate progress of each activity to date of revision, with projected completion date of each activity. Update schedules to depict current status of Work.

1.06 3-WEEK LOOK AHEAD SCHEDULE

A. On the last working day of every week the Contractor shall submit to the Engineer the Contractor's Plan of Activities for the next three weeks. The Plan of Activities shall describe the activity and location of the activity and include the activity number as provided in the CPM Schedule.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Definitions.
B. Submittal procedures.
C. Construction progress schedules.
D. Proposed product list.
E. Product data.
F. Use of electronic CAD files of Project Drawings.
G. Shop Drawings.
H. Samples.
I. Other submittals.
J. Design data.
K. Test reports.
L. Certificates.
M. Manufacturer's instructions.
N. Construction photographs.
O. Contractor review.
P. Manufacturer's field reports.
Q. Erection Drawings.

1.02 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.
B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.03 SUBMITTAL PROCEDURES

A. The project team will use and maintain a web-based database as the primary means of communication related to the Project's correspondence, submittals, requests for information (RFIs), advisory notices, and non-compliance issues. Correspondence from the Contractor shall be sent to the Construction Manager via the District's web-based database.
B. The Construction Manager and Contractor shall utilize District's web-based database for electronic submittal of all data and documents (unless specified otherwise by the Construction Manager) throughout the duration of the Contract. The web-based database will be made available to all Contractor's project personnel. The joint use of this system is to facilitate; electronic exchange of information, automation of key processes, and overall management of the Contract. This web-based database shall be the primary means of project information submission and management. When required by the Construction Manager, paper documents will also be required. In the event of discrepancy between the electronic version and paper documents, the paper documents will govern.
C. The Construction Manager will control the Contractor's access to the web-based database by allowing access and assigning user profiles to accepted Contractor personnel. User profiles will define levels of access into the system; determine assigned function-based authorizations (determines what can be seen) and user privileges (determines what they can do).
D. Transmit each submittal with Engineer-accepted form.
E. Assign each submittal a unique number. Clearly note the submittal numbers on the transmittal. Number each submittal with the identifying specification section, followed by a sequential number that represents the Contractor's assigned number of 01, 02, et cetera. Resubmittals shall be numbered by adding a dot (.) and 01, 02, 03, et cetera to the original submittal number, depending on the number of times the submittal has been resubmitted. For example: if Submittal 01 33 00-01 requires a resubmittal, the first resubmittal will bear the designation "01 33 00-01.01" and the second resubmittal will bear the designation "01 33 00-01.02" and so on.

F. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.
G. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.
H. Schedule submittals to expedite Project, and submit electronic submittals via email as PDF electronic files. Coordinate submission of related items.
I. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.
J. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.
K. Allow space on submittals for Contractor and Engineer review stamps.
L. When revised for resubmission, identify changes made since previous submission.
M. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
N. Submittals not requested will not be recognized nor processed.
O. Incomplete Submittals: Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Engineer.

1.04 CONSTRUCTION PROGRESS SCHEDULES

A. Comply with Section 01 32 16 - Construction Progress Schedule.

1.05 PROPOSED PRODUCT LIST

A. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.06 PRODUCT DATA

A. Product Data: Action Submittal: Submit to Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.
B. Submit electronic submittals via email as PDF electronic files.
C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.07 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.
B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:
    1. Use of files is solely at receiver's risk. Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
    2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
    3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.

4. Receiver shall not hold Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
5. Receiver shall understand that even though Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
6. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

1.08 SHOP DRAWINGS

A. Shop Drawings: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.
   1. Include signed and sealed calculations to support design.
   2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
   3. Make revisions and provide additional information when required by authorities having jurisdiction.
D. Submit electronic submittals via email as PDF electronic files.
E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.09 SAMPLES

A. Samples: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
B. Samples for Selection as Specified in Product Sections:
   1. Submit to Engineer for aesthetic, color, and finish selection.
   2. Submit Samples of finishes, textures, and patterns for Engineer selection.
C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.
D. Include identification on each Sample, with full Project information.
E. Submit number of Samples specified in individual Specification Sections; Engineer will retain 1 Sample.
F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.
G. Samples will not be used for testing purposes unless specifically stated in Specification Section.
H. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 01 70 00 - Execution and Closeout Requirements.

1.10 OTHER SUBMITTALS

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

1.11 DESIGN DATA

A. Informational Submittal: Submit data for Engineer's knowledge as Contract administrator or for District.
B. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.12 TEST REPORTS

A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for District.
B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.13 CERTIFICATES

A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Engineer, in quantities specified for Product Data.
B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

1.14 MANUFACTURER'S INSTRUCTIONS

A. Informational Submittal: Submit manufacturer's installation instructions for Engineer's knowledge as Contract administrator or for District.
B. Submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing to Engineer in quantities specified for Product Data.
C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.15 CONSTRUCTION PHOTOGRAPHS

A. Submit pre-construction photographs and videos of job site.
B. Provide photographs and videos of job site and construction throughout progress of Work.
C. Submit photographs with applications for payment for Work completed.
D. Digital Images: Deliver complete set of digital image electronic files on USB-DriveCD-ROM to District with Project record documents. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as sensor, uncropped.
    1. Digital Images: Uncompressed TIFF format, produced by digital camera with minimum sensor size of 10.0 megapixels, and image resolution of not less than 1024 x 768 pixels.
    2. Date and Time: Include date and time in filename for each image.

1.16 CONTRACTOR REVIEW

A. Review for compliance with Contract Documents and approve submittals before transmitting to District.
B. Contractor: Responsible for:
    1. Determination and verification of materials including manufacturer's catalog numbers.
    2. Determination and verification of field measurements and field construction criteria.
    3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
    4. Determination of accuracy and completeness of dimensions and quantities.
    5. Confirmation and coordination of dimensions and field conditions at Site.
    6. Construction means, techniques, sequences, and procedures.
    7. Safety precautions.
    8. Coordination and performance of Work of all trades.
C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.
D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Engineer.
E. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for District.
F. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.17 ENGINEER REVIEW

A. Do not make "mass submittals" to Engineer. "Mass submittals" are defined as six or more submittals or items in one day or 15 or more submittals or items in one week. If "mass submittals" are received, Engineer's review time stated above will be extended as necessary to perform proper review. Engineer will review "mass submittals" based on priority determined by Engineer after consultation with District and Contractor.

B. Informational submittals and other similar data are for Engineer's information, do not require Engineer's responsive action, and will not be reviewed or returned with comment.
C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.
D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order, field order, or work change directive.
E. The contractor shall provide complete submittals, and avoid providing excessive addenda to submittals after submitting to the Engineer.
    1. Districtmay withhold monies due to Contractor to cover additional costs beyond the second submittal review.
    2. If the Contractor determines they have sent an incomplete submittal, they will notify the Engineer, and resubmit once completed.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

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SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Quality control.
B. Tolerances.
C. References.
D. Labeling.
E. Testing and inspection services.
F. Manufacturers' field services.
G. COVID-19 safety requirements

1.02 QUALITY CONTROL

A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.
B. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
C. Perform Work using persons qualified to produce required and specified quality.
D. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
C. Adjust products to appropriate dimensions; position before securing products in place.

1.04 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.
B. Conform to reference standard by date of issue current as of except where specific date is established by code.
C. Obtain copies of standards and maintain on Site when required by product Specification Sections.
D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Engineer shall be altered from Contract Documents by mention or inference in reference documents.

1.05 LABELING

A. Attach label from agency approved by authorities having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label:
    1. Model number.
    2. Serial number.
    3. Performance characteristics.
C. Manufacturer's Nameplates, Trademarks, Logos, and Other Identifying Marks on Products: Not allowed on surfaces exposed to view in public areas, interior or exterior.

1.06 TESTING AND INSPECTION SERVICES

A. District will employ and pay for specified services of an independent firm to perform testing and inspection.
B. The Contractor may employ their own firm to perform testing for quality assurance at the Contractor's expense.
    1. The Contractor shall include the cost for such testing in the bid item for which testing is required.
    2. Where discrepancies exist between the Contractor's and the District's firm, the District's testing shall govern acceptance of work.
C. Testing and inspections may include, but are not limited to:
    1. Compaction testing - to be provided by the District.
    2. Pressure Testing
    3. Hydrostatic Testing

1.07 MANUFACTURER'S FIELD SERVICES

A. When specified in individual Specification Sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe Site conditions, conditions of surfaces and installation, quality of workmanship, startup of equipment, commissioning, and performance testing as applicable, and to initiate instructions when necessary.
B. Report observations and Site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.
C. Refer to Section 01 33 00 - Submittal Procedures, "Manufacturer's Field Reports" Article.

1.08 PROJECT SURVEY REQUIREMENTS

A. As part of the bid price for the construction of the improvements the Contractor shall provide and be responsible for the layout of all work specified in the Contract Documents. The Contractor shall provide all necessary surveys and positioning for the construction of all components at the proper alignment, elevations, grades, and positions, as indicated to the Contract Drawings and as required for the proper operation and function.
B. The District shall provide one set of Construction Staking.
C. The Contractor shall lay out all work, including structures and pipelines, and shall be solely responsible for executing the Work in accordance with the lines and grades indicated.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary Utilities:
   1. Temporary electricity.
   2. Temporary lighting for construction purposes.
   3. Temporary heating.
   4. Temporary cooling.
   5. Temporary ventilation.
   6. Communication services.
   7. Temporary water service.
   8. Temporary sanitary facilities.

B. Construction Facilities:
   1. Field offices and sheds.
   2. Vehicular access.
   3. Parking.
   4. Progress cleaning and waste removal.
   5. Traffic regulation.
   6. Fire-prevention facilities.

C. Temporary Controls:
   1. Security.
   2. Water control.
   3. Dust control.
   4. Erosion and sediment control.
   5. Noise control.
   6. Pest and rodent control.
   7. Pollution control.

D. Removal of utilities, facilities, and controls.

1.02 REFERENCES

A. ASTM International:
   1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   2. ASTM E90 E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
   3. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

1.03 TEMPORARY FACILITIES UNDER CONSTRUCTION MANAGEMENT AGREEMENT

A. Contractor: Coordinate provisions with District Construction Manager and provide the following items as necessary for execution of the Work including associated costs:
   1. Construction aids.
   2. Temporary fire protection, dust control, erosion and sediment control, water control, noise control, and other necessary temporary controls.
   3. Temporary barriers, barricades, and similar devices as necessary for safety and protection of construction personnel and public.
   4. Temporary tree and plant protection.
   5. Electrical service required. in addition to temporary service and distribution provided by District.
   6. Temporary telephone and internet service.

1.04 TEMPORARY ELECTRICITY

A. District will pay cost of energy used for the field offices located at Copper Cove Water Treatment Plant (WTP) site. Exercise measures to conserve energy. Use District's existing power service. Where use of power affects operations of the water treatment plant, the Contractor shall furnish at the Contractor's expense, means of providing electricity necessary for completion of the Work.

B. Provide temporary electric feeder from existing building electrical service at location as directed by District. Do not disrupt District's use of service.

1.05 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Contractor shall be responsible for furnishing lighting for the duration of construction.

1.06 TEMPORARY HEATING

A. Contractor shall be responsible for providing temporary heating during construction, as needed.

1.07 TEMPORARY COOLING

A. Contractor shall be responsible for providing temporary cooling during construction, as needed.

1.08 TEMPORARY VENTILATION

A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.09 COMMUNICATION SERVICES

A. Contractor shall be responsible for furnishing and maintaining Contractor’s telephone and internet services.

1.10 TEMPORARY WATER SERVICE

A. Contractor will be required to pull construction water from a temporary fire hydrant water meter in the proximity of the project. There will be no charge for consumptive water use, but Contractor will be required to provide a deposit for temporary meter and will be responsible for its daily use and any physical damage. Exercise measures to conserve energy. Use District's existing water system, extended and supplemented with temporary devices as needed to maintain specified conditions for construction operations.

B. Extend branch piping with outlets located so that water is available by hoses with threaded connections. Provide temporary pipe insulation and heat tape to prevent freezing.

1.11 TEMPORARY SANITARY FACILITIES

A. Contractor shall be responsible for furnishing and maintaining temporary sanitary facilities.

1.12 FIELD OFFICES AND SHEDS

A. Mandatory field offices shall be located at Copper Cove WTP site at location designated by District.

1.13 VEHICULAR ACCESS

A. Use existing on-Site roads for construction traffic.
B. Contractor shall not restrict vehicular access to the District.
C. Maintain access to the adjacent properties at all times.
D. Maintain traffic per the approved Traffic Control plans and permit requirements.
E. Lane closures on Sanguinetti Dr. shall be coordinated with the private property owner.

1.14 PARKING

A. Contractor shall coordinate parking with the District so as to not interfere with Water Treatment Plant.

B. Contractor shall coordinate parking restrictions for work on Sanguinetti Dr. with the Homeowners association through the District.

1.15 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.

B. Collect and remove waste materials, debris, and rubbish from Site daily and dispose of off-Site. Comply with Section 01 74 19 - Construction Waste Management and Disposal.

1.16 TRAFFIC REGULATION

A. Signs, Signals, and Devices:
   1. Post-Mounted and Wall-Mounted Traffic Control and Informational Signs: As approved by authorities having jurisdiction.

B. Traffic Signs and Signals:
   1. Provide signs at approaches to Site and on Site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction.

C. Removal:

1. Remove equipment and devices when no longer needed.
2. Repair damage caused by installation.

1.17 FIRE-PREVENTION FACILITIES

A. Prohibit smoking within buildings. Designate area on Site where smoking is permitted. Provide approved ashtrays in designated smoking areas.
B. Cut down grasses on the construction site.
C. Establish fire watch for cutting, welding, and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
D. Hot Work - For the purpose of this section "Hot Work" means any riveting, welding, flame cutting or toher fire-or spark-producing operation, as well as any Work involving burning, welding, grinding, or similar operations having the potential to cause sparks or overheating.
    1. Any Work performed by the Contractor that involves Hot Work requires the Contractor to have a Fire Prevention and Hot Work Procedures plan in place prior to performing the Work. The Contractor's plan shall be consistent with Cal/OSHA requirements. The plan shall address potential fire hazards, potential ignition sources and their control, and the types of fire protection equipment to be used to control a fire. The Contractor shall include its Fire Prevention and Hot Work Procedures plan in their submitted Safety Plan.
    2. All Work performed under an issued Hot Work permit will require the Contractor to assign a specific person to ensure that errant sparks do not cause a fire or explosion. This person will be responsible for observing the Work and Work area, will be trained and equipped to respond to any start of small fires, and can call for help in an emergency should a fire start. This person shall also remain at the site for the entire duration of time that Hot Work is being performed, shall not be assigned to any other duties, and shall be required to remain at the Work location for at least thirty (30) minutes beyond the completion of Hot Work.
    3. Hot Work permits that have been issued will be cancelled under any of the following conditions:
        a. The operation has been completed.
        b. An unsafe condition develops during the operation causing stoppage of the work.
        c. An inactive period of more than two (2) hours elapses.
        d. The end of the work shift.

1.18 SECURITY

A. Security Program:
    1. Protect Work on existing premises and District's operations from theft, vandalism, and unauthorized entry.
    2. Initiate program in coordination with District at Project mobilization.
    3. Maintain program throughout construction period until District's acceptance precludes need for Contractor's security.

1.19 WATER CONTROL

A. Grade Site to drain. Maintain excavations free of water. Provide, operate, and maintain necessary pumping equipment.
B. Protect Site from puddles or running water. Provide water barriers as required to protect Site from soil erosion.

1.20 DUST CONTROL

A. Execute Work by methods that minimize raising dust from construction operations.
B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into District-occupied areas. The off-site migration of dust and particulates past District's property line is not permissible under County ordinances.

1.21 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.
B. Minimize surface area of bare soil exposed at one time.

C. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow.
D. Construct fill and waste areas by selective placement to avoid erosive surface silts and clays.
E. Periodically inspect earthwork to detect evidence of erosion and sedimentation. Promptly apply corrective measures.

1.22 NOISE CONTROL

A. Provide methods, means, and facilities to minimize noise produced by construction operations.
B. Daytime and overnight construction noise levels may not exceed limits established by County ordinances.

1.23 PEST AND RODENT CONTROL

A. Provide methods, means, and facilities to prevent pests and insects from damaging the Work and entering facility.
B. Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

1.24 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.

1.25 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials before Substantial Completion inspection.
B. Clean and repair damage caused by installation or use of temporary Work.
C. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Closeout procedures.
B. Project record documents.
C. Product warranties and product bonds.
D. Examination.
E. Execution.
F. Final cleaning.
G. Restoration

1.02 CLOSEOUT PROCEDURES

A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
   1. Submit maintenance manuals, Project record documents, digital images of construction photographs, and other similar final record data in compliance with this Section.
   2. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
   3. Deliver tools, spare parts, extra stocks of material, and similar physical items to District.
   4. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
   5. Perform final cleaning according to this Section.

B. Substantial Completion Inspection:
   1. When Contractor considers Work to be substantially complete, submit to Engineer:
      a. Written certificate that Work, or designated portion, is substantially complete.
      b. List of items to be completed or corrected (initial punch list).
   2. Within 7 days after receipt of request for Substantial Completion, Engineer and District will make inspection to determine whether Work or designated portion is substantially complete.
   3. Should Engineer determine that Work is not substantially complete:
      a. Engineer will promptly notify Contractor in writing, stating reasons for its opinion.
      b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Engineer.
      c. Engineer will reinspect Work.
      d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer inspection.
   4. When Engineer finds that Work is substantially complete, Engineer will:
      a. Prepare Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Engineer and District (final punch list).
      b. Submit Certificate to District and Contractor for their written acceptance of responsibilities assigned to them in Certificate.
   5. After Work is substantially complete, Contractor shall:
      a. Allow District occupancy of Project under provisions stated in Certificate of Substantial Completion.
      b. Complete Work listed for completion or correction within time period stipulated.

C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.
   1. When Contractor considers Work to be complete, submit written certification that:
      a. Contract Documents have been reviewed.
      b. Work has been examined for compliance with Contract Documents.

c. Work has been completed according to Contract Documents.
d. Work is completed and ready for final inspection.

2. Submittals: Submit following:
   a. Final punch list indicating all items have been completed or corrected.
   b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
   c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
   d. Accounting statement for final changes to Contract Sum.
   e. Contractor's affidavit of payment of debts and claims.
   f. Contractor affidavit of release of liens.
   g. Consent of surety to final payment.
3. Perform final cleaning for Contractor-soiled areas according to this Section.

D. Final Completion Inspection:
1. Within 7 days after receipt of request for final inspection, Engineer will make inspection to determine whether Work or designated portion is complete.
2. Should Engineer consider Work to be incomplete or defective:
   a. Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
   b. Contractor shall remedy stated deficiencies and send second written request to Engineer that Work is complete.
   c. Engineer will reinspect Work.
   d. Redo and Inspection of Deficient Work: Repeated until Work passes Engineer's inspection.

1.03 PROJECT RECORD DOCUMENTS

A. Maintain on Site one set of the following record documents; record actual revisions to the Work:
1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed Shop Drawings, product data, and Samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by District.
C. Store record documents separate from documents used for construction.
D. Record information concurrent with construction progress, not less than weekly.
E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
1. Manufacturer's name and product model and number.
2. Product substitutions or alternates used.
3. Changes made by Addenda and modifications.

F. Record Drawings: Legibly mark each item to record actual construction as follows:
1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
2. Include locations of concealed elements of the Work.
3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
5. Identify and locate existing buried or concealed items encountered during Project.
6. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
7. Field changes of dimension and detail.
8. Details not on original Contract Drawings.

G. Submit marked-up paper copy documents to Engineer with claim for final Application for Payment.
H. Submit PDF electronic files of marked-up documents to Engineer with claim for final Application for Payment. Submit PDF electronic files of marked-up documents to Engineer with claim for final Application for Payment.

1.04 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed by responsible Subcontractors, suppliers, and manufacturers within 10 days after completion of applicable item of Work.
B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.
C. Verify documents are in proper form, contain full information, and are notarized.
D. Co-execute submittals when required.
E. Include table of contents and assemble in PDF electronic file.
F. Submit prior to final Application for Payment.
G. Time of Submittals:
    1. For equipment or component parts of equipment put into service during construction with District's permission, submit documents within 10 days after acceptance.
    2. Make other submittals within 10 days after date of Substantial Completion, prior to final Application for Payment.
    3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within 10 days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
C. Examine and verify specific conditions described in individual Specification Sections.
D. Verify that utility services are available with correct characteristics and in correct locations.

3.02 EXECUTION

A. Comply with manufacturer's installation instructions, performing each step in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.

3.03 FINAL CLEANING

A. Execute final cleaning prior to final Project assessment.
    1. Employ experienced personnel or professional cleaning firm.
B. Clean Site: sweep paved areas, rake clean landscaped surfaces.
C. Remove waste and surplus materials, rubbish, and construction facilities from Site.
D. Flush pipe as thoroughly as available water sources will permit.
E. When pipe contains dirt that cannot be removed by flushing, swab pipe interiors with solution containing not less than 500 parts per million of chlorine until clean.
F. Disinfect pipe per Section 33 01 10 - Disinfection of Water Utility Piping Systems and in accordance with AWWA C651. Maintain an air gap or isolation plates, until after disinfection and passing bacteriological tests and prior to connecting to the active system.
G. Flush pipes with potable water until chlorine residual is less than 0.6 parts per million before pipes are put into service.

3.04 RESTORATION

A. The Contractor shall restore and/or replace paving, curbing, sidewalks, gutters, shrubbery, fences, sod, and other distrubed surfaces and structures to a condition equal to that before the Work began and to the satisfaction of the Engineer and shall furnish all labor and materials incidental thereto.

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Construction waste management plan.
   2. Temporary discharge permit.

1.02 PLAN REQUIREMENTS

A. Develop and implement construction waste management place as approved by Engineer.
B. Intent:
   1. Divert construction, demolition, and land-clearing debris from landfill disposal.
   2. Redirect recyclable material back to manufacturing process.
   3. Generate cost savings or increase minimal additional cost to Project for waste disposal.

1.03 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures contains requirements for submittals.
B. Construction Waste Management Plan: Submit construction waste management plan describing methods and procedures for implementation and monitoring compliance including the following:
   1. Transportation company hauling construction waste to waste processing facilities.
   2. Recycling and adaptive reuse processing facilities and waste type each facility will accept.
   3. Construction waste materials anticipated for recycling and adaptive reuse.
   4. On-Site sorting and Site storage methods.
C. Temporary discharge permit, as needed for construction.

1.04 CONSTRUCTION WASTE MANAGEMENT PLAN

A. Implement construction waste management plan at start of construction.
B. Review construction waste management plan at preconstruction meeting and progress meetings specified in Section 01 30 00 - Administrative Requirements.
C. Distribute approved construction waste management plan to Subcontractors and others affected by plan requirements.
D. Oversee plan implementation, instruct construction personnel for plan compliance, and document plan results.
E. Purchase products to prevent waste by:
   1. Ensuring correct quantity of each material is delivered to Site.
   2. Choosing products with minimal or no packaging.
   3. Requiring suppliers to use returnable pallets or containers.
   4. Requiring suppliers to take or buy back rejected or unused items.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 CONSTRUCTION WASTE COLLECTION

A. All existing material and equipment to be removed as indicated on the Contract Documents or as directed by the Engineer shall become the property of the Contractor and shall be properly disposed of at the Contractor's expense.
B. Collect construction waste materials in marked bins or containers and arrange for transportation to recycling centers or adaptive salvage and reuse processing facilities.
C. Maintain recycling and adaptive reuse storage and collection area in orderly arrangement with materials separated to eliminate co-mingling of materials required to be delivered separately to waste processing facility.

3.02 CONSTRUCTION WASTE DISPOSAL

A. Deliver construction waste to waste processing facilities. Obtain receipt for deliveries.
B. Dispose of construction waste not capable of being recycled or adaptively reused by delivery to landfill, incinerator, or other legal disposal facility. Obtain receipt for deliveries.

END OF SECTION

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SECTION 01 75 00
SYSTEM START-UP

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Procedures and actions, required of the Contractor, which are necessary to achieve and demonstrate Substantial Completion.
   2. Requirements for Substantial Completion Submittals.
   3. Phased construction requirements.

1.02 DEFINITIONS

A. Project Classified System (PCS): A defined part of the Project, consisting of an arrangement of items, such as equipment, structures, components, piping, wiring, materials, or incidentals, so related or connected to form an identifiable, unified, functional, operational, safe, and independent system.

B. Pre-Demonstration Period: The period of time, of unspecified duration after initial construction and installation activities during which the Contractor, with assistance from manufacturer's representatives, performs in the following sequence:
   1. Finishing type construction work to ensure the Project or each PCS has reached a state of Substantial Completion.
   2. Equipment start-up.
   3. Personnel training.

C. Demonstration Period: A period of time, of specified duration, following the Pre-Demonstration Period, during which the Contractor initiates process flow through the Project Classified System and starts up and operates the Project Classified System without exceeding specified downtime limitations, to prove the functional integrity of the mechanical and electrical equipment and components and the control interfaces of the respective equipment and components comprising the Project Classified System as evidence of Substantial Completion.

1.03 SUBMITTALS

A. Submit in the chronological order listed below prior to the completion of the Pre-Demonstration Period.
   1. Master operation and maintenance training schedule:
      a. Submit 18 days (minimum) prior to first training session for District's personnel.
      b. Schedule to include:
         1) Target date and time for District witnessing of each system initial start-up.
         2) Target date and time for Operation and Maintenance training for each system, both field and classroom.
         3) Target date for initiation of Demonstration Period.
      c. Submit for review and approval by District.
      d. Include holidays observed by District.
      e. Attend a schedule planning and coordination meeting 30 calendar days prior to first anticipated training session.
         1) Provide a status report and schedule-to-complete for requirements prerequisite to manufacturer's training.
         2) Identify initial target dates for individual manufacturer's training sessions.
      f. District reserves the right to insist on a minimum 7 days notice of rescheduled training session not conducted on master schedule target date for any reason.
      g. Schedule to be resubmitted until approved.
   2. Substantial Completion Submittal:
      a. File Contractor's Notice of Substantial Completion and Request for Inspection.
      b. Approved Operation and Maintenance manuals received by Engineer minimum 1 week prior to scheduled training.

c. Written request for District to witness each system pre-demonstration start-up. Request to be received by District minimum 1 week before scheduled training of District's personnel on that system.
d. Equipment installation and pre-demonstration start-up certifications.
e. Letter verifying completion of all pre-demonstration start-up activities including receipt of all specified items from manufacturers or suppliers as final item prior to initiation of Demonstration Period.

1.04 SEQUENCING AND SCHEDULING

A. Contractor shall meet with District and Engineer to discuss sequencing and scheduling at least one week prior to start-up.

1.05 COST OF START-UP

A. Contractor to pay all costs associated with System start-up.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 GENERAL

A. Facility Start-up Divided into Two Periods:
1. Pre-Demonstration Period including:
a. Completion of construction work to bring Project to a state of Substantial Completion.
b. Start-up of Equipment.
c. Completion of the filing of all required submittals.
d. Filing of Contractor's Notice of Substantial Completion and Request for Inspection.
2. Demonstration Period including:
a. Demonstration of functional integrity of facility or PCS.

3.02 PRE-DEMONSTRATION PERIOD

A. Completion of Construction Work:
1. Complete the work to bring the PCS to a state of substantial completion.
B. Equipment Start-up:
1. Requirements for individual items of equipment are included within various Divisions of these Specifications.
2. Prepare the equipment so it will operate properly and safely and be ready to demonstrate functional integrity during the Demonstration Period.
3. Perform Equipment Start-up to extent possible without introducing product flow.
4. Test pumps and similar equipment requiring a fluid, using clean water supplied at Contractor's expense.
5. Dispose of water used for Equipment Start-up.
6. Introduce product flow to complete Equipment Start-up for the following equipment:
a. Other equipment as necessary to complete start-up procedures
7. Procedures include but are not necessarily limited to the following:
a. Test or check and correct deficiencies of:
1) Power, control, and monitoring circuits for continuity prior to connection to power source.
2) Voltage of all circuits.
3) Phase sequence.
4) Vacuum and pressure of all closed systems.
5) Lubrication.
6) Valve orientation and position status for manual operating mode.
7) All equipment: Proper connections, alignment, calibration and adjustment.
b. Calibrate all safety equipment.
c. Manually rotate or move moving parts to assure freedom of movement.
d. "Bump" start electric motors to verify proper rotation.
e. Perform other tests, checks, and activities required to make the equipment ready for Demonstration Period.

8. Obtain certifications, without restrictions or qualifications, and deliver to Engineer:
    a. Manufacturer's equipment installation check letters.
    b. Instrumentation Supplier's Instrumentation Installation Certificate.

C. Complete the filing of all required submittals:
1. Shop Drawings.
2. Operation and Maintenance Manuals.
3. Training material.

D. Filing of Contractor's Notice of Substantial Completion and Request for Inspection of Project or PCS:
1. Notify Engineer when the following have been completed:
    a. Construction work (brought to state of Substantial Completion).
    b. Equipment Start-up.
    c. Submittal of required documents.
2. Engineer will review required submittals for completeness within 5 calendar days of Contractor's notice. If complete, Engineer will complete inspection of the Work, within 10 calendar days of Contractor's notice.
3. Engineer will inform Contractor in writing of the status of the Work reviewed, within 14 calendar days of Contractor's notice.
    a. Work determined not meeting state of Substantial Completion:
        1) Contractor: Correct deficiencies noted or submit plan of action for correction within 5 days of Engineer's determination.
        2) Engineer: Re-inspect work within 5 days of Contractor's notice of correction of deficiencies.
        3) Reinspection costs incurred by Engineer will be billed to District who will deduct them from final payment due Contractor.
    b. Work determined to be in state of tentative Substantial Completion: Engineer to prepare tentative "Engineer's Certificate of Substantial Completion."
    c. Engineer's Certificate of Substantial Completion:
        1) Certificate tentatively issued subject to successful Demonstration of functional integrity.
        2) Issued for Project as a whole or for one or more PCS.
        3) Issued subject to completion or correction of items cited in the certificate (punch list).
        4) Issued with responsibilities of District and Contractor cited.
        5) Executed by Engineer.
        6) Accepted by District.
        7) Accepted by Contractor.
    d. Upon successful completion of Demonstration Period, Engineer will endorse certificate attesting to the successful demonstration, and citing the hour and date of ending the successful Demonstration Period of functional integrity as the effective date of Substantial Completion.

3.03 DEMONSTRATION PERIOD

A. General:
1. Demonstrate the functional integrity of the mechanical, electrical, and control interfaces of the respective equipment and components comprising the facility PCS as evidence of Substantial Completion.
2. Duration of Demonstration Period: 72 consecutive hours.
3. If, during the Demonstration Period, the aggregate amount of time used for repair, alteration, or unscheduled adjustments to any equipment or systems that renders the affected equipment or system inoperative exceed 10 percent of the Demonstration Period, the demonstration of functional integrity will be deemed to have failed. In the event of failure, a new Demonstration Period will recommence after correction of the cause of failure. The new

Demonstration Period shall have the same requirements and duration as the Demonstration Period previously conducted.

4. Conduct the demonstration of functional integrity under full operational conditions.
5. District will provide operational personnel to provide process decisions affecting plant performance. District's assistance will be available only for process decisions. Contractor will perform all other functions including but not limited to equipment operation and maintenance until successful completion of the Demonstration Period.
6. District reserves the right to simulate operational variables, equipment failures, routine maintenance scenarios, etc., to verify the functional integrity of automatic and manual backup systems and alternate operating modes.
7. Time of beginning and ending any Demonstration Period shall be agreed upon by Contractor, District, and Engineer in advance of initiating Demonstration Period.
8. Throughout the Demonstration Period, provide knowledgeable personnel to answer District's questions, provide final field instruction on select systems and to respond to any system problems or failures which may occur.
9. Provide all labor, supervision, utilities, chemicals, maintenance, equipment, vehicles, and any other item necessary to operate and demonstrate all systems being demonstrated.

END OF SECTION

SECTION 01 78 23
OPERATION AND MAINTENANCE MANUALS

PART 1 - GENERAL

1.01 GENERAL

A. Operation and maintenance information shall be supplied for all equipment. Operation and maintenance manuals shall include the following:
   1. Equipment function, normal operating characteristics, and limiting conditions.
   2. Assembly, installation, alignment, adjustment, and checking instructions.
   3. Operating instructions for startup, routine and normal operation, regulation and control, shutdown, and emergency conditions.
   4. Lubrication and maintenance instructions.
   5. Guide to troubleshooting.
   6. Parts lists and predicted life of parts subject to wear.
   7. Outline, cross section, and assembly drawings; engineering data; and wiring diagrams.
   8. Test data and performance curves, where applicable.
   9. List of vendors for service and replacement parts purchase.

B. The operation and maintenance manuals shall be in addition to any instructions or parts lists packed with or attached to the equipment when delivered, or which may be required by Contractor.

C. 3 preliminary copies of operation and maintenance manuals shall be submitted to the District no less than 90 days prior to the Contractor's proposed installation date. Preliminary copies shall be in hardcopy format.

D. 4 final hardcopies and 4 electronic copies of operation and maintenance manuals shall be delivered to District no more than 30 days after review comments are received.

E. Installation of equipment will not be considered complete until all required manuals and data have been received.

1.02 HARDCOPY OPERATION AND MAINTENANCE MANUALS

A. Hardcopies for preliminary and final manuals shall be bound in three-ring binders bearing suitable identification. All manuals and other data shall be printed on heavy, first quality 8-1/2 x 11-inch paper, with standard three-hole punching. Drawings and diagrams shall be reduced to 8-1/2 x 11 inches or 11 x 17 inches. Where reduction is not practicable, larger drawings shall be folded separately and placed in envelopes, which are bound into the manuals. Each envelope shall be suitably identified on the outside. Each volume containing data for three or more items of equipment shall include a table of contents and index tabs. The final hardcopy of each manual shall be prepared and delivered in substantial, permanent, three-ring or three-post binders with a table of contents and suitable index tabs.

1.03 ELECTRONIC OPERATION AND MAINTENANCE MANUALS

A. Each electronic copy shall be delivered on a unique USB-Drive CD-ROM in Adobe Acrobat's Portable Document Format (PDF). The PDF file(s) shall be fully indexed using the Table of Contents, searchable with thumbnails generated.

B. File names shall use the "eight dot three" convention (XXXXXX_YY.pdf), where X is the six digit number corresponding to the specification section, and YY is a two digit number set in sequential order when there is more than one PDF document (more than one O&M manual) per specification section. The initial filename for the O&M submittal will be provided with the request for final O&M manuals.

C. Scanned images must be at a readable resolution. For most documents, they should be scanned at 300 dots per inch (dpi). Optical Character Recognition (OCR) capture must be performed on these images. OCR settings shall be performed with the "original image with hidden text" option in Adobe Acrobat Exchange.

D. One PDF document (PDF file) shall be created for each equipment service manual. The entire manual shall be converted to a single .PDF file via scanning or other method of conversion. Drawings or other graphics shall also be converted to .PDF format and included into the single

PDF document. Pages that must be viewed in landscape format shall be rotated to the appropriate position for easy reading on screen.

E. The PDF documents shall have a bookmark created in the navigation frame for each major entry ("Section" or "Chapter") in the Table of Contents. Thumbnails shall be generated for each page or graphic in the PDF file.

F. The opening view for each PDF document shall be as follows:
   1. Initial View: Bookmarks and Page
   2. Magnification: Fit In Window
   3. The file shall open to the cover page of the manual, with bookmarks to the left, and the first bookmark shall be linked to the Table of Contents.

1.04 LABELING

A. A. As a minimum, the following information shall be included on all final O&M manual materials, including USB-drives CD-ROM disks, jewel cases, and hardcopy manuals:
   1. Manufacturer's name.
   2. Equipment name and/or O&M title spelled out in complete words.
   3. "Operations and Maintenance Manual"
   4. Specification Section Number. Example: "Section 460713"
   5. Project Name. "Lake Tulloch Inter-tie"
   6. Capital Improvement Project Number. "CIP No. XXXXXX"
   7. File Name and Date. Example: "460713_01.pdf"

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

SECTION 02 22 00
STRUCTURE EXCAVATION AND BACKFILL

PART 1 - GENERAL

1.01 REQUIREMENTS

A. This Section shall govern the work for structure excavation and backfill. Structure excavation shall consist of the removal of material for the construction of foundations for vaults, manholes, or other structures, and other excavation designated on the Plans or in the Specifications as structure excavation. Trenching and backfill shall be in accordance with Section 02221.

B. Structure excavation and structure backfill shall include the furnishing of all materials and equipment, the construction or installation of all facilities which may be necessary to perform the excavations and to place and compact the backfill, and the subsequent removal of such facilities, except where they are required or permitted by the Plans or Specifications to remain in place.

1.02 SUBMITTALS

A. The following items shall be submitted and approved by the District.
   1. Test results showing gradation, durability, and sand equivalent of import material.
   2. The Annual or Project Permit as issued by the Division of Occupational Safety and Health for excavations five (5) feet or more in depth as required by Cal-OSHA, including any trench excavation or shoring plans.

PART 2 – PRODUCTS

2.01 EXCAVATION

A. Excavation is unclassified. The Contractor shall complete all excavations regardless of the type of materials encountered. The Contractor shall make its own estimate of the kind and extent of the various materials, which will be encountered in the excavation.

B. For District projects, no extra payment will be given for rock excavation, regardless of the method used. It is assumed that rock will be encountered in the Foothills, and it is the responsibility of the Contractor to include those costs appropriately.

2.02 BACKFILL

A. Native earth backfill and imported backfill material shall conform to the requirements of Section 022210.

PART 3 – EXECUTION

3.01 PAVEMENT

A. Bituminous or concrete pavements, regardless of their thickness, and curbs and sidewalks shall be cut prior to excavation for the structure in accordance with the requirements of the encroachment permit or the District.

B. Pavement and concrete materials shall be removed from the site.

3.02 EXCAVATION

A. The sides of excavations for structures shall be sufficient to leave at least 1.5 feet clear, as measured from the extreme outside of form work on the structure, as the case may be. Where excavation is inadvertently carried below designated elevations, suitable provision shall be made at the expense of the Contractor for adjustment of construction, as directed by the District, to meet requirements incurred by the deeper excavation. No earth backfill will be permitted to correct over depth excavation beneath structures, and over depth excavation in such locations shall be rectified by backfilling with sand, graded gravel, or concrete as directed by the District.

3.03 BRACING

A. The Contractor's design and installation of bracing and shoring shall take the necessary precautions to be consistent with the rules, orders, and regulations of the State of California Construction Safety Orders.

B. Excavations shall be so braced, shored, and supported that they will be safe, such that the walls of the excavation will not slide or settle and all existing improvements of any kind, either on public or private property, will be fully protected from damage.

3.04 THE SHORING AND BRACING SHALL BE ARRANGED SO AS NOT TO PLACE ANY STRESS ON PORTIONS OF THE COMPLETED WORK.

A. The Contractor shall carefully remove shoring and bracing and timbering to prevent the caving or collapse of the excavation faces being supported.

3.05 DEWATERING

A. The Contractor shall provide and maintain means and devices to continuously remove and dispose of all water entering the excavation during construction of the structure and during backfill operations.
B. Water shall be disposed of in a manner that will prevent damage to adjacent property and pipe trenches and in accordance with the approved discharge permit.
C. The Contractor shall not allow water to rise in the excavation until backfilling around and above the structure is completed.

3.06 BACKFILL

A. After structures and foundations are in place, backfill shall be placed to the original ground line or to the limits designated on the plans.
B. No material shall be deposited against cast-in-place concrete structures until the concrete has reached a compressive strength of at least 2,500 pounds per square inch.
C. Backfill material shall be placed in horizontal layers not exceeding eight (8) inches in depth.

3.07 COMPACTION

A. Compaction requirements shall be as follows:
    1. Compaction shall be 95% in Roadway and Shoulder, including in the vault.
B. Each layer of backfill material shall be moistened and thoroughly tamped, rolled, or otherwise compacted to the specified relative density.
C. Compaction equipment shall be carefully operated near structures to prevent displacement or damage to said structures. Structural fill is to be placed and compacted in uniform layers around all sides of the structure.

3.08 EXCESS EXCAVATED MATERIAL

A. The Contractor shall make the arrangements for and shall remove and dispose of all excess excavated material.
B. All surplus material shall become the property of and be disposed of offsite by the Contractor.
C. No excavated material shall be deposited on private property unless written permission from the owner thereof is secured by the Contractor. Before the District will accept the work as being completed, the Contractor shall file a written release signed by all property owners with whom Contractor has entered into agreements for disposal of excess excavated material, absolving the District from any liability connected therewith. Contractor will be required to obtain a grading permit from Calaveras County Department of Public work for disposal of excavated materials in excess of 50 cubic yards.

3.09 RESTORATION OF DAMAGED SURFACES AND PROPERTY

A. If any existing improvements, facilities, or vegetation not designated to be removed have
B. been damaged, removed, or disturbed by the Contractor, for whatever reason, such improvements, facilities, and vegetation shall be replaced or repaired at the expense of the Contractor.

3.10 FINAL CLEAN-UP

A. After backfill and compaction have been completed, the right-of-way shall be dressed smooth and left in a neat and presentable condition to the satisfaction of the District.

END OF SECTION

SECTION 02 22 10
TRENCH EXCAVATION, BACKFILL, AND COMPACTION

PART 1 - GENERAL

1.01 REQUIREMENTS

A. This Section governs the work for trench excavation, backfill, and compaction for underground pipeline work.

1.02 SUBMITTALS

1.03 THE FOLLOWING ITEMS SHALL BE SUBMITTED REVIEW AND ACCEPTANCE BY THE DISTRICT.

1. Test results showing gradation, durability, and sand equivalent of pipe zone material.
2. The Annual or Project Permit as issued by the Division of Occupational Safety and Health for excavations five (5) feet or more in depth as required by Cal-OSHA, including any structural excavations and shoring plans.

1.04 TESTING

A. Testing frequency and location shall be approved by the District.

PART 2 – PRODUCTS

2.01 TRENCH EXCAVATION

A. Excavation is unclassified. The Contractor shall complete all excavations regardless of the type of materials encountered. The Contractor shall make its own estimate of the kind and extent of the various materials which will be encountered in the excavation.

B. For District projects, no extra payment will be given for rock excavation, regardless of the method used. It is assumed that rock will be encountered in the Foothills, and it is the responsibility of the Contractor to include those costs appropriately.

2.02 PIPE ZONE

A. The pipe zone limits are designated on the Section 7 – Standard Drawings. Material for the pipe zone shall conform to the following:

1. Aggregate Base. Base shall be ¾ - inch and minus or ½ - inch and minus. The aggregate size gradation shall comply with Caltrans Specifications for Class 2 road base. The sand equivalent shall be 30 minimum. The durability index shall be 35 minimum.

2.03 BACKFILL

A. Backfill material to be Class II Aggregate Base.

2.04 SLURRY BACKFILL

A. Cement slurry shall consist of two sacks of Portland cement per yard of sand with enough water for workability. The District shall approve all uses of slurry backfill.

2.05 WARNING TAPE

A. Warning tape is to be in accordance with Section 6 – Approved Materials List.

2.06 TRACER WIRE

A. Tracer wire is to be in accordance with Section 6 – Approved Materials List.

PART 3 – EXECUTION

3.01 EXCAVATION

A. Excavation for pipelines, fittings, and appurtenances shall be open trench to the depth and in the direction necessary for the proper installation of the same as shown on the contract drawings or as otherwise approved by the District. Excavation shall only proceed when the necessary materials have been delivered to the site.

B. The Contractor shall bear all costs of disposing of roots and all other waste materials from the excavation. Material shall be disposed of offsite at Contractor's expense.

C. The Contractor shall remove obstructions within the trench area or adjacent thereto, such as abandoned concrete structures, logs, and debris of all types, without additional compensation. The District may, if requested, make changes in the trench alignment to avoid major obstructions.

3.02 EXISTING PAVEMENT REMOVAL

A. Pavement shall be removed and replaced in the manner prescribed by the Agency issuing the encroachment permit.
B. Existing pavement, curbs, gutters, sidewalks, and driveways to be removed in connection with construction shall be neatly saw cut prior to removal. Saw cuts shall have a minimum depth of one (1) inch in concrete sidewalk.
C. Concrete sidewalks or driveways shall be removed so that a minimum of a 30-inch square is replaced. If the saw cut in a sidewalk or driveway would fall within 30 inches of a construction joint, expansion joint, or edge, the concrete shall be removed and replaced to the joint or edge. If the saw cut would fall within 12 inches of a score mark, the concrete shall be removed and replaced to the score mark. Concrete shall be removed by jackhammer.

3.03 GRADING AND STOCKPILING

A. The Contractor shall control grading in a manner to prevent water running into excavations. Obstructions of surface drainage shall be avoided and means shall be provided whereby storm and wastewater can be uninterrupted in existing gutters, other surface drains, or temporary drains. Material for backfill or for protection of excavation in public roads from surface drainage shall be neatly placed and kept shaped so as to cause the least possible interference with public travel. Free access must be provided to all fire hydrants, water valves, meters, and private drives.

3.04 LINE AND GRADE

A. The Contractor shall excavate the trench to the lines and grades shown on the plans. Any deviations shall first be approved by the District Engineer.
B. The trench shall be excavated to a minimum depth of 6 inches below the bottom of the pipe. The sides of the trench shall be excavated and maintained as nearly vertical as is practical.

3.05 TRENCH SUPPORT

A. The trench shall be adequately supported, and the safety of workers provided for as required by the standards of CAL/OSHA.
B. The Contractor shall be responsible for adequately shored and braced excavations so that the earth will not slide, move, or settle, and so that all existing improvements of any kind will be fully protected from damage.
C. No shoring, once installed, shall be removed until the trench has been approved for backfill operations. Removal of shoring shall only be accomplished during backfill operations and in such a manner as to prevent any movement of the ground or damage to the pipe or other structures.
D. The Contractor shall obtain all permits for any excavations over five (5) feet in depth into
E. which a person is required to descend or any excavation less than five (5) feet in depth in soils where hazardous ground movement may be expected and into which a person is required to descend.
F. Excavated material shall not be placed closer than two (2) feet from the top edge of the trench. Heavy equipment should not be used or placed near the sides of the trench unless the trench is adequately braced.

3.06 BLASTING

A. Blasting for excavation shall not be permitted without the written approval of the District and only after securing the required permits. Procedures and methods for blasting shall conform to all Federal, State, and local laws and ordinances. The Contractor shall notify the proper representatives of jurisdictional agencies and individuals which may have property within at least 600 feet of the construction zone or within an area in which damage could occur, at least 24 hours inadvance.
B. Blasting mats shall be used at all times where flying rock might cause damage to any person, building, power line, or other installation.
C. All traffic shall be stopped a safe distance from the blasting operation, and all persons shall be removed from the area prior to blasting.
D. The Contractor shall designate, in writing, a single responsible individual as the Powder Foreman. Carelessness or incompetency by the Powder Foreman shall be grounds for immediate removal

from said position or responsibility, and the Powder Foreman shall not be permitted to handle or use explosives on the remainder of the project. Priming of all explosives shall be with electric detonators of sufficient size to ensure efficient and complete detonation of the explosive charge. All charges consisting of more than one hole shall be wired either as series or series- parallel.

E. Straight parallel hookups will not be permitted.
F. The Contractor is responsible to provide a power source adequate for detonation of the explosive charges consistent with the accepted standard practices involving electric detonation of explosives. Excessive blasting will not be permitted, and any material outside the authorized cross section which may be loosened or shattered by blasting shall beremoved.
G. The District Engineer shall have authority to require the Contractor to discontinue any method of blasting which leads to overshooting, is dangerous to the public, or is destructive to property or natural features.
H. The Contractor shall notify the District a minimum of 24 hours in advance of any blasting operations.

3.07 PRESERVATION OF TREES

A. Excavation within the dripline of any tree shall conform to the project's environmental monitoring program and to encroachment permits. Trees shall not be removed outside of fill or excavated areas, except as authorized by the District.

3.08 DEWATERING

A. The Contractor shall provide and maintain means and devices to continuously remove and dispose of all water entering the excavation during construction of the structure and during backfill operations.
B. Water shall be disposed of in a manner that will prevent damage to adjacent property and pipe trenches. The Contractor is responsible for meeting all Federal, State, and local regulations and rules governing the treatment and disposal of water from dewatering operations on the construction site.
C. The Contractor shall not allow water to rise in the excavation until backfilling around and above the structure is completed.

3.09 OVER EXCAVATION

A. Any over excavation carried below the grade or beyond the trench width, as specified or shown, shall be rectified by backfilling with approved sand and/or graded gravel and shall be compacted as directed by the District.

3.10 STRUCTURE PROTECTION

A. Temporary support, adequate protection, and maintenance of all underground and surface structures, drains, sewers, and other obstructions encountered in the progress of the work shall be furnished by the Contractor at its expense and subject to the approval of the District. Any structure that has been disturbed shall be restored upon completion of the work.

3.11 PROTECTION OF PROPERTY AND SURFACE STRUCTURES

A. Trees, shrubbery, fences, poles, and all other property and surface structures shall be protected unless their removal is shown on the drawings or authorized by the District Engineer.

3.12 TRENCH WIDTH

A. The width of the trench within the pipe zone shall be such that the clear space between the barrel of the pipe and the trench wall shall not exceed the amount shown in the standard details. In general, the following shall be adhered to:

Nominal Pipe Diameter	Trench Width	
	Minimum	Maximum
6"-12"	OD + 12"	OD + 18"
14"-18"	OD +18"	OD + 24"

B. Trench widths in excess of those specified must have prior written approval.
C. Maximum Length of Open Trench. Unless otherwise specified or directed by the District, the maximum length of open trench shall be 500 feet or the distance necessary to accommodate the

amount of pipe installed in a single day, whichever is greater. The distance is the collective length of any location, including open excavation, pipe laying, and appurtenant construction and backfill that has not been temporarily resurfaced.

D. Failure by the Contractor to comply with the limitations specified herein may result in an order to halt progress of the work until compliance has been achieved. The Contractor shall provide proper barricades for excavated areas.

E. No open trench will be allowed from October to May.

3.13 TRENCH FOUNDATION

A. The trench bottom shall be graded to provide a smooth, firm, and stable foundation at every point throughout the length of the pipe. Should large gravel and cobbles be encountered at the trench bottom or pipe subgrade, they shall be removed from beneath the pipe and replaced with a uniform layer of pipe zone material which shall be compacted to provide uniform support and a firm foundation.

3.14 FOUNDATIONS IN POOR SOIL

A. If excessively wet, soft, spongy, unstable, or similarly unsuitable material is encountered at the surface upon which the bedding material is to be placed, the unsuitable material shall be removed to a depth as determined in the field by the District. The trench bottom shall be stabilized as detailed by the Section 7 – Standard Drawings as directed by the District. The Contractor's attention is called to Section 022021-3.8 regarding its responsibilities in maintaining adequate dewatering procedures to ensure that an otherwise stable foundation will not be rendered unfit due to accumulation of water.

3.15 BACKFILL AND COMPACTION

A. Backfill shall be completed within the shortest possible time so that the construction area or street can be opened to traffic. If for any reason construction of the pipeline or appurtenances thereto is delayed, the District may require that the trench be backfilled, and such areas or streets opened to traffic.

3.16 PIPE ZONE

A. After completion of the trench excavation and proper preparation of the foundation, 6- inches of bedding material shall be placed on the trench bottom for support under the pipe.

B. Bell holes shall be dug to provide adequate clearance between the pipe bell and the bedding material. All pipes shall be installed in such a manner as to ensure full support of the pipe barrel over its entire length. After the pipe is adjusted for line and grade and the joint is made, the remainder of the pipe bedding shall be placed to the limits as shown on the Drawings. All bedding material shall be compacted 95% relative compaction.

C. The pipe bedding backfill shall be brought to optimum moisture content and shall be placed by hand in layers not exceeding 3 inches in thickness to the centerline (springline) of the pipe. Each layer shall be solidly tamped with the proper tools so as not to injure, damage, or disturb the pipe.

D. Backfilling shall be carried on simultaneously on each side of the pipe to assure proper protection of the pipe.

E. Each lift shall be "walked in" and supplemented by slicing with a shovel to ensure that all voids around the pipe have been completely filled. Mechanical compaction such as "wackers" or “pogo sticks” as approved, shall be used for compaction of pipe zone.

3.17 INITIAL BACKFILL

A. The remaining portion of the trench shall be backfilled, compacted, and/or consolidated by approved methods to obtain the relative compaction shown on the Section 7 – Standard Drawings.

B. When backfill is placed mechanically, the backfill material shall be pushed onto the slope of the backfill previously placed and allowed to slide down into the trench. The Contractor shall not push backfill into the trench in such a way as to permit free fall of the material until at least 18 inches of cover is provided over the top of the pipe. Under no circumstances shall sharp, heavy pieces of materials be allowed to be dropped directly onto the pipe or the tamped material around the

pipe. Backfill shall be placed in layers not exceeding 8 inches and compacted by an approvedmethod.

C. Heavy-duty compacting equipment having an overall weight in excess of 125 pounds shall not be used until backfill has been completed to a depth of 2 feet over the top of the pipe.
D. If hydro-hammer is used for compaction of overlying materials, at least 4 feet of backfill must be placed over the top of pipe prior to its use. This is required to ensure that the pipe is not damaged.

3.18 FINAL BACKFILL

A. Final backfill placed in trenches below roadways or below shoulders of roadways shall be compacted to obtain the relative compaction shown on the Section 7 – Standard Drawings.
B. Backfill shall be placed in layers not exceeding 8 inches, compacted, and brought up to the subgrade of the roadway.

3.19 EXCESS EXCAVATED MATERIAL

A. The Contractor shall make the arrangements for and shall remove and dispose of all excess excavated material.
B. All surplus material shall become the property of and be disposed of offsite by the Contractor.
C. No excavated material shall be deposited on private property unless written permission from the owner thereof is secured by the Contractor. Before the District will accept the work as being completed, the Contractor shall file a written release signed by all property owners with whom it has entered into agreements for disposal of excess excavated material, absolving the District from any liability connected therewith.

3.20 RESTORATION OF DAMAGED SURFACES AND PROPERTY

A. If any existing improvements, facilities, or vegetation not designated to be removed have been damaged, removed, or disturbed by the Contractor, for whatever reason, such improvements, facilities, and vegetation shall be replaced or repaired at the expense of the Contractor.

3.21 FINAL CLEAN-UP

A. After backfill has been completed, the right-of-way shall be dressed smooth and left in a neat and presentable condition to the satisfaction of the District.

END OF SECTION

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SECTION 03 41 00
PRECAST CONCRETE STRUCTURES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Precast concrete vault for the pressure reducing valve, in accordance with plans.
      a. Vault shall be supplied by pressure reducing valve manufacturer and be preassembled upon delivery.

1.02 SUBMITTALS

A. Shop Drawings:
   1. Fabrication and/or layout drawings:
      a. Include detailed diagrams of vault showing typical components and dimensions.
      b. Indicate knockout elevations for all piping entering each structure.
B. Supplier's concrete mix data sheet showing contents and proportions of cement, aggregate, water, and any admixtures.
C. Reinforcing steel schedule.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Precast vault:
   1. Christy Concrete Products
   2. Oldcastle Infrastructure
   3. Jensen Precast
   4. Vault Access Solutions (VAS)
   5. Or approved equal

2.02 VAULTS AND GRATES:

A. Precast concrete vault, hatch, and all required accessories shall be provided by Cla-Val.
B. Size as shown on plans.
C. Double leaf hatch, hot dip galvanized, with 1/4" steel z-bar frame, 1/4" steel diamond plate, stainless steel hardware and safety arms, torsion assist, and four 1/2" security bolts.
D. Vault shall be H20 Traffic Rated.
E. Conform to requirements of ASTM C858.
F. Reinforcement shall be deformed reinforcement in accordance with ASTM A615 or ASTM A185 for welded wire fabric.

PART 3 - EXECUTION

3.01 STRUCTURE CONSTRUCTION

A. General:
B. Place precast structures on 6 inches compacted Class 2 aggregate base.
C. Build each structure to dimensions shown on plans and at such elevation that pipe sections built into wall of structure will be true extensions of line of pipe.
D. Seal all pipe penetrations in structures. Form pipe openings smooth and well shaped. After installation, seal cracks with non shrink grout. After grout cures, wire brush smooth and apply two coats emulsified fibered asphalt compound to minimum wet thickness of 1/8 inch to ensure complete seal.
E. Set and adjust vault top to match finished pavement.
F. All exterior concrete sufaces to be buried and in contact with soil shall have a minimum 30 mils of bituminous mastic or approved equal coating.

END OF SECTION

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SECTION 31 25 00
EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Erosion and sediment control.

1.02 REFERENCE STANDARDS

A. ASTM D5338 - Standard Test Method for Determining Aerobic Biodegradation of Plastic Materials Under Controlled Composting Conditions, Incorporating Thermophilic Temperatures; 2015 (Reapproved 2021).
B. ASTM D7367 - Standard Test Method for Determining Water Holding Capacity of Fiber Mulches for Hydraulic Planting; 2019, with Editorial Revision.
C. ASTM D8298/D8298M - Standard Test Method for Determination of Erosion Control Products (ECP) Performance in Protecting Slopes from Continuous Rainfall-Induced Erosion Using a Tilted Bed Slope; 2020.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
B. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.
C. Maintenance Instructions: Provide instructions covering inspection and maintenance for preventive measures that must remain after Substantial Completion.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Comply with requirements of EPA (NPDES) for erosion and sedimentation control, as specified by the NPDES, for Phases I and II, and in compliance with requirements of Construction General Permit (CGP), whether the project is required by law to comply or not.
B. Comply with more stringent requirements of State of California Erosion and Sedimentation Control Manual.

2.02 MATERIALS

A. High Performance - Flexible Growth Medium (HP-FGM):
    1. Physical Properties:
        a. Water Holding Capacity: Greater than or equal to 1,700 percent when tested in accordance with ASTM D7367.
        b. Material Color: Green.
        c. Cure Time: Zero to 2 hours.
        d. Functional Longevity: Less than or equal to 18 months when tested in accordance with ASTM D5338.
        e. Cover Factor: Less than or equal to 0.01 when tested in accordance with ASTM D8298/D8298M.
        f. Application Rate: 3,500 lb per acre.
B. Bonded Fiber Matrix (BFM):
    1. Physical Properties:
        a. Water Holding Capacity: Greater than or equal to 1,200 percent when tested in accordance with ASTM D7367.
        b. Material Color: Green.
        c. Cure Time: 4 to 24 hours.
        d. Functional Longevity: Observed, less than or equal to 6 months.
        e. Cover Factor: Less than or equal to 0.05 when tested in accordance with ASTM D8298/D8298M.
        f. Application Rate: 3,500 lb per acre.

2.03 ACCESSORY MATERIALS

A. Fill Material: Soil, granular fill, or sand used to raise an existing grade, acceptable to authorities having jurisdiction, and in compliance with specified performance requirements.
B. Geotextiles: Permeable, synthetic fabric used to stabilize loose soil and prevent erosion.
C. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
D. Grass Seed for Permanent Cover: Mixture of grass seeds compatible with soil composition in the locality of the work.
E. Sod for Permanent Cover: Cultivated grass sod, type as indicated; with strong fibrous root system, free of stones, burned or bare spots.
F. Plants for Permanent Cover: Specie and sizes identified in plant schedule, grown in climatic conditions similar to those in locality of the work.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.
B. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish documentation required to obtain applicable permits.
    1. Obtain and pay for permits and provide security required by authority having jurisdiction.
    2. District will withhold payment to Contractor equivalent to all fines resulting from non-compliance with applicable regulations.
C. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

3.03 FIELD QUALITY CONTROL

A. Provide analysis of topsoil fill; see Section 01 40 00 - Quality Requirements.
B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.
C. Submit minimum 10 oz sample of proposed topsoil. Forward sample to approved testing laboratory in sealed containers to prevent contamination.
D. Testing is not required if recent tests are available for imported topsoil. Submit these test results to the testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

3.04 INSTALLATION

A. Hydroseeding: Apply seeded slurry with a hydraulic seeder at a rate of recommended by manufacturer evenly in two intersecting directions.
    1. Soil Amendment: Provide soil amendments for application with hydroseeding slurry at manufacturer's recommended rates based on soil test results.
B. Do not seed areas in excess of that which can be mulched on same day.
C. Immediately following seeding, apply mulch to a thickness of 1/8 inch. Maintain clear of shrubs and trees.
D. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.
E. Following germination, immediately reseed areas without germinated seeds that are larger than 4 by 4 inches.

3.05 PROTECTION

A. Cover seeded slopes where grade is 4 inches per foot or greater with geotextile fabric. Roll fabric onto slopes without stretching or pulling.

B. Lay fabric smoothly on surface, bury top end of each section in 6-inch deep excavated topsoil trench. Provide 12-inch overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
C. Secure outside edges and overlaps at 36-inch intervals with stakes.
D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

3.06 MAINTENANCE

A. Provide maintenance of seeded areas for three months from Date of Substantial Completion.
B. Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition.
C. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
D. Immediately reseed areas that show bare spots.
E. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.
F. Repair deficiencies immediately.
G. Place sediment in appropriate locations on site; do not remove from site.
H. Protect seeded areas with warning signs during maintenance period.

3.07 CLEAN UP

A. Clean out sediment control structures that are to remain as permanent measures.

END OF SECTION

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SECTION 32 12 16
PAVING AND SURFACING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Asphalt concrete paving at project site as shown on the Contract Drawings.
   2. All paving shall be completed in accordance with County standards.

1.02 QUALITY ASSURANCE

A. General:
   1. Test in-place for density, thickness and surface smoothness.
   2. Final surfaces of uniform texture, conforming to required grades and cross sections.

B. Density:
   1. Minimum acceptable density of in-place course materials is 97 percent of the recorded laboratory specimen density.

C. Thickness: Variations from Contract Drawings:
   1. Base course: 1/2 inch, ±.
   2. Surface course: 1/2 inch, ±.

D. Surface Smoothness:
   1. Test using a 10-foot straightedge applied parallel to direction of drainage.
   2. 1/4 inch per foot from nearest point of contact.
   3. Do not permit pockets or depressions where water may pool.

E. Reference Standards:
   1. CalTrans Construction Manual, Section 39 and 92.
   2. ASTM C29: Unit Weight and Voids in Aggregate.
   3. ASTM C88: Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
   4. ASTM C117: Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing.
   5. ASTM C128: Specific Gravity Test and Absorption of Fine Aggregate.
   6. ASTM C126: Sieve or Screen Analysis of Fine and Coarse Aggregates.
   7. ASTM D4: Bitumen Content.
   8. ASTM D5: Penetration of Bituminous Materials.
   9. ASTM D70: Specific Gravity of Semi-Solid Bituminous Materials.
   10. ASTM D93: Flash Point by Density-Martens Closed Tester.
   11. ASTM D113: Ductility of Bituminous Materials.
   12. ASTM D1188: Bulk Specific Gravity of Compacted Bituminous Mixtures.
   13. ASTM D2041: Theoretical Maximum Specific Gravity of Bituminous Paving Mixtures.
   14. ASTM D2172: Quantities Extraction of Bitumen From Bituminous Paving Mixtures.
   15. ASTM D2419: Sand Equivalent Value of Soils and Fine Aggregate.
   16. ASTM D290: Bituminous Mixing Plant Inspection.
   17. ASTM D946: Asphalt Cement for Use in Pavement Construction.
   18. ASTM D692: Course Aggregate for Bituminous Paving.
   19. ASTM D1073: Fine Aggregate for Bituminous Paving Mixtures.
   20. A.I. MS-Z: Mix Design Method for Asphalt Concrete.
   21. Federal Highway Administration Standard Specifications, Aggregate Bases, Class 6 Aggregate Base (Table 703-2).
   22. Federal Highway Administration Standard Specifications, Asphalt Concrete, Aggregate (Table 703-3).
   23. CalTrans Standard Specification, Road and Bridge Construction (Grading S or SX).

1.03 SUBMITTALS

A. Samples: Provide asphalt job-mix design.

B. Test Reports: Submit laboratory reports for following material tests where called for by the Engineer.

1. Coarse and fine aggregate from each material source and each required grading:
    a. Sieve analysis: ASTM C136 (AASHTO T19).
    b. Unit weight of slag: ASTM C29 (AASHTO T19).
    c. Soundness: ASTM C89 (AASHTO T104) for surface coarse aggregates only.
    d. Sand equivalent: ASTM D2419 (AASHTO T176).
    e. Abrasion of coarse aggregate: ASTM C131 (AASHTO T96), for surface coarse aggregates only.
2. Asphalt cement for each penetration grade:
    a. Penetration: ASTM D5 (AASHTO T49).
    b. Viscosity (Kinematic): ASTM D2170 (AASHTO T201).
    c. Flash point: ASTM D92 (AASHTO T48).
    d. Ductility: AASTM D113 (AASHTO T44).
    e. Solubility: ASTM D4 (AASHTO T44).
    f. Specific gravity: ASTM D70 (AASHTO T43).
3. Job-mix design mixtures for each material or grade:
    a. Bulk specific gravity for fine aggregate: ASTM C128 (AASHTO T84).
    b. Bulk specific gravity for fine aggregate: ASTM C128 (AASHTO T84).
4. Uncompacted asphalt concrete mix: Maximum specific gravity ASTM D2041 (AASHTO T209).
5. Compacted asphalt concrete mix:
    a. Bulk density: ASTM D1188 (AASHTO T166).
    b. Marshall stability and flow: ASTM D1559.
6. Density and voids analysis:
    a. Provide each series of asphalt concrete mixture text specimens, in accordance with A.I., MS-2 "Mix Design Methods for Asphalt Concrete".
    b. Use Marshall method of mix design unless otherwise directed or acceptable to Engineer.
7. Sampling and testing of asphalt concrete mixtures for quality control during paving operations:
    a. Uncompacted asphalt concrete mix:
        1) Asphalt cement content: ASTM D2172 (AASHTO T164).
        2) Penetration of recovered asphalt cement: ASTM D5 (AASHTO T49).
        3) Ductility of recovered asphalt cement: ASTM D113 (AASHTO T51).
    b. Compacted asphalt concrete mix:
        1) Bulk density: ASTM D1188 (AASHTO T166).
    c. Asphalt plant inspection: ASTM D290.

1.04 JOB CONDITIONS

A. Weather Limitations:
1. Do not apply when underlying surface is muddy, frozen or wet.
2. Spreading and finishing machine:
    a. Do not place tack coat or asphaltic cement when temperature is below 45 Degrees F and falling.Place when above 40 Degrees F and rising.
    b. Place when above 40 Degrees F and rising.
3. By hand or motor grader:
    a. Do not place asphaltic concrete courses when temp is below 60 Degrees F.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Aggregate Base:
1. Per Section 02200 – CalTrans Class II.

B. Aggregate for Asphalt Concrete, General:
1. Sound, angular crushed stone, crushed gravel, or crushed slag: ASTM D692.
    a. Sand, stone, or slag screening: ASTM D1073.
2. Provide aggregate in gradations for various courses to comply with CalTrans and local highway standards.

C. Asphalt concrete (AC): AC paving shall be restored in accordance with Caltrans State Standard Specifications Section 39.
   1. AC mix shall be prepared by an approved certified independent laboratory under the supervision of a certified asphalt technician.
   2. Finish coarse shall be 1/2-inch maximum medium (MM) PG 64-16 conforming to Caltrans State Standard
D. Prime Coat:
   1. Cut-back liquid asphalt.
   2. SC-70.
E. Tack Coat:
   1. Section 94 of the Caltrans Standard Specifications.
F. Seal Coat:
   1. Section 37 of the Caltrans Standard Specifications.
G. Pavement Traffic Markings and Striping
   1. Shall be painted with 2 coats on the roadway surface
   2. All-weather, oil-based paint, which conforms to the most current version of the Caltrans Standard Plans and Specifications.
   3. All damaged or removed pavement markers shall be replaced in kind.
   4. Visual uniformity as determined by the Director of Public Works, may require adjacent markins and all markings within an intersection to be replainted by the Contractor at no additional cost to the District.

2.02 MIXES

A. Design Mix:
   1. Determine design mix based upon aggregates furnished.
   2. Grade dependent on temperature.
   3. Acceptable to Engineer.

PART 3 - EXECUTION

3.01 GENERAL

A. Traffic Control:
   1. In accordance with all applicable specification sections and laws.
   2. Minimize inconvenience to traffic, but keep vehicles off freshly treated or paved surfaces to avoid pickup and tracking of asphalt. Do not open new HMA pavement to traffic until its mid depth temperature is below 160-deg F.
B. Driveways: Repave driveways from which pavement was removed. Leave driveways in as good or better condition than before start of construction.
C. Overlay in accordance with Calaveras County Public Works Pavement Restoration Options.

3.02 LINE AND GRADE

A. Provide and maintain intermediate control of line and grade, independent of underlying base, to meet finish surface grades and minimum thickness. Construct shoulders to line, grade, and cross section shown.

3.03 PREPARATION

A. Saw-cut all edges of pavement to be removed to be square with clean lines relative to trench and excavation limits; during saw cutting all water and slurry waste must be immediately vacuumed from the ground surface and not be allowed to flow off pavement or into ditches, curbs or drains.
B. When paving thickness permits grinding, grind out asphalt T-section adjacent to each side of trench, grind out all pavement transitions between new and existing pavement, and grind out other areas as required by encroachment with Public Works and/or Caltrans.
C. Aggregate Base:
   1. Check subgrade for conformity with elevations and section immediately before placing aggregate base material.
   2. Scarify 8 inches minimum and compact subgrade to 95% standard Proctor (ASTM D-15573).

3. Place aggregate base material in compacted layers not more than 6 inches thick, unless continuing tests indicate the required results are being obtained with thicker layers.
4. In no case will more than 6 inches of compacted base be placed in one lift.
5. Spread, shape, and compact all aggregate base material deposited on the subgrade during the same day.
6. Compact aggregate base course material to not less than 95 percent of maximum density: ASTM D1557, Method D.
7. Agency will test density of compacted aggregate base course: ASTM D2167.
8. Agency will conduct 1 test for each 500 sq yards of in-place material, but in no case not less than 1 for each layer.

D. Loose and Foreign Material:
1. Remove loose and foreign material from compacted subbase surface immediately before application of paving.

E. Prime Coat:
1. Uniformly apply at rate of 0.25 gallons/sq yard over compacted and cleaned subbase surface.
2. Apply enough material to penetrate and seal, but not flood the surface.
3. Allow to cure and dry as long as required to attain penetration and evaporation of volatile, and in no case less than 24 hours unless otherwise acceptable to the Engineer.
4. Blot excess asphalt with just enough sand to prevent pick-up under traffic.
5. Remove loose sand before paving.

F. Tack Coat:
1. Dilute material with equal parts of water and apply to contact surfaces of previously constructed asphalt concrete or Portland cement concrete and surfaces.
2. Apply at rate of 0.10 gallons/sq. yard of surface, to dry surface, and no threat of rain.
3. Apply tack coat to contact surfaces of curbs, gutters, manholes, and other structures projecting into or abutting asphalt concrete pavement.
4. Allow surfaces to dry until material is at condition of tackiness to receive pavement.

G. Seal Coat:
1. Apply a seal coat at a rate of 0.15 to 0.30 gal/cy per Section 37 of the CalTrans Standard Specifications.

H. Prior to Paving:
1. Sweep primed surface free of dirt, dust, or other foreign matter.
2. Patch holes in primed surface with asphalt concrete pavement mix.

3.04 PREPARING THE MIXTURE

A. Comply with ASTM D995 for material storage, control, and mixing, and for plant equipment and operation.

B. Stockpiles:
1. Keep each component of the various-sized combined aggregates in separate stockpiles.
2. Maintain stockpiles so that separate aggregate sizes will not be intermixed and to prevent segregation.

C. Heating:
1. Heat the asphalt cement at the mixing plant to viscosity at which it can be uniformly distributed throughout mixture.
2. Use lowest possible temp to suit temperature-viscosity characteristics of asphalt.
3. Do not exceed 325 Degrees F per Section 39 of the Caltrans State Standards.

D. Aggregate:
1. Heat-dry aggregates.
2. Deliver to mixer at recommended temperature to suit penetration grade and viscosity characteristics of asphalt cement, ambient temperature, and workability of mixture.
3. Accurately weight or measure dry aggregates and weigh or meter asphalt cement to comply with job-mix formula requirements.

E. Mix aggregate and asphalt cement to achieve 90-95 percent coated particles for base mixtures and 85-90 percent coated particles for surface mixture, per ASTM D2489.

F. Transporting:
    1. From mixing site in trucks having tight, clean compartments.
    2. Coat hauling compartments with lime-water mixture to prevent sticking.
    3. Elevate and drain compartment of excess solution before loading mix.
    4. Provide covers over asphalt concrete mixture to protect from weather and to prevent loss of heat.
    5. During periods of cold weather or for long distance deliveries, provide insulation around entire truck bed surfaces.

3.05 EQUIPMENT

A. Bituminous Pavers: Self-propelled, spreads without tearing, surfaces, and controls pavement edges to true lines without use of stationary forms.
B. Rolling Equipment:
    1. Pneumatic tired roller.
    2. Two or 3 wheeled steel roller.
C. Hand Tools: Provide rakes, lutes, shovels, tampers, smoothing irons, pavement cutters, portable heaters, and other miscellaneous small tools.

3.06 PLACING THE MIX

A. Place asphalt concrete mixture on prepared surface, spread and strike-off using paving machine.
B. Complete Placement Over Full Width of Section on Each Days Run.
C. Minimum Temperature of 225 Degrees F.
D. Inaccessible and Small Areas May Be By Hand.
E. Conform to the grade, cross section, finish thickness, and density indicated. The thickness of each lift placed shall not exceed 3-inches unless approved by the Engineer.
F. Paver Placing:
    1. Unless otherwise directed, begin placing along centerline of areas on crowned section, and at high side on one-way slope, and in direction of traffic flow.
    2. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips.
        a. Complete base courses before placing surface courses.
    3. Place mixture in continuous operation as practicable.
G. Hand Placing:
    1. Spread, tamp, and finish mixture using hand tools in areas where machine spreading is not possible, as acceptable to Engineer.
    2. Place mixture at a rate that will ensure handling and compaction before mixture becomes cooler than acceptable working temperature.
H. Joints:
    1. Construct transverse joint at right angles to centerline when operations are suspended long enough for mixture to chill.
    2. Construct joints to have same texture, density and smoothness as adjacent sections of asphalt concrete course.
        a. Clean contact surfaces free of sand, dirt, or other objectionable material and apply tack coat.
    3. Offset transverse joints in succeeding courses not less than 24 inches.
    4. Cut back edge of previously placed course to expose an even, vertical surface for full course thickness.
    5. Offset longitudinal joints in succeeding courses not less than 6 inches.
    6. When the edges of longitudinal joints are irregular, honeycombed, or inadequately compacted, cut back unsatisfactory sections to expose an even, vertical surface for full course thickness.
    7. Wearing course constructed in even number of strips; place 1 longitudinal joint on centerline of road.
    8. Wearing course constructed in odd number of strips; place the centerline of 1 strip on centerline of road.

I. Curbs: Finish surface high adjacent to curb so when compacted surface is slightly higher than edge of curb and flashing.

3.07 COMPACTING THE MIX

A. Provide Rollers to Obtain the Required Pavement Density.
B. Begin rolling operations when the mixture will bear weight of roller without excess displacement.
C. Do not permit heavy equipment, including rollers to stand on finished surface before it has thoroughly cooled or set.
D. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
E. Start rolling longitudinally at extreme lower side of sections and proceed toward center of pavement. Roll to slightly different lengths on alternate roller runs.
F. Do Not Roll Centers of Sections First Under Any Circumstances.
G. Breakdown Rolling:
    1. Accomplish breakdown or initial rolling immediately following rolling of transverse and longitudinal joints and outside edge.
    2. Operate rollers as close as possible to paver without causing pavement displacement.
    3. Check crown, grade, and smoothness after breakdown rolling.
    4. Repair displaced areas by loosening at once with lutes or rakes and filling, if required, with hot loose material before continuing rolling.
H. Second Rolling:
    1. Follow breakdown rolling as soon as possible, while mixture is hot and in condition for compaction.
    2. Continue second rolling until mixture has been thoroughly compacted.
I. Finish Rolling:
    1. Perform finish rolling while mixture is still warm enough for removal of roller marks.
    2. Continue second rolling until roller marks are eliminated and course has attained 92.0% measured maximum density determined in accordance with ASTM D2041. In place density shall not be less than 91.0% nor greater than 97.0% for contract compliance.
J. Patching:
    1. Remove and replace defective areas.
    2. Cut-out and fill with fresh, hot asphalt concrete.
    3. Compact by rolling to specified surface density and smoothness.
    4. Remove deficient areas for full depth of course.
    5. Cut sides perpendicular and parallel to direction of traffic with edges vertical.
    6. Apply tack coat to exposed surfaces before placing new asphalt concrete mixture.
K. Tolerances:
    1. General: Conduct measurements for conformity with crown and grade immediately after initial compression. Correct variations immediately by removal or addition of materials and by continuous rolling.
    2. Completed Surface or Wearing Layer Smoothness:
        a. Uniform texture, smooth, and uniform to crown and grade.
        b. Maximum Deviation: 1/8 inch from lower edge of a 3.6 meter (12 foot) straightedge, measured continuously parallel and at right angle to centerline.
        c. If surface of completed pavement deviates by more than twice specified tolerances, remove and replace wearing surface.
    3. Transverse Slope Maximum Deviation: 1/4 inch.
L. Pavement Lines and Markings:
    1. General: Contractor shall restore all center lines, fog lines, limit lines, and other pavement markings that are damaged by trenching, excavation and other Contractor’s operations and construction activities.
    2. Paint: Unless otherwise required by the County and/or Caltrans, paint shall be 100% acrylic traffic and zone marking paint of required colors, PPG Zoneline, USSC Techline, or equal.

Paint shall be applied according to manufacturer's instructions and within required ambient and substrate temperatures to a wet film thickness of 15± mils.

3.08 CLEANING AND PROTECTION

A. Cleaning: After completion of paving operations, clean surfaces of excess or spilled asphalt materials to the satisfaction of Engineer.

B. Protection:
   1. After final rolling, do not permit vehicular traffic on asphalt concrete pavement until it has cooled and hardened, and in no case sooner than 6 hours.
   2. Provide barricades and warning devices as required to protect pavement and the general public.
   3. Cover openings of structure in the area of paving until permanent coverings are placed.

PART 4 - QUALITY CONTROL

4.01 TESTING

A. Contractor to schedule and arrange for all tests with Agency employed independent testing laboratory to determine compliance of in-place materials and compaction with Specifications where required by the Engineer. Agency will pay for one set of independent testing. Re-tests will be performed by Agency laboratory, but paid for by the Contractor.

B. Gravel Surfacing:
   1. Two initial gradation tests for each type of material plus one additional test for each 500 cubic yards of each material.
   2. Two standard compaction tests, ASTM D1557, Method D, for each type of surfacing material proposed.
   3. One in-place compaction test for each 1,000 sq feet of drive or road.

C. Asphalt Surfacing:
   a. One in-place compaction test for each 1,000 sq feet of drive or road.

END OF SECTION

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SECTION 32 15 00
PAVEMENT MICROSURFACE

PART 1 - GENERAL

1.01 DESCRIPTION

A. This work covers the materials, equipment, construction, and application procedures for placing micro-surfacing material for filling ruts and surfacing existing paved surfaces. Properly proportion, mix, and spread all ingredients on the paved surface according to this Specification and as directed by the ENGINEER.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. AASHTO Standards:
B. M 140, Emulsified Asphalt
C. M 208, Cationic Emulsified Asphalt
D. M 316, Polymer-Modified Cationic Emulsified Asphalt
E. MP 28, Materials for Micro Surfacing
F. PP 83, Micro Surfacing Design
G. T 27, Sieve Analysis of Fine and Coarse Aggregates
H. T 319, Quantitative Extraction of Asphalt Binder from Asphalt Mixtures
I. AASHTO Guide Specifications for Highway Construction, 10th Edition, 2020

1.03 CONTRACTOR SUBMITTALS

A. Mix Design: Submit the proposed mix design for approval at least two weeks before beginning the mixing operations. As a minimum, the design shall include the following:
B. Aggregate test properties, Aggregate target gradation, Results of Table 1 mixture design properties, Design percent asphalt residue based on dry weight of the aggregate, Mineral filler percentages based on dry weight of the aggregate, Quantitative effects of moisture content on the unit weight of the aggregate.
C. Submit to the ENGINEER, DISTRICT, and COUNTY representatives samples of each ingredient to be used in the micro-surfacing mixture for design verification at least two weeks before beginning mixing operations. Include information about sources, type of materials, and project number.
D. Do not begin micro-surfacing work until the ENGINEER, DISTRICT, and COUNTY have approved the micro-surfacing design and accepted the mixture.

PART 2 - PRODUCTS

2.01 MIXTURE DESIGN PROPERTIES

Table 1: Mixture Design Properties

MICRO-SURFACING		**TYPE I**	**TYPE II**
MIXTURE CONTROL TOLERANCES	**GRADING REQUIREMENTS**	**PERCENT PASSING**	**PERCENT PASSING**
±0%	**3/8-INCH (9.5 MM)**	**100**	**100**
±6%	**NO. 4 (4.75 MM)**	**90-100**	**60-95**
±5%	**NO. 8 (2.36 MM)**	**65-90**	**45-75**
±4%	**NO. 50 (300 M)**	**20-45**	**15-35**
±3%	**NO. 200 (75 M)**	**5-15**	**5-15**
	DESIGN REQUIREMENTS	**RANGE**	**RANGE**
±0.5%	**RESIDUAL AC, %**	**6.0-9.0**	**6.0-9.0**
N/A	**MINERAL FILLER, %**	**0.5-3.0**	**0.5-3.0**
DESIGN REQUIREMENTS – MICRO SURFACING TYPE I AND TYPE II			
TEST NO.	**DESCRIPTION**		**SPECIFICATION**
AASHTO T-245 (MODIFIED)	**FLOW**		**6-16**

AASHTO T-245 (MODIFIED)	**MIN. STABILITY, LB (KG), 50 BLOW MARSHALL**		**1800 (8000)**
ISSA TB-100	**WET TRACK ABRASION LOSS (MAXIMUM)**	**6-DAY SOAK**	**1 LB/YD² (538 G/M²)**
		1-HOUR SOAK	**1.5 LB/YD² (807 G/M²)**
ISSA TB-147A OR 147C	**VERTICAL DISPLACEMENT (MAXIMUM)**		**10%**
ISSA TB-109	**EXCESS ASPHALT BY LWT (MAXIMUM)**		**1 LB/YD² (538 G/M²)**
ISSA TB-113	**MIXING TIME TEST @ 100 F (38 C) (MINIMUM)**		**45 SECONDS**
ISSA TB-139	**SET TIME TEST (MINIMUM)**	**@ 30 MINUTES**	**12 KG-CM**
		@ 60 MINUTES	**20 KG-CM**
ISSA TB-102	**WATER RESISTANCE TEST @ 30 MINUTES**		**NO DISCOLORATION**
ISSA TB-114	**WET STRIPPING TEST (MINIMUM RETAINED)**		**90%**
ISSA TB-115	**SYSTEM COMPATIBILITY**		**PASS**

2.02 DELIVERY, STORAGE AND HANDLING

A. Aggregate Storage: Store or stockpile mineral aggregates in a manner that will prevent segregation, mixing of the various materials or sizes, and contamination with foreign materials. Do not use construction equipment on, or to ramp the stockpiled aggregate. Pass the aggregate over a scalping screen immediately before transferring it to the micro-surfacing mixing machine to remove oversized material.

B. Storage of Bituminous Material: Ensure that the bituminous storage is adequate to meet the requirements of the production rate. Always keep clean all equipment used to store and handle bituminous material and operate it in such a manner to prevent contamination with foreign matter.

PART 3 - EXECUTION

3.01 GENERAL

A. Produce, transport, and place the specified materials according to these specifications and as approved by the ENGINEER. Produce a finished micro-surfacing that has a uniform texture free from excessive scratch marks, tears, or other surface irregularities. Ensure that the cured mixture fully adheres to the underlying surface. Based on a visual examination or test results, the ENGINEER may reject any work due to poor workmanship, loss of texture, raveling, or apparent instability.

B. Geotextile paving fabric shall be handled and placed in accordance with the manufacturer's recommendations.

3.02 WEATHER LIMITATIONS

Spread the micro-surfacing mixture only when:

A. The ambient temperature for 48 hours immediately prior to placement has been at least 50 °F.

B. The current pavement surface and the ambient temperature is at least 50 °F (10 °C) and rising. Supply a surface temperature thermometer and a sling psychrometer and take temperature and humidity measurements as directed by the ENGINEER.

C. The weather is not foggy or rainy.

D. There is no forecast of temperatures below 32 °F within 48 hours from the time of placement.

E. Whenever the relative humidity exceeds 80 percent or the weather is overcast, the placement of micro-surfacing will be at the discretion of the ENGINEER.

3.03 SURFACE PREPARATION

A. Before applying the micro-surfacing mixture, thoroughly clean all cracks and the area to be surfaced to the ENGINEER's satisfaction

3.04 TACK COAT

A. Use a tack coat which consists of cationic asphalt emulsion CSS-1h or CQS-1h. Dilute it at the rate of one part emulsion and three parts water and apply with an asphalt distributor. The application rate is 0.05 to 0.10 gal/yd2 of diluted emulsion per square yard. If the surface course is placed within 30 days of the leveling course or if the ENGINEER determines that excessive tracking of material is evident, a tack coat will not be required between the leveling and surface course.

3.05 APPLICATION

A. Pre-wet the surface by spraying water ahead of and outside of the spreader box at a rate that dampens the surface without allowing water to flow freely ahead of the spreader box.

B. Spread the paving mixture on the prepared surface to produce a uniform finished surface. Take care when filling ruts to restore the designed profile of the pavement cross section. Excess crowning or overfilling of the rut area is not permitted.

C. Use squeegees and lutes to spread the mixture in areas inaccessible to the spreader box and areas requiring hand spreading. Carry a sufficient amount of material at all times in all parts of the spreader box to ensure complete coverage.

D. Make adjustments to the additive, if necessary, to provide a slower setting time during hand spreading. If hand spreading is necessary, pour the mixture in a small windrow along one edge of the surface to be covered and uniformly spread with a hand squeegee or lute. Provide a smooth, neat seam where two passes meet. Immediately remove excess material from the ends of each run.

3.06 TRAFFIC CONTROL

A. Do not allow traffic on the micro-surfacing mixture until it has cured sufficiently to prevent pick up or marring of the surface. Repair any damage done by traffic to the mixture at no expense to the DISTRICT.

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SECTION 33 01 10.58
TESTING AND DISINFECTING OF WATER MAINS

PART 1 - GENERAL

1.01 REQUIREMENTS

A. All completed waterlines, as well as the service assemblies and appurtenant structures, will be pressure tested and disinfected by the Contractor in the Inspector's presence prior to field acceptance of the work. The pressure test is to be performed prior to disinfection of the pipeline, unless the District approves concurrent pressure testing and disinfection.

B. The Contractor shall furnish all pipe and fittings for connection to the main, pumps, pressure regulator, a calibrated water storage tank, disinfectant, and all other materials; fittings and pipelines required to perform the tests and make the necessary repairs.

C. When lines to be tested are in areas that will be paved, testing shall be done after the rock subgrade is placed and compacted. No lines shall be accepted as passing until all underground construction that may disturb the waterline is compacted.

D. The pressure test and the test for allowable leakage shall be performed simultaneously. Testing shall not commence until the water main, and all appurtenances have been completely installed and all concrete thrust blocks have cured. The Contractor may, at any time and at his expense, perform his own pressure and leak test; however, these tests will in no way offset the requirement for a final pressure, leak test, and disinfection.

E. Disinfection shall be in accordance with ANSI/AWWA C651 with additional requirements as described in this section.

F. After having been successfully tested and disinfected, the water main may be connected to the District's water system.

G. Water mains under construction that become flooded by storm water or groundwater shall be flushed with potable water until clear water is evident.

1.02 SUBMITTALS

A. The Contractor shall notify the District a minimum of seven (7) business days in advance of its proposed testing schedule for review and concurrence. If requested, the Contractor's proposed plans for water conveyance, disinfection, control, and disposal, shall also be submitted in writing.

PART 2 – PRODUCTS

2.01 GENERAL

A. All test equipment, chemicals for chlorination, temporary valves, bulkheads, or other water control equipment and materials shall be determined and furnished by the Contractor, subject to the District's review. No materials shall be used which would be injurious to the construction or its futurefunction.

2.02 HYDROSTATIC TESTING EQUIPMENT

A. The Contractor shall be responsible for supplying and operating all testing equipment. The District may furnish a test gauge at its option. Temporary piping connecting to an existing main for water supply shall be configured as shown in the Section 7 – Standard Drawings.

2.03 CHLORINE

A. Chlorine for disinfection shall be in the form of sodium hypochlorite solution complying with ANSI/AWWA B300. Both disinfectants are to comply with NSF/ANSI 60.

PART 3 – EXECUTION

3.01 GENERAL

A. The Contractor shall correct all defects in workmanship or materials, which become evident by inspection or testing at any time during the work.

B. In the presence of the District, all pressure pipelines shall be tested and all potable water components shall be disinfected.

C. Disinfection operations shall be scheduled by the Contractor as late as possible during the contract time period so as to assure the maximum degree of sterility of the facilities before the District accepts the Work. The District shall perform bacteriological testing.

D. Release of water from pipelines, after testing and disinfecting have been completed, shall be in accordance with a written disposal plan reviewed by the District.

3.02 HYDROSTATIC TESTING

A. Only potable water shall be used for testing. The purpose of the hydrostatic test is both to test the ability of the pipeline to withstand pressure and test for allowable leakage. These tests shall run simultaneously. All valves and appurtenances shall be operated during the test period. Thrust blocks shall have been in place for at least thirty-six (36) hours if high- early-strength cement was used or at least seven (7) days if standard cement was utilized.

3.03 PREPARATION

A. Prior to testing, the water main shall be slowly and carefully filled with water at the low end of the section being tested. All air shall be expelled slowly from the pipe and appurtenances in a manner so as not to create excessive surge pressures. The release of air can be accomplished by opening services, fire hydrants, blow-offs, and air release valves. Where air valves or other suitable outlets are not available for releasing air before applying the test, approved taps and fittings shall be installed and later securely plugged.

B. All appurtenances shall be left on during the testing procedure. The valve controlling the admission of water into the section of pipe to be tested should be opened wide before shutting the hydrants or blow-offs. After the system has been filled with water and all air expelled, all the valves controlling the section to be tested shall be closed; and the line shall remain in this condition under a slight pressure for a period of not less than twenty-four (24) hours.

C. The Contractor may, at its own risk, test against existing valves. Suspected leaking of these valves will not be accepted as a reason for having not passed the leakage test requirements. These valves shall either be repaired or replaced prior to the start of another testing sequence. All new valves shall be tested against a reduced pressure side. Butterfly valves shall be tested in both directions.

3.04 TEST SECTION LENGTH

A. The length of pipe being tested at any one time shall not exceed 2,000 feet unless otherwise approved by theDistrict.

3.05 TEST PRESSURE

A. The test pressure shall be 150 psi or 50 psi greater than design pressure of the system, whichever is greater, measured at the lowest point of the section of the pressure zone being tested.

B. Test pressure shall be 200 psi.

C. Test pressure shall be maintained throughout the period of test. Measurement of the amount of additional water pumped in during test provides a measurement of the amount of leakage, if any.

3.06 TEST DURATION

A. The test duration shall be two (2) hours. Pressure in the water main shall be maintained within 2 psi of the calculated test pressure for the full two-hour duration. The individual testing of the valves may be of a shorter duration as approved by the District.

3.07 REPAIRS

A. During the pressure and leakage test, all accessible appurtenances shall be inspected for visual signs of leakage. All visual leaks shall be corrected immediately, regardless of the amount of leakage and the test shall be run again for its full duration. All leaks detected shall be repaired to a watertight condition. All repairs made shall be retested in accordance with the specifications. All repairs shall be made, and a successful test accomplished prior to taking bacteriological samples.

3.08 DISINFECTING

A. After completion of pressure testing, the Contractor shall disinfect all water mains, services, and appurtenances. Disinfection shall be accomplished in accordance with the latest revision of AWWA C651.

B. Chlorination and dichlorination shall be performed by competent individuals knowledgeable and experienced in the operation and safety of disinfecting procedures with the applicable Federal,

State, and local laws and regulations. Transporting, storage, and handling of these materials shall be performed in accordance with Federal and State Hazardous Materials Regulations.

C. The basic disinfection procedure consists of:
   1. Preventing contaminating materials from entering the water main during storage, construction, or repair.
   2. Chlorinating any residual contamination that may remain and flushing the chlorinated water from the main.
   3. Protecting the existing distribution system from backflow due to hydrostatic pressure test and disinfecting procedures.
   4. Determining the bacteriological quality by laboratory test after disinfecting.
   5. Final connection of the approved new water main to the active distribution system.

3.09 SODIUM HYPOCHLORITE SOLUTION

A. Sodium hypochlorite can be used for swabbing as well as pipeline disinfecting. The solution shall be injected using a chemical feed pump designed for chlorine solutions. A backflow prevention device shall be installed at the point of connection to the potable water source. The District shall approve the point(s) of injection.

3.10 FILLING AND CONTACT

A. The main shall be filled at a rate no greater than one (1) foot with an initial chlorine concentration high enough to maintain a constant minimum residual concentration of 25 ppm throughout the system for a duration of at least twenty-four (24) hours. During this time, valves, hydrants, blowoffs, air valves, and other appurtenances shall be operated and flushed to move the chlorinated water throughout the system to ensure disinfection.

3.11 FINAL FLUSHING

A. After the applicable retention period, heavily chlorinated water should not remain in prolonged contact with pipe. In order to prevent damage to the pipe lining or corrosion damage to the pipe itself, the heavily chlorinated water shall be flushed and dechlorinated from the main until chlorine measurements match the existing system chlorine levels.
B. Chemicals used for dichlorination shall be as listed in Appendix C of AWWA C651.
C. Contractor shall submit the method of dichlorination.

3.12 BACTERIOLOGICAL TESTS

A. After completion of testing and sterilization, and before the new water main is connected to the distribution system, the Contractor/Developer will take water samples for bacteriological examination through an approved laboratory. Should any of the samples fail to meet minimum State of California, Department of Public Health requirements, the Contractor will continue to chlorinate and flush the system, as directed, until a satisfactory sample is obtained. The Contractor/Developer shall submit a sampling plan for CCWD approval along with sample sites.
B. After final flushing and after the water has remained in the new main for at least 16 hours, two consecutive sets of acceptable samples, taken at least twenty-four (24) hours apart, shall be collected from the new main. At least one set of samples shall be collected from every 1,200 feet of the new water main, plus one (1) set from the end of the line, and at least one (1) set from each branch. . Bacteriological testing shall be per CCWD Standards and AWWA C651, Section 5.1, whichever is more stringent, and shall be completed by the Contractor/Developer with CCWD approval. A standard heterotrophic plate count may be required, at the option of District.
C. If trench water has entered the new main during construction or if, in the opinion of District, excessive quantities of dirt or debris have entered the new main, bacteriological samples shall be taken at intervals of approximately two hundred (200) feet and shall be identified by location. Samples shall be taken of water that has stood in the new main for at least sixteen (16) hours after final flushing has been completed.

3.13 RE-DISINFECTION

A. If the initial disinfection fails to produce satisfactory bacteriological samples, the main shall be flushed again and shall be resampled. If check samples show the presence of coliform organisms, then the main shall be re-chlorinated until satisfactory results are obtained.

B. NOTE: High velocities in the existing system, resulting from flushing the new main, may disturb sediment that has accumulated in the existing mains. When check samples are taken, it is well to also sample water entering the new main.

3.14 DISINFECTING CUT-IN CONNECTIONS

A. When connecting to an existing water main with a cut-in tee, the trench excavation is to be dewatered during the tie-in work. The interior of the pipe, couplings, fittings, valves, and other components that make up the connection assembly shall be swabbed with a minimum 1% solution of chlorine in accordance with AWWA C650.

3.15 HOT TAPS

A. Before the tapping sleeve is installed, the exterior surface of the main is to be cleaned and
B. the interior surface of the tapping sleeve, outlet, and valve shall be swabbed with a minimum 1% solution of chlorine

END OF SECTION

SECTION 33 01 15
PIPE AND PIPE FITTINGS: BASIC REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Piping systems.
   2. Disinfection requirements.

1.02 QUALITY ASSURANCE

A. Referenced Standards:
   1. American Iron and Steel Institute (AISI).
   2. American Society of Mechanical Engineers (ASME):
      a. ASME B16.3, Malleable Iron Threaded Fittings.
      b. ASME B16.5, Pipe Flanges and Flanged Fittings.
      c. ASME B16.9, Factory-Made Wrought Steel Butt-Welding Fittings.
   3. ASTM International (ASTM):
      a. ASTM A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
      b. ASTM A126, Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
      c. ASTM A536 , Standard Specification for Ductile Iron Castings.
   4. American Water Works Association/American National Standards Institute (AWWA/ANSI):
      a. AWWA C110/A21.10, Ductile-Iron and Gray-Iron Fittings, 3 Inch through 48 Inch for Water and Other Liquids.
      b. AWWA C111/A21.11, Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.
      c. AWWA C115/A21.15, Flanged Ductile-Iron Pipe with Threaded Flanges.
      d. AWWA C151/A21.51, Ductile-Iron Pipe, Centrifugally Cast In Metal Molds or Sand-Lined Molds for Water or Other Liquids.
      e. AWWA C153/A21.53, Ductile-Iron Compact Fittings, 3 Inch Through 16 Inch, for Water and Other Liquids.
B. Coordinate flange dimensions and drillings between piping, valves, and equipment.

1.03 SYSTEM DESCRIPTION

A. Piping Systems Organization and Definition:
   1. Piping services are grouped into designated systems according to the fluid conveyed, system pressure, piping size and system materials of construction.
   2. See Piping Specification Schedules in Section 3.03.

1.04 SUBMITTALS

A. Shop Drawings:
   1. See Section 01 33 00 - Submittal Procedures for requirements for the mechanics and administration of the submittal process.
   2. Fabrication and/or layout drawings:
      a. Exterior yard piping drawings (minimum scale 1 inch equals 10 feet) with information including:
         1) Dimensions of piping lengths.
         2) Invert or centerline elevations of piping crossings.
         3) Acknowledgement of bury depth requirements.
         4) Details of fittings, tapping locations, thrust blocks, restrained joint segments, harnessed joint segments, hydrants, and related appurtenances.
         5) Acknowledge designated valve or gate tag numbers, manhole numbers, instrument tag numbers, pipe and line numbers.
         6) Line slopes and vents.
      b. Schedule of interconnections to existing piping and method of connection.

3. Product technical data including:
    a. Acknowledgement that products submitted meet requirements of standards referenced.
    b. Copies of manufacturer's written directions regarding material handling, delivery, storage and installation.
    c. Separate schedule sheet for each piping system scheduled in this Section showing compliance of all system components.
        1) Attach technical product data on gaskets, pipe, fittings, and other components.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect pipe coating during handling using methods recommended by manufacturer.
    1. Use of bare cables, chains, hooks, metal bars or narrow skids in contact with coated pipe is not permitted.
    2. Pipe consisting of lining systems shall utilize wooden bulkheads or plastic caps at both ends of each pipe segment in order to protect the interior lining system.
B. Prevent damage to pipe during transit.
    1. Repair abrasions, scars, and blemishes.
    2. If repair of satisfactory quality cannot be achieved, replace damaged material immediately.

PART 2 - PRODUCTS

2.01 PIPING SPECIFICATION SCHEDULES

A. Piping system materials, fittings and appurtenances are subject to requirements of specific piping specification schedules located at the end of Part 3 of this Section and as specified in the Division 33 piping sections.

2.02 COMPONENTS AND ACCESSORIES

A. Reducers:
    1. Furnish appropriate size reducers and reducing fittings to mate pipe to equipment connections.
    2. Connection size requirements may change from those shown on Contract Drawings depending on equipment furnished.
B. Valves:
    1. See Section 33 14 19 - Valves and Hydrants.

PART 3 - EXECUTION

3.01 EXTERIOR BURIED PIPING INSTALLATION

A. Unless otherwise shown on the Contract Drawings, provide a minimum earth cover over exterior buried piping systems and appurtenances as follows:
    1. 36 inches in unpaved areas.
    2. 36 inches in paved areas.
B. Laying Pipe In Trench:
    1. Excavate and backfill trench in accordance with Section 02 22 10 Trench Excavation, Backfill, and Compaction.
    2. Clean each pipe length thoroughly and inspect for compliance to Specifications.
    3. Grade trench bottom and excavate for pipe bell, place bedding, and lay pipe on trench bottom.
    4. Install gasket or joint material according to manufacturer's directions after joints have been thoroughly cleaned and examined.
    5. Except for first 2 joints, before making final connections of joints, install 2 full sections of pipe with earth tamped along side of pipe or final with bedding material placed.
    6. Lay pipe in only suitable weather with good trench conditions.
        a. Never lay pipe in water except where approved by Engineer.
    7. Seal open end of line with watertight plug if pipe laying stopped.
    8. Remove water in trench before removal of plug.
C. Lining Up Push-On Joint Piping:
    1. Lay piping on route lines shown on Contract Drawings.
    2. All joints are to be restrained.

3. Deflect from straight alignments or grades by vertical or horizontal curves or offsets.
4. Observe maximum deflection values stated in manufacturer's written literature.
5. Provide special bends when specified or where required alignment exceeds allowable deflections stipulated.
6. Install shorter lengths of pipe in such length and number that angular deflection of any joint, as represented by specified maximum deflection, is not exceeded.

3.02 CONNECTIONS WITH EXISTING PIPING

A. Coordinate any necessary outages for connections with District per Section 01 14 00 - Work Restrictions.
B. Where connection between new work and existing work is made, use suitable and proper fittings to suit conditions encountered. See Contract Drawings for connection details.
C. Perform connections with existing piping at time and under conditions which will least interfere with service to customers affected by such operation.
D. Undertake connections in fashion which will disturb system as little as possible.
E. Provide suitable equipment and facilities to dewater, drain, and dispose of liquid removed without damage to adjacent property.
F. Where connections to existing systems necessitate employment of past installation methods not currently part of trade practice, utilize necessary special piping components.
G. Once tie-in to each existing system is initiated, continue work continuously until tie-in is made and tested.

3.03 FIELD QUALITY CONTROL

A. Pipe Testing - General:
   1. Test piping systems as follows:
      a. Test exposed, non-insulated piping systems upon completion of system.
      b. Test exposed, insulated piping systems upon completion of system but prior to application of insulation.
      c. Test buried piping after rock subgrade is placed and compacted.
   2. Utilize pressures, media and pressure test durations as specified on Piping Specification Schedules.
   3. Perform pressure test using calibrated pressure gauges and calibrated volumetric measuring equipment to determine leakage rates.
      a. Select each gauge so that the specified test pressure falls within the upper half of the gauge's range.
      b. Notify the Engineer 24 hours prior to each test.
      c. Pressure test shall be witnessed by District Inspector.
   4. Completely assemble and test new piping systems prior to connection to existing pipe systems.
   5. Acknowledge satisfactory performance of tests and inspections in writing to Engineer prior to final acceptance.
   6. Bear the cost of all testing and inspecting, locating and remedying of leaks and any necessary retesting and re-examination.
B. Pressure Testing:
   1. Hydrostatic pressure testing methodology:
      a. General:
         1) Test pressure measured at lowest elevation in tested pipe.
         2) Provide additional temporary supports for piping systems designed for vapor or gas to support the weight of the test water.
         3) Provide temporary restraints for expansion joints for additional pressure load under test.
         4) Isolate equipment in piping system with rated pressure lower than pipe test pressure.
         5) Do not paint or insulate exposed piping until successful performance of pressure test.

3.04 CLEANING AND DISINFECTION

A. See Section 33 01 10.58 Testing and Disinfecting of Water Mains.
B. Cleaning:
    1. Clean interior of piping systems thoroughly before installing.
    2. Maintain pipe in clean condition during installation.
    3. Before jointing piping, thoroughly clean and wipe joint contact surfaces and then properly dress and make joint.
    4. Immediately prior to pressure testing, clean and remove grease, metal cuttings, dirt, or other foreign materials which may have entered the system.
    5. At completion of work and prior to Final Acceptance, thoroughly clean work installed under these Specifications.
        a. Clean equipment, fixtures, pipe, valves, and fittings of grease, metal cuttings, and sludge which may have accumulated by operation of system, from testing, or from other causes.
        b. Repair any stoppage or discoloration or other damage to parts of building, its finish, or furnishings, due to failure to properly clean piping system, without cost to Owner.
C. Disinfection of Potable Water Systems: See Section 33 01 10.58 Testing and Disinfecting of Water Mains.

3.05 LOCATION OF BURIED OBSTACLES

A. Furnish exact location and description of buried utilities encountered and thrust block placement.
B. Reference items to definitive reference point locations such as found property corners, entrances to buildings, existing structure lines, fire hydrants and related fixed structures.
C. Include such information as location, elevation, coverage, supports and additional pertinent information.
D. Incorporate information on "As-Recorded" Drawings.

3.06 SCHEDULES

System	Service	Restrained Joint	Spec Section
1	Transmission Pipeline - High Pressure	Yes, All Joints	33 01 24

A. System 1
   1. General:
      a. Piping and Symbol service:
         1) TP - Transmission Pipeline - High Pressure
      b. Test requirements:
         1) Test medium: Water
         2) Pressure: 200 psig
         3) Duration: 2 hours.
      c. Gaskets:
         1) Flanged, push-on, mechanical joints (ductile iron): Rubber, AWWA C111.
   2. System 1 Components:
      a. Pipe size: 12 IN.
         1) Buried Service:
            (a) Material: Ductile Iron, Class 350
            (b) Reference: ANSI/AWWA C151
            (c) Lining: Cement Mortar
            (d) Fittings: ANSI/AWWA C110 or ANSI C153.
               (1) U.S. Pipe
               (2) Tyler Union
               (3) Sigma Corp
               (4) Star Pipe Products
               (5) Or equal
            (e) Joints:
               (1) See Section 33 01 22 Ductile Iron Pipe
               (2) Valves connections, Flanged

END OF SECTION

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SECTION 33 01 22
DUCTILE IRON PIPE

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Ductile iron piping, fittings, and appurtenances.

1.02 QUALITY ASSURANCE

A. Referenced Standards:
   1. American National Standards Institute (ANSI):
      a. ASME B1.1, Unified Inch Screw Threads (UN and UNR Thread Form).
      b. ASME B16.1, Cast-Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250, and 800.
      c. ASME B16.21, Nonmetallic Flat Gaskets for Pipe Flanges.
   2. American Society for Testing and Materials (ASTM):
      a. ASTM A183, Carbon Steel Track Bolts.
      b. ASTM A193/A193M, Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service.
      c. ASTM A194/A194M, Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service.
      d. ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength.
      e. ASTM B695, Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
      f. D1330, Rubber Sheet Gaskets.
   3. American Water Works Association (AWWA):
      a. AWWA C104/A21.4, Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
      b. AWWA C105/A21.5, Polyethylene Encasement for Gray and Ductile Cast-Iron Piping for Water and Other Liquids.
      c. AWWA C110/A21.10, Ductile Iron and Gray Iron Fittings, 3 IN through 48 IN for Water and Other Liquids.
      d. AWWA C111/A21.11, Gasket Joints for Cast Iron and Ductile Iron Pressure Pipe and Fittings.
      e. AWWA C115/A21.15, Flanged Ductile Iron Pipe with Threaded Flanges.
      f. AWWA C150/A21.50, Thickness Design of Ductile Iron Pipe.
      g. AWWA C151/A21.51, Ductile Iron Pipe, Centrifugally Cast-In-Metal Molds or Sand-Lined Molds, for Water or Other Liquids.
      h. AWWA C153/A21.53, Ductile-Iron Compact Fittings, 3 in. through 16 in. for Water and Other Liquids.
      i. AWWA C203, Coal-Tar Protective Coatings and Linings for Steel Water Pipelines-Enamel and Tape-Hot Applied.
      j. AWWA C606, Grooved and Shouldered Joints.
   4. Military Specification (Mil Spec):
      a. QQ-P-416F, Plating, Cadmium Electro Deposited.

1.03 SUBMITTALS

A. Shop Drawings:
   1. See Section 33 01 15 - Pipe and Pipe Fittings: Basic Requirements.
   2. Certification of factory hydrostatic testing.
   3. If mechanical coupling system is used, submit piping, fittings, and appurtenant items which will be utilized to meet system requirements.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents the following manufacturers are acceptable:

1. Ductile Iron Pipe Class 350
    a. American Ductile Iron Pipe, McWane Ductile, U.S. Pipe
    b. TR Flex Ductile Iron Pipe, McWane Ductile
    c. HDSS Pipe High Pressure Restrained Pipe With Deflection, U.S. Pipe
    d. Tyton Joint Ductile Iron Pipe, U.S. Pipe
    e. Flex-Ring Joint Ductile Iron Pipe, American Ductile Iron Pipe
    f. Or Equal
2. Flanged adapters:
    a. Ductile iron conforming to AWWA C219, NSD 61 compliant.
    b. On opposite end provide compatible joint type to match adjacent piping systems, such as Tyton, TR-Flex, Flex Rings, MJ
    c. Must be working pressure rated minimum for field test pressure
    d. ROMAC RFCA
    e. Hymax Grip Coupling
    f. EBAA 2100 MegaFlange
    g. Or Equal
3. Reducing couplings:
    a. Rockwell (Style 415).
    b. Dresser (Style 62).
    c. Or approved equal.
4. Transition coupling:
    a. Rockwell (Style 413).
    b. Dresser (Style 62).
    c. Or approved equal.
5. Polyethylene encasement tape:
    a. Chase (Chasekote 750).
    b. Kendall (Polyken 900).
    c. 3 M (Scotchrap 50).
    d. Or approved equal.
6. Restrained joints:
    a. American (Lock Fast) - 12 IN and below.
    b. US Pipe (TR-Flex) - 4 IN to 54 IN.
    c. American (Flex-Ring) - Above 12 IN.
    d. Or approved equal.

B. Submit requests for substitution in accordance with Section 01 33 00 - Submittal Procedures.

C. All flange adaptors and couplings listed above are to be furnished with manufacturer's shop applied NSF 61 certified epoxy lining and coating. All nuts and bolts shall be stainless steel.

D. All flange adapters and couplings shall have a working pressure rating exceeding the maximum field test pressure applied to the pipe segment.

2.02 MATERIALS:

A. Pipe
1. Ductile iron:
    a. Pressure Class as shown on Contract Drawings:
        1) Class 350.
    b. AWWA C151/A21.51
2. Cement mortar lining: AWWA C104/A21.4

B. Fittings:
1. All fittings shall be Zinc Coated.
2. Ductile iron: AWWA C110/A21.10:
    a. Mechanical joint fittings: 350 psi rating
    b. Flanged fittings:
        1) Rated to 350-psi per AWWA with use of special gaskets (U.S. Pipe Ring Flange-Tyte, American Toruseal or equal).

3. Comply with requirements for restrained fittings as indicated on Contract Drawings
4. Cement mortar lining: AWWA C104/A21.4
    a. ISO 8179-1 external zinc-based coating
    b. Active inner layer of 200 g/m2 of pure metallic zinc under asphalt topcoat

C. Pipe Joints:
1. Mechanical joints AWWA C111/A21.11:
    a. Restraint Glands: Fusion bonded coated ductile iron body, domestic sourced either Romac RomaGrip (Romabond), Ebba MegaLug 1100, or equal. Working pressure rating must exceed field test pressure.
    b. Hardware: Xylan 1424 top coat (Tripac 2000, Romac R-Blue, or equal) bolts, t-bolts and nuts. Furnish Type 304 stainless steel hardware where Xylan coated hardware is not available.
    c. Gaskets: AWWA C111/A21.11
2. Flanged joints:
    a. Flanges:
        1) General use: AWWA C115/A21.15 and ASME B16.1, 125 pounds
    b. Nuts and Bolts:
        1) AWWA C111 Flanged heavy hex nuts and bolts of low-carbon steel ASTM A307/Grade B, 60,000 psi tensile strength; t-bolts and nuts of high strength, low alloy corrosion resistant steel (ASTM A242/A242M) with 45,000-psi yield strength. All bolts, nuts & washers zinc plated with Xylan 1424 top coat (Tripac 2000, Romac R-Blue or equal). Furnish Type 304 stainless steel hardware where Xylan coated hardware is not available.
        2) Manufacturer's:
            (a) Tripac 2000
            (b) Romac R-Blue
            (c) Tyler Union Flurokote #1
            (d) Or Equal
    c. Gaskets: ASTM D1330, Grade 1, red rubber, full face type
    d. Screw-on type
3. Push-on joints: AWWA C111/A21.11:
    a. Lubricant: Heavy vegetable soap solution suitable for potable water use
    b. Conforms to Tyton Joint standard for pipe and fittings
    c. Compatible with U.S. Pipe Field Lock 350 push-on restraint gaskets
4. Mechanical couplings: Dresser "Style 38," Rockwell "411," or equal
5. Grooved couplings:
    a. Standard groove/rigid groove
    b. 24 inches and smaller:
        1) Pipe ends: Grooved with "radius groove"
        2) Couplings: Victaulic "Style 31," Tyler," or equal
    c. Gaskets: Compatible with pipe material
6. Tapping Sleeves: Romac “FTS 420”, Romac “STS 420”, Romac SSTIII Ford, or equal

D. Corrosion Control:
1. Shop coating and lining per AWWA C104/A21.4:
    a. Cement lining: ANSI A21.4
    b. Exterior bituminous coating: Manufacturer's standard.

E. V-Bio Enhanced Polyethylene encasement: AWWA C105/A21.5; seamless tube, ASTM D674:
    a. Joint tape: Self-sticking, PVC or polyethylene, 10 mils thick; Chase "Chasekote 750," Kendall "Polyken 900," 3M "Scotchrap 50,"or equal
    b. Strapping: Nonmetallic, water resistant, FS PPP-S-760, Type II

F. See Piping Schedules in Section 33 01 15 - Pipe and Pipe Fittings: Basic Requirements.

2.03 MANUFACTURED UNITS

A. Couplings:

1. Flanged adapters:
    a. Unit consisting of steel or carbon steel body sleeve, flange, followers, Grade 30 rubber gaskets.
    b. Provide units equal to those specified in Section 2.01.
    c. Supply flanges meeting standards of adjoining flanges.
    d. Rate entire assembly for test pressure specified on piping schedule for each respective application.
2. Compression sleeve coupling:
    a. Unit consisting of steel sleeve, followers, Grade 30 rubber gaskets.
    b. Provide units equal to those specified in Section 2.01.
    c. Supply flanges meeting standards of adjoining flanges.
    d. Entire assembly to be rated for test pressure specified on piping schedule for each respective application.
    e. Provide field coating for buried couplings per AWWA C203.

2.04 FABRICATION

A. Furnish and install without outside coatings of bituminous material any exposed pipe scheduled to be painted.
B. Furnish cast parts with lacquer finish compatible with finish coat.

2.05 SOURCE QUALITY CONTROL

A. Factory Test:
    1. Subject pipe to hydrostatic test of not less than 500 psi with the pipe under the full test pressure for at least 10 seconds.

PART 3 - EXECUTION

3.01 HANDLING AND TRANSPORTATION

A. Handling and transportation of pipe shall be in accordance with the pipe manufacturer's published instructions.
B. Heavy canvas or nylon slings of suitable strength shall be used for lifting and supporting materials. Chains or cables shall not be used.
C. Pipe and fittings shall not be stored on rocks or gravel or other hard material that might damage the pipe.

3.02 RUBBER GASKET STORAGE

A. All rubber gaskets shall be stored in a cool, well-ventilated place and not exposed to the direct rays of the sun. Gaskets shall not be allowed in contact with oils, fuels, petroleum, or solvents.

3.03 PIPE LAYING

A. Pipe shall be laid in accordance with the pipe manufacturer's published instructions, District Standards Drawings, ANSI/AWWA C600, and AWWA C651-14, as complimented and modified herein.

3.04 CLEANLINESS

A. The interior of pipes shall be clean of foreign materials before sections of pipe are installed and shall be protected to prevent entry of foreign materials after installation.
B. Open ends of installed pipe shall be sealed with watertight plugs or other approved means at times when pipe installation is not in progress. Ground water shall not be allowed to enter the pipe.

3.05 INSPECTION BEFORE INSTALLATION

A. All pipe and fittings shall be carefully examined for cracks and other defects while suspended and before installation. Spigot ends shall be examined with particular care as this area is the most vulnerable to damage from handling. Defective pipe or fittings shall be laid aside for inspection by the District, which will accept proposed corrective repairs or rejection.

3.06 LOWERING OF PIPE MATERIAL INTO TRENCH

A. Proper implements, tools, and equipment, satisfactory to the District, shall be provided and used by the Contractor for the safe and convenient performance of the work. All pipe, fittings, valves,

and hydrants shall be carefully lowered into the trench piece by piece in such a manner as to prevent damage to the water main materials and protective coatings and linings. Under no circumstances shall water main materials be dropped or dumped into the trench.

B. If damage occurs to any pipe, fittings, valves, hydrants, or water main accessories in handling, the damage shall be immediately brought to the District's attention.

3.07 LAYING OF PIPE

A. Pipe shall be laid in trenches to the line and grade indicated on the Contract Drawings. Generally, the pipe is laid with the bell end facing the direction of pipe laying, except on steep grades.

B. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the trench. If the pipe-laying crew cannot install the pipe into the trench without getting earth into it, the District's Inspector may require a heavy, tightly woven canvas bag of suitable size, or plastic caps, be placed over each end of the pipe prior to installation and left there until the connection is made to the adjacent pipe. During laying operations, no debris, tools, clothing, or other material shall be placed in the pipe.

C. As each length of pipe is placed in the trench, the spigot end shall be centered in the bell or coupling, and the pipe forced home and brought to correct line and grade. The pipe shall be secured in place with approved backfill material tamped under it, except at the bells or couplings. Precautions shall be taken to prevent dirt from entering the joint space.

D. Joints shall be assembled in accordance with the manufacturer's instructions. Each joint shall be checked with a feeler gauge to assure proper seating of the gasket.

3.08 CUTTING OF PIPE

A. Pipe that has been marked For Field Cut shall be used. If the pipe is not marked for field cutting, then the diameter of the pipe should be checked prior to cutting. Field cuts and connections shall be in accordance with the pipe manufacturer's published instructions.

B. The cutting of pipe for inserting valves, fittings, or closure pieces shall be done in a neat and workmanlike manner without damage to the pipe to leave a smooth end at right angles.

3.09 ALLOWABLE DEFLECTION

A. The maximum allowable angular deflection at the joints shall be 75% of manufacturer's recommendation for push-on and mechanical joints unless otherwise allowed by the District.

3.10 INSTALLATION

A. Joining Method - Push-On Mechanical (Gland-Type) Joints:
   1. Install in accordance with AWWA C111/A21.11.
   2. Assemble mechanical joints carefully according to manufacturer's recommendations. Deflection not to exceed 75% of manufacturer's allowed deflection.
   3. If effective sealing is not obtained, disassemble, thoroughly clean, and reassemble the joint.
   4. Do not overstress bolts.
   5. Where piping utilizes mechanical joints with tie rods, align joint holes to permit installation of harness bolts.

B. Joining Method - Push-On Joints:
   1. Install in accordance with AWWA C151/A21.51.
   2. Assemble push-on joints in accordance with manufacturer's directions. Deflection not to exceed 75 percent of manufacturer's allowed deflection 4 degrees for 6"-12" pipe .
   3. Bevel and lubricate spigot end of pipe to facilitate assembly without damage to gasket. Use lubricant that is non-toxic, does not support the growth of bacteria, has no deteriorating effects on the gasket material, and imparts no taste or odor to water in pipe.
   4. Assure the gasket groove is thoroughly clean.
   5. For cold weather installation, warm gasket prior to placement in bell.
   6. Taper of bevel shall be approximately 30 degrees with centerline of pipe and approximately 1/4 IN back.

C. Joining Method - Flanged Joints:
   1. Install in accordance with AWWA C115/A21.15.
   2. Extend pipe completely through screwed-on flanged and machine flange face and pipe in single operation.

3. Make flange faces flat and perpendicular to pipe centerline.
4. When bolting flange joints, exercise extreme care to ensure that there is no restraint on opposite end of pipe or fitting which would prevent uniform gasket compression or would cause unnecessary stress, bending or torsional strains to be applied to cast flanges or flanged fittings.
5. Allow one flange free movement in any direction while bolts are being tightened.
6. Do not assemble adjoining flexible joints until flanged joints in piping system have been tightened.
7. Gradually tighten flange bolts uniformly to permit even gasket compression.

D. Joining Method - Mechanical Coupling Joint:
1. Arrange piping so that pipe ends are in full contact.
2. Groove and shoulder ends of piping in accordance with manufacturer's recommendations.
3. Provide coupling and grooving technique assuring a connection which passes pressure testing requirements.

E. Flange Adapters 12 IN and Less:
1. Locate and drill holes for anchor studs after pipe is in place and bolted tight.
2. Drill holes not more than 1/8 IN larger than diameter of stud projection.

F. Support exposed pipe in accordance with Section 33 01 15 - Pipe and Pipe Fittings: Basic Requirements.

G. Install buried piping in accordance with Section 33 01 15 - Pipe and Pipe Fittings: Basic Requirements.

H. Install restrained joint systems where specified in Section 33 01 15 - Pipe and Pipe Fittings: Basic Requirements under specific piping system.

3.11 ANCHORAGE FOR FITTINGS

A. All fittings, unless specified in the Contract Drawings, shall be provided with a thrust block constructed against undisturbed soil.

3.12 THRUST BLOCKS

A. Thrust blocks shall be constructed of Class B concrete. Care shall be taken not to obstruct the outlets of tees or crosses, which are intended for future connections. A waterproof paper or plastic bond-breaker shall be placed between plugs and caps and the concrete thrust block to facilitate their removal in the future. Thrust blocks shall be poured against undisturbed earth and shall have at least the minimum dimensions shown in the Contract Drawings.

3.13 POLYETHYLENE ENCASEMENT

A. All buried pipe and fittings shall be wrapped in polyethylene encasement to prevent contact between the pipe and the surrounding backfill and bedding materials but is not intended to be a completely airtight or watertight enclosure. Installation of polyethylene encasement shall be in accordance with the ANSI/AWWA C-105, Method A.

B. All lumps of clay, mud, cinders, etc. on the pipe surface shall be removed prior to installation of the polyethylene encasement. During installation, care shall be exercised to prevent soil or embedment material from becoming trapped between the pipe and the polyethylene.

C. For installations below the water table, both ends of the polyethylene tube shall be sealed as thoroughly as possible with adhesive tape at the joint overlap.

3.14 FIELD QUALITY CONTROL

A. Test piping systems in accordance with Section 33 01 10.58 Testing and Disinfecting of Water Mains and Section 33 01 15 - Pipe and Pipe Fittings: Basic Requirements

END OF SECTION

SECTION 33 14 19
VALVES AND HYDRANTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included:
   1. Valves and hydrants indicated on Contract Drawings, specified, or required for proper operation of equipment or systems.
   2. Provide ALL valves as shown on Contract Drawings.

1.02 QUALITY CONTROL

A. Shop Testing:
   1. Test valves in accordance with the applicable standards referenced in Part 2.

1.03 SUBMITTALS

A. Catalog Data: Submit manufacturer's literature and illustrations sufficient to verify compliance with the Specifications.
B. Shop Drawings:
   1. Dimensions.
      a. Construction details.
      b. Materials.
      c. Assembled weight.
C. Installation Instructions: Complete manufacturer's installation instructions.
D. Maintenance Data:
   1. Maintenance instructions.
   2. Parts lists.

1.04 PRODUCT DELIVERY

A. Prepare Valves and Accessories for Shipment According to AWWA C500, Section 31:
   1. Seal valve ends to prevent entry of foreign matter into valve body.
   2. Box, crate, completely enclose, and protect valves and accessories from accumulations of foreign matter.

1.05 WARRANTY

A. Supplier warrants equipment (and its component parts) against defects in materials and workmanship under normal use for a minimum of two years after the date of the District’s final acceptance and start of beneficial use of the equipment in accordance with the Contract Specifications.

PART 2 - PRODUCTS

2.01 GENERAL

A. Construction:
   1. Actual valve length within $\pm$1/16 inch of specified or theoretical length.
   2. Ends, except as otherwise specified:
      a. 2-1/2 inches and smaller: Threaded or soldered ends.
      b. 3 inches and larger:
         1) Buried: Flanged, AWWA C111/A21.11, or Mechanical Joint.
         2) Others: Flanges, ANSI, 125 pounds, or Mechanical Joint.
B. Shop Painting:
   1. Shop paint all ferrous metal surfaces of valves and accessories, both interior and exterior, for corrosion protection.
   2. Manufacturer's standard paint will be acceptable if it is functionally equivalent to the specified paint and compatible with the specified field painting.
   3. Materials:
      a. Asphalt varnish: TT-U-51.
      b. Coal tar: Koppers "Bitumastic Super Tank Solution," Tnemec, or equal.
      c. Epoxy: Tnemec "Hi-Build Epoxoline," Carboline, or equal.

d. Rust-inhibitive primer: Tnemec "77 Chem-Prime," Carboline, or equal.
e. Rust-preventive compound: Houghton "Rust Veto 344," "Rust-Oleum R-9," or equal.

4. Surfaces to be painted:
   a. Unfinished surfaces:
      1) Interior: Epoxy.
      2) Exterior to be buried, submerged, or located in manholes: Asphalt varnish or coal tar.
      3) Other exterior: Rust-inhibitive primer.
   b. Polished or machined surfaces: Rust-preventive compound.
   c. Operators and accessories: Rust-inhibitive primer.

C. Actuators:
1. Provide manual actuators for all valves not specified to be power actuated or designed for automatic operation:
   a. General use: Handwheel, 8 inch diameter minimum.
   b. Buried valve, valves operated through floor boxes, and as indicated on Contract Drawings: 2 inch Wrench nuts.
      1) AWWA C504, AWWA C508, or C517.
      2) Provide two operating keys.
2. Rotation:
   a. Counterclockwise (to the left) to open.
   b. The word "OPEN" and an arrow indicating direction to open cast on each valve body or operator.
3. Extension stems:
   a. Provide where indicated on Contract Drawings, specified, or required for proper operation, and for buried valves with operating nuts more than 4 feet below grade.
   b. Nonrising stems:
      1) Solid steel shafting with OD not less than OD of valve stem or galvanized steel pipe with ID not less than OD of valve stem.
      2) Connected to valve by a flexible socket coupling.
   c. Stem guides:
      1) Cast iron, bronze bushed, adjustable in two directions.
      2) If extension stem length exceeds 10 feet, design top guide to carry the stem weight and provide a collar on the stem to bear against the thrust guide.
      3) Maximum spacing:
         (a) Nonrising stems: 100 times stem OD.
         (b) 10 feet maximum.
   d. Buried valves:
      1) Stem to extend within 6 inches of grade.
      2) Provide spaces to center stem in valve box.
      3) Provide wrench nut.
4. Valve boxes:
   a. Provide for all buried valves.
   b. ADS extension sleeve with Christy G5 boxes, Brooks, or equal and cast iron traffic covers.
   c. Extension sleeve depth as required for valve.
   d. Extension sleeve minimum diameter: 8 inches.
   e. Box, cover, and base coated by dipping in asphalt varnish.
   f. An appropriate word designating the valve service cast on the cover.
   g. Provide locking grade rings as necessary for proper installation.
   h. Install with concrete collar and thrust block as illustrated on Drawing details.
5. Valve Lockout Device:
   a. Provide Aqua Lockout-Tagout device for valves per valve ID, per Contract Documents.

2.02 GATE VALVES: 3 TO 12 IN DIAMETER

A. Resilient Wedge Gate Valve:
   1. Comply with AWWA C515 .
   2. Ductile iron, NRS, open left, NSF 61-G and NSF 372 compliant, 2-inch square operating nut (unless otherwise noted)
   3. Fusion epoxy coated and lined
   4. Body shall be constructed of ductile iron ASTM A536 with wall thickness per Table 3 of AWWA C515
      a. Marked "D.I" or "Ductile Iron" cast on body.
      b. The body shall have a smooth, oversized waterway
      c. Prior to assembly, all internal and external ferrous surfaces of body and bonnet shall receive electro-statically applied fusion-bonded epoxy coating complying with AWWA C550.
      d. All exterior valve body bolting shall be 304 stainless steel with hexagonal heads and dimensions per ANSI B18.2.21.
      e. All body gaskets shall be pressure energized O-ring style design.
   5. Wedge to be ductile iron ASTM A537 with proective Acetal polymer wedge guife covers.
   6. Stem forged or cast managanese brones (ASTM B138 C67600 or ASTM B763 C86700), sealed by three O-rings, and thrust washers located above and below the thrust collar to reduce operating torque.
   7. Operators for sizes 2" through 12", provide 2" AWWA sequare nut constructed of ductile iron fitted to a square tapered stem.
   8. Design Requirements:
      a. 200 psi testing pressure.

B. Acceptable Manufacturers:
   1. Mueller A-2361
   2. American Darling 2500 and 3500
   3. Or equal.

2.03 AIR AND VACUUM RELIEF VALVES

A. General:
   1. Provide as indicated on Contract Drawings.
   2. Water testing pressure: 200 psi.
   3. Provide a shutoff valve: Ball valve, globe valve, eccentric action cock, or a Nibo "U-Valve," Dyna-Quip "Combo Valve," or equal.
   4. 1-inch and 2-inch inlet, pump applications, vacuum break, AWWA C512 and NSF 61 and NSF 372 compliant, underground, fusion epoxy lined and coated

B. Materials:
   1. Body: Ductile Iron.
   2. Cover: Ductile Iron.
   3. Seat: Buna N.
   4. Float Lever: Bronze.
   5. Float: Stainless Steel.
   6. Hardware: Stainless Steel.

C. Design Requirements:
   1. Single body.
   2. Air and vacuum valve with externally mounted air release valve.
   3. Inlet size as indicated on Contract Drawings.

D. Acceptable Manufacturers:
   1. APCO Series S-143C, S-145C
   2. Cla-Val 36, 39
   3. ValMatic 201C.2, 202C.2
   4. Or equal.

2.04 FIRE HYDRANTS

A. Conform to AWWA C502 – Latest Revision for dry barrel type. All components shall conform to ANSI/NSF-61
B. Rated for a working pressure of 350-psig and hydrostatically tested according to AWWWA C502 to 500-psig
    1. The first test for the main valve seat shall be made at 500-psig with the main valve closed with pressure applied through the shoe inlet.
    2. The second test for the entire hydrant and drain valves shall be made at 500-psig with the main valve open.
C. Information Required by AWWA C502, Section 2:
    1. Affidavit of compliance: Not required.
    2. Catalog and maintenance data: Review before manufacture.
    3. Type of shutoff: Compression or gate.
    4. Size of hydrant: 6-inch, flanged.
    5. Inlet connection: 6-inch, flanged.
    6. 5-1/4" main valve opening 3-way
    7. Harnessing lugs: Required.
    8. Outlet nozzles: Two 2 1/2-inch hose and one 4 1/2-inch pumper.
    9. Outlet nozzle threads: NPPA #194 for national standard fire hose coupling screw threads.
    10. Direction to open: Counterclockwise.
    11. Stem seals: O-ring.
    12. Outlet nozzle cap chains: Required.
    13. Drain outlet: Required.
D. Locate per Contract Plans.
E. Upon vehicular impact, safety flange ring at base of above ground hydrant assembly and internal stem coupling shall break away to allow above ground hydrant assembly to separate cleanly from buried standpipe without damage to internal parts with main valve remaining closed without loss of water.
F. Coatings
    1. Hydrants shall have a 6-inch mechanical joint or flanged shoe with interior and exterior fusion bonded epoxy coating per AWWA C550 or equal.
    2. Interior and exterior above and below ground line coated with catalyzed epoxy primer (NSF61 listed and AWWA C550 compliant).
        a. Exterior above ground surfaces shall have finish coat of catalyzed polurethane (red).
G. Manufacturer:
    1. American Darling Model B-45-B-5
    2. Mueller Super Centurion 250
    3. Or Approved Equal
H. Hydrants shall be provided with a ten-year limited warranty free of defects in materials and workmanship.

PART 3 - EXECUTION

3.01 INSPECTION

A. Fire Hydrants:
    1. Thoroughly inspect.
    2. Thoroughly clean interior.
    3. Open and close hydrant as many times as required to ensure parts are in proper working order, valves are seating properly, and drain valve is operating freely.
    4. Check the packing gland to determine if packing is in-place and gland nut is properly tightened.

3.02 STORAGE

A. Valves shall be delivered and stored in the field with the port openings covered with plastic, cardboard, or wood. These covers shall remain in place until the valve is ready to be installed.

Valves shall not be stored in contact with bare ground. Valves shall not be stacked on top of one another.

3.03 INSTALLATION

A. General:
   1. Install valves and accessories in accordance with manufacturer's recommendations.
   2. Provide a union or flanged connection within 2 feet of each threaded end valve, unless the valve can otherwise be easily removed from piping.
   3. Set valve and valve boxes plumb.
   4. Install valve box directly over valve it serves with top of box flush with finish grade. Provide concrete ring per valve box detail in Contract Drawings.
   5. Fill around box with earth and thoroughly tamp on all sides.

B. Air-Release and Vacuum-Relief Valves:
   1. Pipe exhaust to a suitable disposal point.
   2. Where exhausted to a trapped floor drain, terminate exhaust line 36 inches above grade.

C. Fire Hydrants:
   1. Hydrants shall be place within the public right-or-way and the final location shall be approved by the agency having jurisdiction over the right-of-way.
   2. Set for required minimum pipe cover over supply line and to keep nozzles 12 inches minimum above grade.
   3. Anchor in place or block adequately to prevent hydrant from blowing off supply connection.
   4. Provide 4 cubic feet of gravel or crushed stone around hydrant and below top of supply pipe.
   5. Install plumb.
   6. Install hydrants with pumper nozzles such that hose nozzles are parallel with, and pumper nozzle is perpendicular to edge of road.
   7. Install hydrants with 2 hose nozzles 90 degrees apart so that line bisecting the 90 degree angle is perpendicular to edge of road.
   8. Cover hydrant with burlap bag until tested and placed in service.
   9. Hydrants shall be tested at the same time as the main; dry barrel hydrants shall have the drain valves tested in the following manner:
      a. Following the pressure test, open fire hydrant valve a few turns and allow hydrant to fill until water is at bottom of nozzle.
      b. Close hydrant valve and observe water level drop. If water level drop is not detectable, the hydrant has failed the drainage test.
      c. If the hydrant fails the drainage test, the drain valve may be clogged of backfill material does not permit free drainage. The Contractor shall make the necessary corrections and repairs to correct improper drainage.

3.04 ADJUSTMENTS

A. Check and adjust valves and accessories for smooth operation in accordance with manufacturer's instructions.

3.05 POLYETHYLENE ENCASEMENT

A. Valves and all bolted connections shall be encased with polyethylene plastic film wrap.

3.06 MANUFACTURER'S FIELD SERVICE

A. Provide Manufacturer's Field Services for Valves Scheduled Below:
   1. One visit required:
      a. Verify equipment installed properly and ready for operation.
      b. Schedule:
         1) All valves 12 inch and larger.

END OF SECTION

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SECTION 33 14 19.02
PRESSURE REDUCING VALVES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:
   1. Provide pressure decrease in 12" Class 350 DIP transmission main where indicated onthe Contract Drawings.
   2. Purpose: Pressure reducing station equipped with pressure reducing valves (PRV) sized for low and maximum flows.
   3. The pressure reducing station including the precast vault and hatch shall be a preassembled system by a single manufacturer specializing in engineered piping systems.
   4. Accessories:
      a. Pressure Gauges (4)
      b. Flow Meters (2)
      c. CV Flow Control (Opening and Closing)
      d. Y-Strainer

1.02 QUALITY ASSURANCE

A. Reference Standards:
   1. American Society for Testing and Materials (ASTM):
      a. A536, Specifications for Ductile Iron Castings.

1.03 ACCEPTABLE MANUFACTURERS

A. CLA-VAL Company

1.04 SUBMITTALS

A. See Section 01 33 00.
B. Catalog Data: Submit manufacturer's literature, illustrations and data, sufficient to verify compliance with the Specifications.
C. The control valve manufacturer shall provide:
   1. A computerized cavitation analysis report which shows flow rate, differential pressure, and percentage valve opening. Cv factor, system velocity, and if there will be cavitation damage.
   2. Valve noise levels according to International Standards over the flow range of the valve. Noise calculation program will be specific to the control valve manufacturer, and based upon tests conducted by a third party, independent laboratory and will be able to provide dBA values for octave band frequencies between 31.5 and 8000 Hz.
D. Installation Instructions: Complete manufacturer's installation instructions.
   1. Maintenance Data
      a. See Section 01 78 23
   2. Maintenance instructions.
   3. Parts lists.
E. Shop Drawings:
   1. Dimensions.
   2. Construction details.
   3. Materials of construction.
   4. Assembled dimensions and weight.
   5. Catalog cuts.
   6. Special linings.

1.05 WARRANTY

A. The Control Valve manufacturer shall warrant the valves to be free of defects in material and workmanship for a period of three (3) years after the date of the District's final acceprance and start of beneficial use of this equipment according with the Contract Specifications.

PART 2 - PRODUCTS

2.01 PRESSURE REDUCING VALVE

A. General 8" Pressure Reducing Valve Lake Tulloch —Transmission Main Location: As shown on the Contract Drawings.
   1. Model: 90-01
   2. Pattern: Globe
   3. Inlet Pressure: 146 psi
   4. Outlet Pressure: 77 psi

B. General 4" Pressure Reducing Valve Lake Tulloch —Transmission Main Location: As shown on the Contract Drawings.
   1. Model: 90-01
   2. Pattern: Globe
   3. Inlet Pressure: 146 psi
   4. Outlet Pressure: 77 psi

C. Materials:
   1. Body & Cover: Ductile Iron, Conform to ASTM A536
   2. Main Valve Trim:Stainless Steel
   3. Disc Guide: Stainless Steel
   4. Cover Bearing: Stainless Steel
   5. Seat: Stainless Steel
   6. Stem, Nut, Spring: Stainless Steel
   7. Disc: Buna-N Rubber
   8. Diaphragm: Nylon Reinforced Buna-N Rubber
   9. Internal Trim Parts: Stainless Steel; Bronze; Brass
   10. Length (Flange to Flange): 21"
   11. Pressure Rating: Class 300 lb. (400psi Max.)
   12. Any other wetter metallic parts: Stainless Steel; Bronze; Brass
   13. Lining and Coating: Fusion bonded Epoxy Coating (Interior and Exterior); ANSI/NSF 61 Approved; AWWA coating specifications C116-03.

D. Pilot Control System
   1. The District to provide programing for correlation between pressure and flowrate.
   2. No mechanical adjustments shall be necessary to the actuator.
   3. Pilot shall comply with NSF/ANSI Standard 61 and be certified lead free to NSF/ANSI 372 as a safe drinking water system component.

E. Material
   1. Body and Cover: Stainless Steel
   2. Pilot Trim: Stainless Steel
   3. Rubber: Buna-N
   4. Connections: FNPT
   5. Pressure Rating: 350
   6. Temperature Range: Water to 180^{o}F Max.
   7. Control Tubing: Stainless Steel
   8. Control Fittings: Stainless Steel

F. Accessories:
   1. Flow Meter: Cla-Val XP2F-CV35 Flow Meter
   2. Pressure Gauge: Cla-Val X141
   3. "Y" Strainer: Cla-Val X43
   4. Speed Controls: Cla-Val Flow Control - Opening and Closing

G. Factory Assembly:
   1. Each control valve shall be factory assembled and include:
      a. the complete main valve, pilot valve(s), and all associated accessories and control equipment.

2. During factory assembly the control valve manufacture shall make all necessary adjustments and correct any defects.
3. The station shall be assembled within the precast vault by a single manufacturer.

H. Nameplates:
1. Each control valve and associated pilots shall be provided with an identifying nameplate mounted in the most practical position possible - typically on the inlet side of the valve body.
2. Min. 3/32" thick, 3/4" high and 2-3/4" long.
3. Data shall etched or stamped into the nameplate shall include:
a. control valve Catalog number
b. function
c. size
d. material pressure rating
e. end-connection details
f. type of pilot controls
g. adjustment range

I. Factory testing:
1. Each control valve shall be factory tested
2. Tests shall include a valve body and cover leakage test, seat leakage test, and a stroke test.
3. Control valves and pilot valves shall be subject to an air pressure test at min. 90 psi for a min. of 15 minutes.
4. No visible leakage is permitted.

2.02 REFERENCE STANDARDS

A. ASTM A536 - Standard Specification for Ductile Iron Castings; 2024.
B. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service; 2019.
C. Modbus - The Modbus Organization Communications Protocol.; Latest Update.
D. NSF 61 - Drinking Water System Components - Health Effects; 2022, with Errata.

PART 3 - EXECUTION

3.01 PRODUCT DELIVERY

A. Prepare valves in accordance with AWWA C500, Section 31. All pressure reducing valves shall be new, unused, and suitable for the specified service.
B. Control valves specified herein shall be factory assembled as part of a complete, prefabricated pressure reducing station, fabricated and supplied by Cla-Val Company. The packaged system shall include all valves, piping, fittings, supports, and appurtenances required for a complete operational assembly. Any control valve appurtenances, accessories, parts, or assemblies shipped unassembled shall be packaged and tagged to protect the equipment from damage and to facilitate final field installation. Valve ends shall be sealed to positively prevent the entrance of foreign matter into valve bodies and associated piping.
C. The prefabricated pressure reducing station, including all control valves and appurtenances, shall be factory pressure tested prior to shipment. Care shall be taken in loading, transporting, and unloading to protect valves, piping, appurtenances, coatings, and linings from damage. Equipment shall not be dropped. All control valves, piping, and appurtenances shall be examined prior to installation, and no component found to be defective, damaged, or otherwise unsuitable shall be installed. Any damage shall be repaired or the component replaced in accordance with the manufacturer’s recommendations.
D. Prior to shipping, the prefabricated pressure reducing station, including control valves and all associated accessories, shall be acceptably packaged, sealed, and covered to prevent the entry of foreign material, moisture, or debris during transport and storage.
E. All packaged control valves and prefabricated pressure reducing stations shall be shipped as a single coordinated assembly, remain covered, and be stored on site in accordance with the manufacturer’s requirements until installed and placed into service. Field fabrication of the pressure reducing station will not be permitted except for final connection to adjacent piping.

3.02 INSTALLATION

A. Install valves and accessories in accordance with the manufacturer's recommendation.

3.03 ADJUSTMENTS

A. Check and Adjust Valves and Accessories for Smooth Operation in Accordance with Manufacturer's Instructions.
   1. System valves open upstream and downstream.
   2. Air removed from the main valve cover and pilot system at all high points.
   3. Periodic cleaning of Y-strainer is recommended.

3.04 FIELD TESTING

A. Pressure Reducing Control Valve:
   1. PRV shall include on-site set up with Valve manufacturer representative.
   2. The Contractor shall ensure that a Cla-Val representative is made available by the equipment supplier for start-up service, inspection and necessary adjustments. A Cla-Val representative shall make one visit to each site for four (4) hours.

END OF SECTION

ATTACHMENT A:

MPE GEOTECHNICAL REPORT

Geotechnical Engineering Report

CCWD LAKE TULLOCH EMERGENCY INTERTIE PROJECT

O'Byrnes Ferry Road, between Copper Meadow Drive and Conner Estates Drive
Calaveras County, California
MPE No. 07191-01

MPE
MID PACIFIC ENGINEERING, INC.

October 8, 2024

Geotechnical Engineering Report

CCWD LAKE TULLOCH EMERGENCY INTERTIE PROJECT

O'Byrnes Ferry Road, between Copper Meadow Drive and Conner Estates Drive

Calaveras County, California

MPE No. 07191-01

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Geotechnical Engineering Report

CCWD LAKE TULLOCH EMERGENCY INTERTIE PROJECT

O'Byrnes Ferry Road, between Copper Meadow Drive and Conner Estates Drive
Calaveras County, California
MPE No. 07191-01
October 8, 2024

INTRODUCTION

GENERAL

We have completed a Geotechnical Engineering investigation for the proposed CCWD Lake Tulloch Emergency Intertie Project to be constructed in Calaveras County, California. The purposes of our study were to investigate the site, soil/rock and groundwater conditions across the project site and to prepare Geotechnical Engineering conclusions and recommendations regarding design and construction of the proposed improvements.

SCOPE OF WORK

Our scope of work included the following:

1. Site reconnaissance;
2. Review of available geologic, seismic, soil, and groundwater data and maps containing the site, and historic aerial photos;
3. Review of *Technical Memorandum, Copper Cove Water System Improvements Project, Phase 3 Lake Tulloch Intertie, Calaveras County Water District*, prepared by PBI and dated May 6, 2024;
4. Subsurface investigation, including:
    a. the drilling and sampling of six (6) soil borings to the maximum depth of approximately 14½ feet below ground surface (bgs); and,
    b. Performance of six (6) individual standard P-wave refraction survey lines.
5. Collection of undisturbed and bulk samples of the soil/rock;
6. Laboratory testing of selected soil samples;

7. Engineering analysis; and,
8. Preparation of this report.

This report is specific to the design and construction of the proposed improvements to be located on the project site as it is described in this report. This report should not be used for the design or construction of any other proposed development without review of the proposed improvements by our office.

Figures and Attachments

This report contains a Vicinity Map as Figure 1; a Regional Geologic Map as Figure 2; Site Plans showing the approximate boring and seismic refraction line locations as Figures 3 through 5; and, Logs of Borings as Figures 6 through 11. Explanations of the symbols and classification systems used on the logs are included as Figures 12 and 13. Appendix A contains information of a general nature regarding project concepts, exploratory methods used during the field phase of our investigation, an explanation of laboratory testing accomplished, and laboratory test results. Appendix B contains *Rippability Study, CCWD Lake Tulloch Emergency Intertie Project*, prepared by Petralogix Engineering, Inc., dated September 19, 2024, referred to, hereinafter, as the Rippability Study.

Project Description

Based on our review of the available information, we understand the project will include a construction of approximately 15,320 linear feet of 12-inch diameter water force main. It is anticipated that the force main will be placed at a depth of approximately 4½ feet bgs.

Site History

We reviewed historical aerial photographs of the site from Google Earth and *Historicalaerials.com*, taken in 1945, 1959, 1984, 1985, 1998, from 2003 through 2006, from 2009 through 2011, and from 2013 through 2024. The O'Byrnes Ferry Road appears to be an unimproved roadway in 1945 photograph. Copper Meadow Drive, Sanguinetti Drive, and Conner Estates Drive are undeveloped land in the 1945 photograph. The O'Byrnes Ferry Road appears to be paved in the 1984 photograph. Copper Meadow Drive, Sanguinetti Drive, and Conner Estates Drive are visible in the 1998 photograph.

FINDINGS

SITE DESCRIPTION

The proposed force alignment follows a northbound lane of O'Byrnes Ferry Road and west bound lanes of Copper Meadow Drive, Sanguinetti Drive, and Conner Estates Drive. At the time of the field investigation the alignments were paved.

Topography across the ranges from relatively level to rolling hills, with surface elevations ranging from approximately +560 feet relative to mean sea level (msl) to +700 feet msl, based on the review of USGS *New Malones Dam Quadrangle, California, 7.5 – Minute Series*, 2021.

SITE GEOLOGY

Review of the *Preliminary Geologic Map of the Oakdale 30' x 60' Quadrangle, California: California Geological Survey Preliminary Geologic Map 22-09*, indicates the majority of the project site is mapped as being underlain by meta-andesite and meta-basalt (metavolcanic rock) of Copper Hills Volcanics Formation (Map symbol: Jch). Some local areas of the site are mapped as being underlain by black slate (metasedimentary rock) of the Salt Spring Slate Formation (Map symbol: Jss). Review of the California Geological Survey *Fault Activity Map of California* (2010) database indicates the alignment crosses of one of the strands of Late Quaternary Green Springs Run Fault of the Foothills Fault System.

SUBSURFACE SOIL CONDITIONS

Table 1 below summarizes the approximate pavement sections encountered at each boring.

Table 1 – Existing Pavement Sections

Test Boring	AC Thickness, inches	AB Thickness, inches
D1	3½	19½
D2	3	16
D3	3½	14½
D4	5	15
D5	4	10
D6	2½	11½

Fill soils were encountered in Boring D5 extending to a depth of approximately 3 feet bgs. Fill soils consist of silty sands.

In Borings D2 through D6, pavement sections are underlain by weathered metavolcanic rock to the maximum depth explored at this location of 6 feet bgs. In the Boring D1, pavement section is underlain by sandy, lean clay to a depth of approximately 4½ feet bgs. Thes strata are underlain by clayey sand to a depth of approximately 8 feet bgs. These strata are underlain by completely weathered metavolcanic rock to the maximum depth explored at this location of 14½ feet bgs.

For more detail regarding the soil/rock conditions at specific locations, please refer to the Logs of Soil Borings on Figures 6 through 11.

Please note that subsurface conditions within the borings are representative of the soil/rock conditions at the time of exploration and at the specific location. It should be expected that soil/rock conditions across the site can and will vary laterally and vertically from those encountered during our investigation.

GROUNDWATER

Permanent groundwater was not encountered in borings advanced on September 3, 2024, to the maximum depth explored of 14½ feet bgs.

Groundwater levels may fluctuate beneath the site depending on the time of year and rainfall amounts. Therefore, groundwater conditions presented in this report may not be representative of those which may be encountered during or subsequent to construction.

CONCLUSIONS

BEARING CAPACITY AND FOUNDATION SUPPORT

In our opinion, the undisturbed native soils/rock and engineered fill are capable of supporting the proposed improvements provided the further recommendations regarding site preparation and soils compaction are followed.

EXPANSIVE SOILS

The results of our subsurface exploration and our previous experience indicate the on-site rock is essentially a non-expansive material, while clay soils are soils with a medium expansion potential. Expansion potential of on-site near surface and surface soils should not be a factor in the design and construction of the proposed improvements provided earthwork is accomplished as recommended in the further sections of this report.

SEISMIC CODE PARAMETERS

The 2022 edition of the CBC references ASCE Standard 7-16 for seismic design. The following seismic parameters were determined based on the site latitude and longitude using the web interface (https://seismicmaps.org/) provided by the Structural Engineers Association of California (SEAOC) in association with the California Office of Statewide Health Planning and Development (OSHPD) that uses the USGS web services to retrieve pertinent seismic design data. The seismic design parameters summarized in the following table may be used for seismic design of the proposed improvements.

Table 2 –2022 CBC Seismic Design Parameters*

Latitude: 37.9091° N Longitude: 120.5890° W	ASCE 7-16 Table/Figure	2022 CBC Table/Figure	Factor/ Coefficient	Value
Short-Period MCE at 0.2	Figure 22-1	Figure 1613.2.1(1)	S_S	0.385 g
1.0 Period MCE	Figure 22-2	Figure 1613.3.1(2)/ Figure 1613.2.1(3)	S_1	0.193 g
Soil Class	Table 20.3-1	Section 1613.2.2	Site Class	C
Site Coefficient	Table 11.4-1	Table 1613.2.3(1)	F_a	1.3
Site Coefficient	Table 11.4-2	Table 1613.2.3(2)	F_v	1.5
Adjusted MCE Spectral Response Parameters	Equation 11.4-1	Equation 16-36/ Equation 16-20	S_{MS}	0.5 g
	Equation 11.4-2	Equation 16-37/ Equation 16-21	S_{M1}	0.29 g
Design Spectral Acceleration Parameters	Equation 11.4-3	Equation 16-38/ Equation 16-22	S_{DS}	0.333 g
	Equation 11.4-4	Equation 16-39/ Equation 16-23	S_{D1}	0.193 g

* Calculated using USGS computer program U.S. Seismic Design Maps and the site latitude and longitude.
MCE – Maximum Considered Earthquake
g – Acceleration due to gravity

Site-specific ground response and ground motion hazard analyses, and/or time history analyses were not part of our work scope.

LIQUEFACTION POTENTIAL

Liquefaction is a soil strength and stiffness loss phenomenon that typically occurs in loose, saturated cohesionless sands as a result of strong ground shaking during earthquakes. The potential for liquefaction at a site is usually determined based on the results of a subsurface Geotechnical investigation and the groundwater conditions beneath the site. A full liquefaction analysis was beyond our scope of work performed for this project; however, the project site is predominantly underlain by metavolcanic rock, it is our opinion that the potential for liquefaction occurring beneath this site is low. The site is not located within a State Designated Seismic Hazard Zone for liquefaction.

EXCAVATION CONDITIONS

The metavolcanic rock at the site will be difficult to very difficult to excavate. Our past experience indicates that large tractors equivalent in size or larger than a Caterpillar D8 bulldozer equipped with a single tooth ripper typically are needed to productively rock during mass grading. Large "floaters" of harder material will be present within the rock mass and would make ripping difficult at those locations.

Excavation within undisturbed rock is generally very difficult with a standard size backhoe, with depth of penetration limited to shallow depths. Past experience suggests that large excavators, equivalent in size to a Caterpillar 374 or a Komatsu PC750, may have difficulty excavating utility trenches in undisturbed rock, but have been used successfully at other sites underlain by rock. Specialized excavation equipment such as rock trenchers and hydraulic hammers attached to large excavators also have been used successfully to excavate rock.

The actual type, size and use of equipment is the responsibility of the contractor performing the work. We suggest a contractor that has experience in the area be selected for the proposed improvements.

In general, we anticipate undisturbed soil sidewalls and recompacted on-site soils for most site excavations will remain stable at near-vertical inclinations for short periods of time without significant caving, unless perched water and/or seepage is encountered, or saturated and/or low cohesion sandy soils are encountered or the exposed soils are allowed to dry. Excavations encountering perched water and seepage will be susceptible to sloughing or caving upon excavation or if left open for an extended period of time requiring sloped excavations and other stabilization methods.

Excavations deeper than five feet that will be entered by workers should be sloped and/or braced in accordance with current OSHA regulations. The contractor must provide an adequately constructed and braced shoring system in accordance with federal, state and local safety regulations for individuals working in an excavation that may expose them to the danger of moving ground. If material is stored or heavy equipment is operated near an excavation, stronger shoring would be needed to resist the extra pressure due to the superimposed loads.

Undisturbed metavolcanic rock can be considered as "stable rock" for the purposes of short-term excavations. However, excavation of rock with large excavators could disturb the rock exposed in utility trench sidewalls, and it may be necessary to slope short-term excavations in consideration of loose, disturbed rock in the trench sidewalls.

According to OSHA *Trenching and Excavation Safety* (OSHA 226-10R 2015) the on-site soils can be considered as Type C soils.

RIPPABILITY STUDY

Line 1

Review of the data contained within the Rippability Study, indicates that the p-wave velocities were between 3,000 and 6,000 ft/sec from the ground surface to a depth of an approximate 5 feet bgs. P-wave velocities were between 3,500 and 6,000 ft/sec from a depth of an approximate 5 feet bgs to a depth of approximately 10 feet bgs. Based on the *Caterpillar Performance Handbook, Edition 48*, on-site rock (basalt or slate) with velocities less than about 6,000 ft/sec is rippable with a Caterpillar D8R/D8T ripper equipped with multi- or single shanks.

Line 2

Review of the data contained within the Rippability Study, indicates that the p-wave velocities were predominantly between 3,000 and 6,000 ft/sec from the ground surface to a depth of an approximate 5 feet bgs. However, in the northern end of the line an isolated area with velocities of up to 7,000 ft/sec was determined. P-wave velocities were between 3,500 and 6,000 ft/sec from a depth of an approximate 5 feet bgs to a depth of approximately 10 feet bgs. Based on the Caterpillar Performance Handbook, Edition 48, on-site rock (basalt or slate) with velocities less than about 6,000 ft/sec is rippable with a Caterpillar D8R/D8T ripper equipped with multi- or single shanks. On-site rock (basalt or slate) with velocities between 6,000 and 7,000 ft/sec is rippable with a Caterpillar D9R/D9T ripper equipped with multi- or single shanks.

Line 3

Review of the data contained within the Rippability Study, indicates that the p-wave velocities were predominantly between 3,000 and 5,000 ft/sec from the ground surface to a depth of an approximate 5 feet bgs. However, in the northern end of the line an isolated area with velocities of up to 7,000 ft/sec was determined. P-wave velocities were between 4,000 and 7,000 ft/sec from a depth of an approximate 5 feet bgs to a depth of approximately 10 feet bgs. Based on the Caterpillar Performance Handbook, Edition 48, on-site rock (basalt or slate) with velocities less than about 6,000 ft/sec is rippable with a Caterpillar D8R/D8T ripper equipped with multi- or single shanks. On-site rock (basalt or slate) with velocities between 6,000 and 7,000 ft/sec is rippable with a Caterpillar D9R/D9T ripper equipped with multi- or single shanks.

Line 4

Review of the data contained within the Rippability Study, indicates that the p-wave velocities were predominantly between 4,000 and 6,000 ft/sec from the ground surface to a depth of an approximate 5 feet bgs. However, in the northern end of the line an isolated area with velocities of up to 10,000 ft/sec was determined. P-wave velocities were between 5,000 and 9,000 ft/sec from a depth of an approximate 5 feet bgs to a depth of approximately 10 feet bgs. Based on the Caterpillar Performance Handbook, Edition 48, on-site rock (basalt or slate) with velocities less than about 6,000 ft/sec is rippable with a Caterpillar D8R/D8T ripper equipped with multi- or single shanks. On-site rock (basalt or slate) with velocities between 6,000 and 7,000 ft/sec is rippable with a Caterpillar D9R/D9T ripper equipped with multi- or single shanks. On-site rock (basalt or slate) with velocities up to 9,000 ft/sec is rippable with a Caterpillar D11T CD ripper equipped with single shank. **On-site rock (basalt or slate) with velocities above 9,000 ft/sec is considered non-rippable.**

Line 5

Review of the data contained within the Rippability Study, indicates that the p-wave velocities were predominantly between 4,000 and 5,000 ft/sec from the ground surface to a depth of an approximate 5 feet bgs. However, in the southern end of the line an isolated area with velocities of up to 10,000 ft/sec was determined. P-wave velocities were between 4,000 and 6,000 ft/sec from a depth of an approximate 5 feet bgs to a depth of approximately 10 feet bgs. Based on the Caterpillar Performance Handbook, Edition 48, on-

site rock (basalt or slate) with velocities less than about 6,000 ft/sec is rippable with a Caterpillar D8R/D8T ripper equipped with multi- or single shanks. On-site rock (basalt or slate) with velocities between 6,000 and 7,000 ft/sec is rippable with a Caterpillar D9R/D9T ripper equipped with multi- or single shanks. On-site rock (basalt or slate) with velocities up to 9,000 ft/sec is rippable with a Caterpillar D11T CD ripper equipped with single shank. **On-site rock (basalt or slate) with velocities above 9,000 ft/sec is considered non-rippable.**

Line 6

Review of the data contained within the Rippability Study, indicates that the p-wave velocities were predominantly between 3,000 and 5,000 ft/sec from the ground surface to a depth of an approximate 5 feet bgs. However, in the southern end of the line an isolated area with velocities of up to 7,000 ft/sec was determined. P-wave velocities were between 4,000 and 6,000 ft/sec from a depth of an approximate 5 feet bgs to a depth of approximately 10 feet bgs. Based on the Caterpillar Performance Handbook, Edition 48, on-site rock (basalt or slate) with velocities less than about 6,000 ft/sec is rippable with a Caterpillar D8R/D8T ripper equipped with multi- or single shanks. On-site rock (basalt or slate) with velocities between 6,000 and 7,000 ft/sec is rippable with a Caterpillar D9R/D9T ripper equipped with multi- or single shanks.

The Rippability Study should be reviewed in entirety for more detail and guidance regarding seismic velocities and rippability. As noted before, the actual type, size and use of equipment is the responsibility of the contractor performing the work and should consider their experience with the same geologic unit.

Fill Material Suitability

The on-site soils/rock are considered suitable for use as engineered fill provided the materials are free of roots, asphalt and concrete rubble, organic materials, other deleterious debris, particles larger than 3 inches in size, and are at a suitable moisture content to achieve the desired degree of compaction.

Pavement Subgrade Quality & Support

Based on our previous experience excavated rock is good quality material for the support of asphalt concrete pavements possessing estimated Resistance ("R")-value of 40. Based on

the results of laboratory testing, on-site sandy clays WITH ROCK which when tested in accordance with California Test (CT) 301 are fair quality materials for the support of asphalt concrete pavements possessing Resistance ("R")-value of 27, (see Figure A1). Based upon the test results, it is our opinion that an R-value of 20 is considered appropriate for design of pavements at the site where clays are present. An R-value of 40 is considered appropriate for design of pavements at the site where backfill of the trenches will consist of excavated rock.

SOIL CORROSION POTENTIAL

Two representative soil/rock samples were submitted to Sunland Analytical Lab, Inc. for testing to determine pH, resistivity, and sulfate and chloride concentrations to help evaluate the potential for corrosive attack upon reinforced concrete. Results of the corrosion testing performed by Sunland Analytical Lab are summarized in Table 3.

TABLE 3 – Soil Corrosivity Testing

Sample Identification	CA DOT Test #643 Modified (Sm. Cell)		CA DOT 417	CA DOT 422
	pH	Minimum Resistivity	Chloride	Sulfate
D1 (2' – 5')	7.49	1,720 Ω-cm	4.0 ppm	9.0 ppm
D5 (1½' – 3½')	7.49	1,660 Ω-cm	2.6 ppm	40.9 ppm

***** = Small cell method, Ω-cm = ohm-centimeters, ppm = parts per million

The California Department of Transportation Corrosion Technology Section, Office of Materials and Foundations, Corrosion Guidelines Version 3.2, March 2021, considers a site to be corrosive to foundation elements if one or more of the following conditions exists for the representative soil and/or water samples collected: a chloride concentration greater than or equal to 500 ppm, sulfate concentration greater than or equal to 2000 ppm, or the pH is 5.5 or less. Based on this criterion, the on-site soils/rock are not considered corrosive to reinforced concrete.

Table 19.3.1.1 – Exposure Categories and Classes, American Concrete Institute (ACI) 318-19, Section 19.3, as referenced in Section 1904.1 of the 2022 CBC, indicates the severity of sulfate exposure for the samples tested is "not a concern". Ordinary Type I-II Portland cement is considered suitable for use on this project, assuming a minimum concrete cover is maintained over the reinforcement.

Mid Pacific Engineering, Inc. are not corrosion engineers. Therefore, to further define the soil corrosion potential at the site, or to determine the need or design parameters for cathodic protection or grounding systems, a corrosion engineer should be consulted.

Import fills, if used for construction, should be sampled and tested to verify the materials have corrosion characteristics within acceptable limits and generally should be similar to the tested on-site soils.

Permanent Groundwater

Due to the anticipated depth to groundwater, permanent groundwater should not be a significant factor in the design and construction of the proposed improvements at this site.

Seasonal Water

The near-surface soils also may be in a near-saturated condition during and for a significant time following the rainy season due to rainwater being unable to penetrate through the low permeability rock below existing site grade. Earthwork operations attempted following the onset of the rainy season and prior to prolonged drying will be hampered by high soil moisture contents. Heavy, prolonged rainfall events will promote high soil moisture contents and increase the potential for trapped water over impermeable soil layers that could further affect grading operations. If grading operations are to proceed shortly after the rainy season, and before prolonged periods of warm dry weather, the near-surface soils and soils to be used as engineered fill including trench backfill may be at moisture contents where significant and prolonged aeration or lime-treatment may be required to dry the soils to a moisture content where the specified degree of compaction can be achieved. The contractor should anticipate the additional time and effort necessary to achieve a compactable moisture content.

Perched or seepage water may be present within excavations, on the soil/rock interface, depending upon the time of year when construction takes place. The need for dewatering of excavations can best be determined during site work when subsurface conditions are fully exposed.

RECOMMENDATIONS

We consider it essential that our office review final site, grading, and structural foundation plans (if any) to verify the applicability of the following recommendations, and to provide supplemental recommendations, as conditions dictate.

The recommendations presented below are appropriate for typical construction in the late spring through fall months. The on-site soils likely will be saturated by rainfall in the winter and early spring months and will not be compactable without drying by aeration or the addition of lime (or a similar product) to dry the soils. Should the construction schedule require work during wet conditions, additional recommendations can be provided, as conditions dictate.

SITE CLEARING

Prior to site grading, the site should be cleared of all surface and subsurface structures designated for removal including but not limited to existing vegetation, soil stockpile, rubble, deleterious material, underground utilities scheduled for removal, and any other items designated for removal. Where practical, the clearing should extend a minimum of five feet beyond the limits of the proposed structural areas of the site including pavements. Backfill of the existing underground utilities should be tested to determine if it meets the minimum compaction requirements.

Depressions resulting from clearing operations, as well as any loose, saturated soils, as identified by our representative, should be cleaned out to firm, undisturbed soils and widened, as necessary, to allow access with construction equipment. Depressions should be backfilled with engineered fill in accordance with the recommendations contained in this report. Any other loose, disturbed, soft or otherwise unstable materials should be removed to expose a firm base prior to backfilling to restore the areas back to the required grades.

Our review of available literature and historical photographs provide a limited site history. Therefore, unknown buried structures (foundations, basement walls, piping, etc.), as well as tree roots and rootballs, may be present on-site and may be encountered during construction. If encountered, these items should be removed, and the resulting cavities or holes should be backfilled with properly moisture conditioned and compacted engineered fill as described in this report.

Remaining areas should be stripped of surface vegetation; strippings may be stockpiled for later use or disposed of off-site. If used on-site, strippings may be placed in landscaped areas, provided they are kept at least five feet from the structural areas including flatwork or pavements, moisture conditioned and compacted. Strippings should not be used in landscaped berms that will support either walls, concrete flatwork, or any other improvements that are susceptible to damage from settlement. *Discing may be a suitable alternative to stripping, depending on the quantity and condition of organics at the time of grading. However, it is emphasized that discing should be allowed only with our office's approval at the time of grading based on the quantity and condition of vegetation on the site.*

It is considered essential that our representative be notified prior to site clearing operations to schedule periodic site visits. It is important that excavations resulting from clearing operations be left as shallow dish-shaped depressions for proper location and to allow proper access with compaction equipment during grading operations. If this is not the case, deeper processing or excavation will be required.

Site Clearing and Site Preparation

Initially, the areas proposed for the waterlines should be cleared from the existing pavement sections. Removed AC pavements should be disposed off-site. AB section can be used in general fill construction if mixed with on-site soils, or stockpiled for later use as AB in roadway construction or trench backfill.

Compaction operations should be undertaken with a proper compaction equipment and should be performed in the presence of our representative who will evaluate the performance of the subgrade under compactive load and identify loose or unstable soils that could require additional excavation and/or compaction. Loose, soft, or unstable soils as identified by our representative in the field, should be cleaned out to firm, undisturbed and stable soils, as determined by our representative, and should be restored to grade with

engineered fill compacted in accordance with the recommendations of this report. Difficulty in achieving subgrade compaction or unusual soil instability may be indications of loose fill associated with past subsurface items, or loose fills placed during previous site uses. Should these conditions exist, the materials should be excavated to check for subsurface structures and loose fills, and the excavations backfilled with engineered fill. We recommend construction bid documents contain a unit price (price per cubic yard) for all excess excavation due to loose, soft, or unsuitable materials and replacement with engineered fill.

Engineered Fill Construction

From a Geotechnical standpoint, the on-site soils/rock will be suitable for general trench backfill and engineered fill construction, if they are at a compactable moisture content, and free from rubbish, rubble, particles greater than three inches, and organic concentrations.

Imported fill materials, if required for general trench backfill and engineered fills, should be granular soils with a Plasticity Index of 15 or less; an Expansion Index of 20 or less; and, be free of particles greater than three inches in maximum dimension. Also, if import fills are required (other than aggregate base) the contractor should provide appropriate documentation for imported fill materials indicating the materials are free of known contamination and possess similar corrosion characteristics as tested for the project site. Imported soils should be tested and approved by the Geotechnical Engineer's office prior to being transported to the site.

Engineered fill composed of on-site or approved imported soils should be placed in lifts not exceeding six inches in compacted thickness, with each lift being moisture conditioned to at least the optimum moisture content for granular soils, or to at least two percent above optimum for clay soils, and uniformly compacted to at least 90 percent relative compaction. The relative compaction and moisture content should be based on the ASTM D1557, maximum dry unit weight and optimum moisture content. Fill materials should be uniformly and thoroughly moisture conditioned to the full depth of each lift. Compactive effort should be applied uniformly across the full width of the fill. Additional passes with the compactor shall be added, as required by the Geotechnical Engineer, to achieve a firm, stable and unyielding subgrade condition.

The upper 12 inches of pavement subgrades should be scarified, moisture conditioned to at least two percent above the optimum moisture content, processed, and uniformly

compacted to at least 95 percent of the maximum dry density, regardless of whether final grade is completed by excavation, filling, or left at existing grade.

Final pavement subgrade preparation and compaction should be performed just prior to placement of aggregate base, after construction of underground utilities is complete. The completed pavement subgrades must be proof-rolled and stable under construction traffic prior to placement of aggregate base. The completed aggregate base section must be proof-rolled and stable under construction traffic prior to placement of asphalt concrete.

All earthwork operations should be accomplished in accordance with the recommendations of this report. A representative of the Geotechnical Engineer must be present during site clearing and preparation, grading operations, to perform compaction testing and observe grading to verify compliance with the recommendations of this report.

UTILITY TRENCH BACKFILL

As noted above, from a Geotechnical standpoint, the on-site soils/rock will be suitable for general trench backfill construction, if they are at a compactable moisture content, and free from rubbish, rubble, particles greater than three inches, and organic concentrations. Local jurisdictions may have specific requirements for backfill materials and details for backfill of trenches within existing streets which should govern, as applicable. Bedding of utilities and initial backfill around and over the pipe should be in accordance with the manufacturer's recommendations for the pipe materials selected, and applicable City or County *Improvement Standards*, latest editions.

Utility trench backfill should be mechanically compacted as engineered fill in accordance with the following recommendations. Utility trench backfill should be placed in maximum six-inch lifts (compacted thickness), to at least the optimum moisture and mechanically compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557. The upper 12 inches of trench backfill in pavement areas shall be compacted to at least 95 percent of the ASTM D1557 maximum dry density. We recommend that native soil/rock be used as trench backfill where trenches cross from landscape areas to structural areas (areas supporting exterior flatwork, pavements, etc.) to help minimize soil moisture variations beneath the improvements.

EARTH PRESSURES

Retaining structures that are essentially fixed at the top (unable to rotate about their bases) should be capable of resisting "active" lateral soil pressures equal to an equivalent fluid pressure of 40 psf per foot of retained soil. Rigid or restrained retaining structures that are not allowed to yield at the top should be capable of resisting "at-rest" lateral soil pressures equal to an equivalent fluid pressure of 60 psf per foot of retained soil. Surcharge loads should be included, as applicable, in the design of retaining structures.

SITE DRAINAGE

Final site grading should be accomplished to provide positive drainage of surface water away from the structural areas. The grade adjacent to structural areas should be sloped away at a minimum two percent slope for a distance of at least five feet, where possible. Surface drains should be connected to non-perforated rigid piping directed towards appropriate drainage facilities. Landscape berms, if planned, should be constructed in such a manner as to promote drainage away from the structural areas. Concentrated storm water discharge collected from surface drains should not be allowed to drain on unprotected slopes.

All excavations should be protected from concentrated storm water run-off to minimize potential erosion. Ponding of surface water or allowing sheet flow of water over any open excavation must be avoided.

PAVEMENT DESIGN

The following pavement sections have been calculated based on anticipated traffic indices (TI's), results of R-value testing, and the procedures contained within Chapters 600 to 670 of the *California Highway Design Manual*, Sixth Edition. An R-Value of 20 was used for the design of on-site pavements constructed on clay subgrade soils and an R-value of 40 was used for the design of on-site pavements constructed on excavated rock. The project civil engineer should determine the appropriate traffic index based on anticipated traffic conditions. We can provide additional section thicknesses for other TI's, as needed. Sections below subject to applicable City or County minimums.

Table 4 - Pavement Design Alternatives

Traffic Index (TI)	Clay Subgrades R-value = 20		Excavated Rock Subgrades (a) R-value = 40	
	Type B Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)	Type B Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
5.0	2½	8½	2½	5
	3*	7½	3*	4
6.0	2½	11½	2½	7½
	3½*	9½	3½*	5½
7.0	3	14	3	9
	4*	12	4*	7
8.0	3½	16	4	9½
	5*	13½	5*	7½
9.0	4	18½	4	12
	5½*	16	5½*	9½
10.0	5	20	5	13
	6½*	17½	6½*	10½

* = Asphalt concrete thickness includes the Caltrans Safety Factor.

We emphasize that the performance of pavements is critically dependent upon uniform and adequate compaction of the soil subgrade, as well as all engineered fill and utility trench backfill within the limits of the pavements. Final pavement subgrade preparation, i.e. scarification, moisture conditioning and compaction, should be performed after underground utility construction is completed, just prior to aggregate base placement.

Pavement subgrade soils should be constructed and compacted as recommended in this report and maintained in an optimum moisture condition until covered and protected by aggregate base. Soil subgrades allowed to dry, desiccate or become disturbed must be moisture conditioned and recompacted prior to placement of aggregate base.

Pavement subgrades should be proof-rolled and must be stable under construction traffic prior to placement of aggregate base. All Class 2 aggregate base should be compacted to at least 95 percent of the ASTM D1557 maximum dry density, proof-rolled, and must be stable prior to paving.

Pavement Drainage

Efficient drainage of all surface water to avoid infiltration and saturation of the supporting aggregate base and subgrade soils is important to pavement performance. We suggest considering the use of full-depth curbs where pavements abut landscaped areas to serve as a cut-off against water migrating into the pavement base and subgrade materials. Weep holes also could be provided at drop inlets, located at or slightly below the subgrade-base interface, to allow accumulated water to drain from beneath the pavements.
Earthwork construction within the limits of the pavements should be performed in accordance with the recommendations contained within this report. Materials used for pavement construction should conform to the appropriate sections of the *Caltrans Standard Specifications* and applicable City or County *Improvement Standards*, latest editions.

CONSTRUCTION TESTING AND OBSERVATION

Site preparation should be accomplished in accordance with the recommendations of this report. Representatives of Mid Pacific Engineering, Inc. (MPE) must be present during site clearing, site preparation and all grading operations to observe and test the fill to verify compliance with our recommendations and the job specifications. These services are beyond the scope of work authorized for this investigation.

In the event that MPE is not retained to provide geotechnical engineering observation and testing services during construction, the Geotechnical Engineer retained to provide this service should indicate in writing that they agree with the recommendations of this report, prepare supplemental recommendations as necessary, and prepare the CBC 1803.5.7 report.

A final report by the "Geotechnical Engineer" should be prepared upon completion of the project indicating compliance with or deviations from this report and the project plans and specifications. Please be aware that the title Geotechnical Engineer is restricted in the State of California to a Civil Engineer authorized by the State of California to use the title "Geotechnical Engineer."

ADDITIONAL SERVICES

We recommend Mid Pacific Engineering, Inc., review the final plans and specifications to determine if the intent of our recommendations has been implemented in those documents.

LIMITATIONS

Our recommendations are based upon the information provided regarding the proposed project, combined with our analysis of site conditions revealed by the field exploration and laboratory testing programs. We have used our best engineering judgment based upon the information provided and the data generated from our investigation. This report has been prepared in substantial compliance with generally accepted geotechnical engineering practices that exist in the area of the project at the time the report was prepared. No warranty, either express or implied, is provided.

If the proposed construction is modified or re-sited; or, if it is found during construction that subsurface conditions differ from those we encountered at our boring locations, we should be afforded the opportunity to review the new information or changed conditions to determine if our conclusions and recommendations must be modified.

We emphasize that this report is applicable only to the proposed construction and the investigated site and should not be utilized for construction on any other site. The conclusions and recommendations are considered valid for a period of two years after the date of this report. If design and construction begin after two years, the report should be reviewed and updated as necessary by a Geotechnical Engineer.

Mid Pacific Engineering, Inc.

Vasiliy V. Parfenov
Senior Geologist

REGISTERED GEOLOGIST
VASILIY V. PARFENOV
No. 2355
CERTIFIED ENGINEERING GEOLOGIST
Exp. 6/30/25
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Martin S. Osier
Senior Project Engineer

REGISTERED PROFESSIONAL ENGINEER
MARTIN S. OSIER
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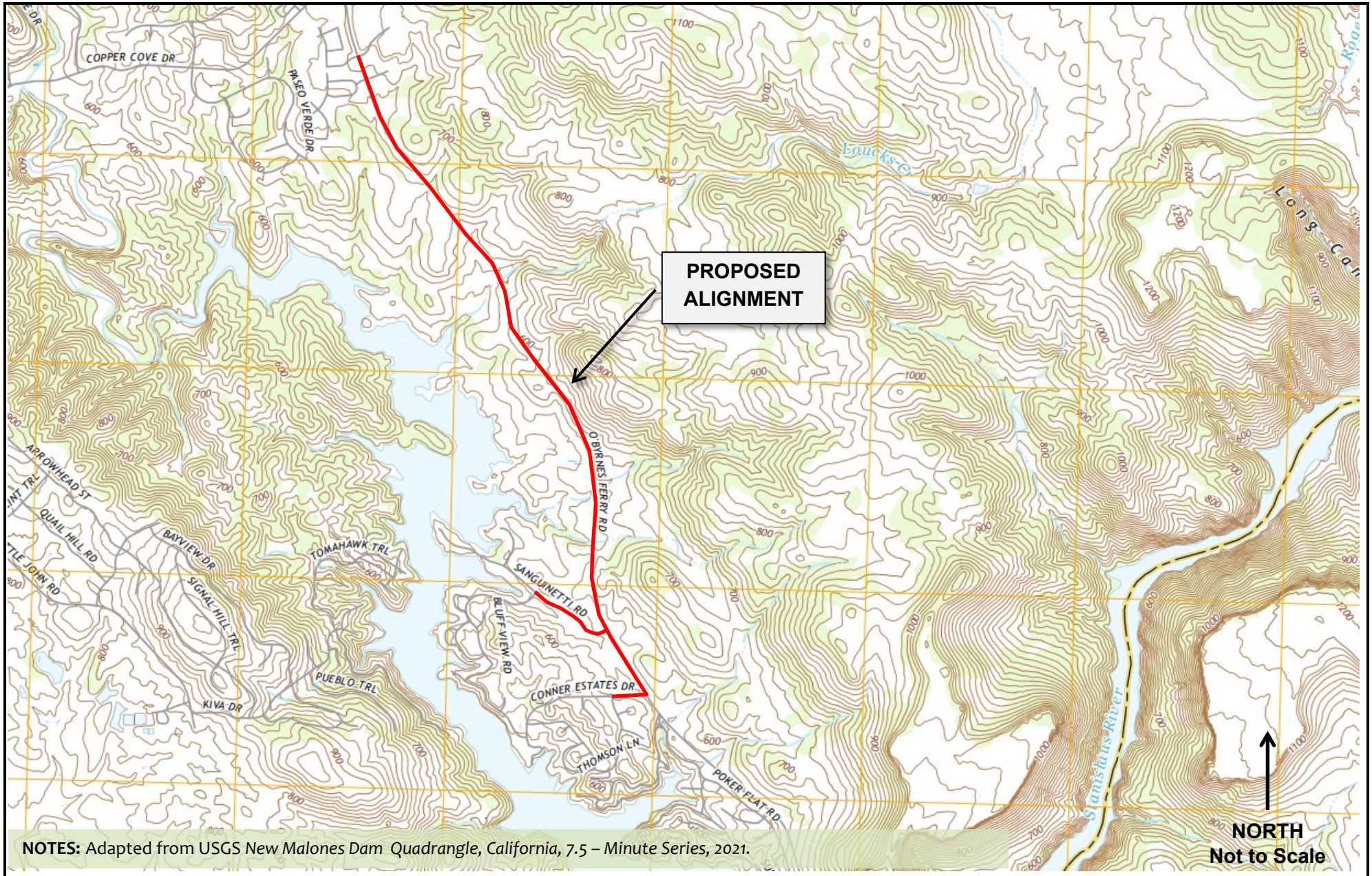
CIVIL
STATE OF CALIFORNIA

FIGURES



NOTES: Adapted from USGS *New Malones Dam Quadrangle, California, 7.5 – Minute Series, 2021.*

MPE
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VICINITY MAP

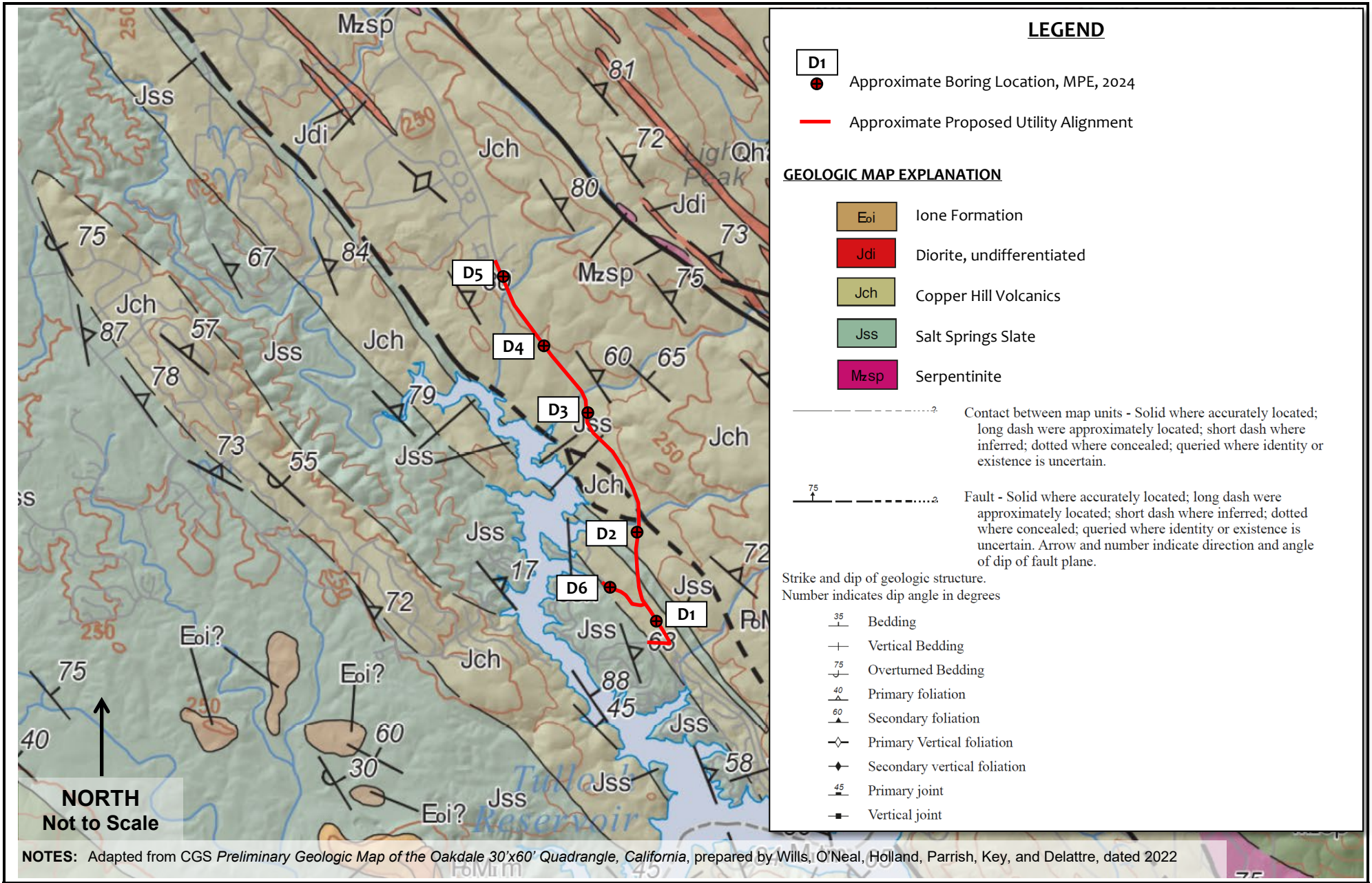
CCWD LAKE TULLOCH EMERGENCY INTERTIE PROJECT

O'Byrnes Ferry Road, between Copper Meadow Drive and Conner Estates Drive
Calaveras County, California

FIGURE 1

Date: 10/24

MPE No. 07191-01



NOTES: Adapted from CGS *Preliminary Geologic Map of the Oakdale 30'x60' Quadrangle, California*, prepared by Wills, O'Neal, Holland, Parrish, Key, and Delattre, dated 2022

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REGIONAL GEOLOGIC MAP

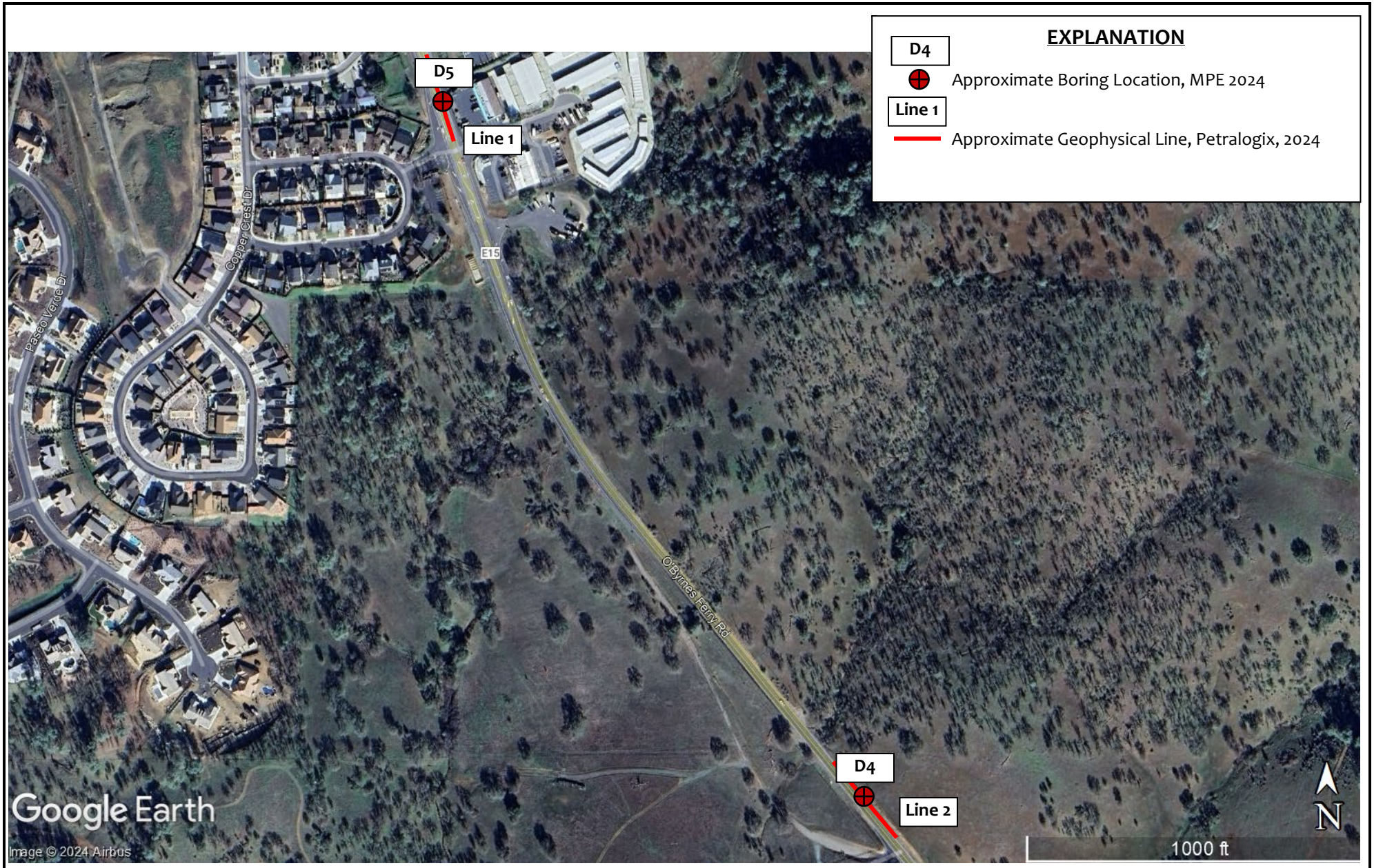
CCWD LAKE TULLOCH EMERGENCY INTERTIE PROJECT

O'Byrnes Ferry Road, between Copper Meadow Drive and Conner Estates Drive
Calaveras County, California

FIGURE 2

Date: 10/24

MPE No. 07191-01



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SITE INVESTIGATION MAP

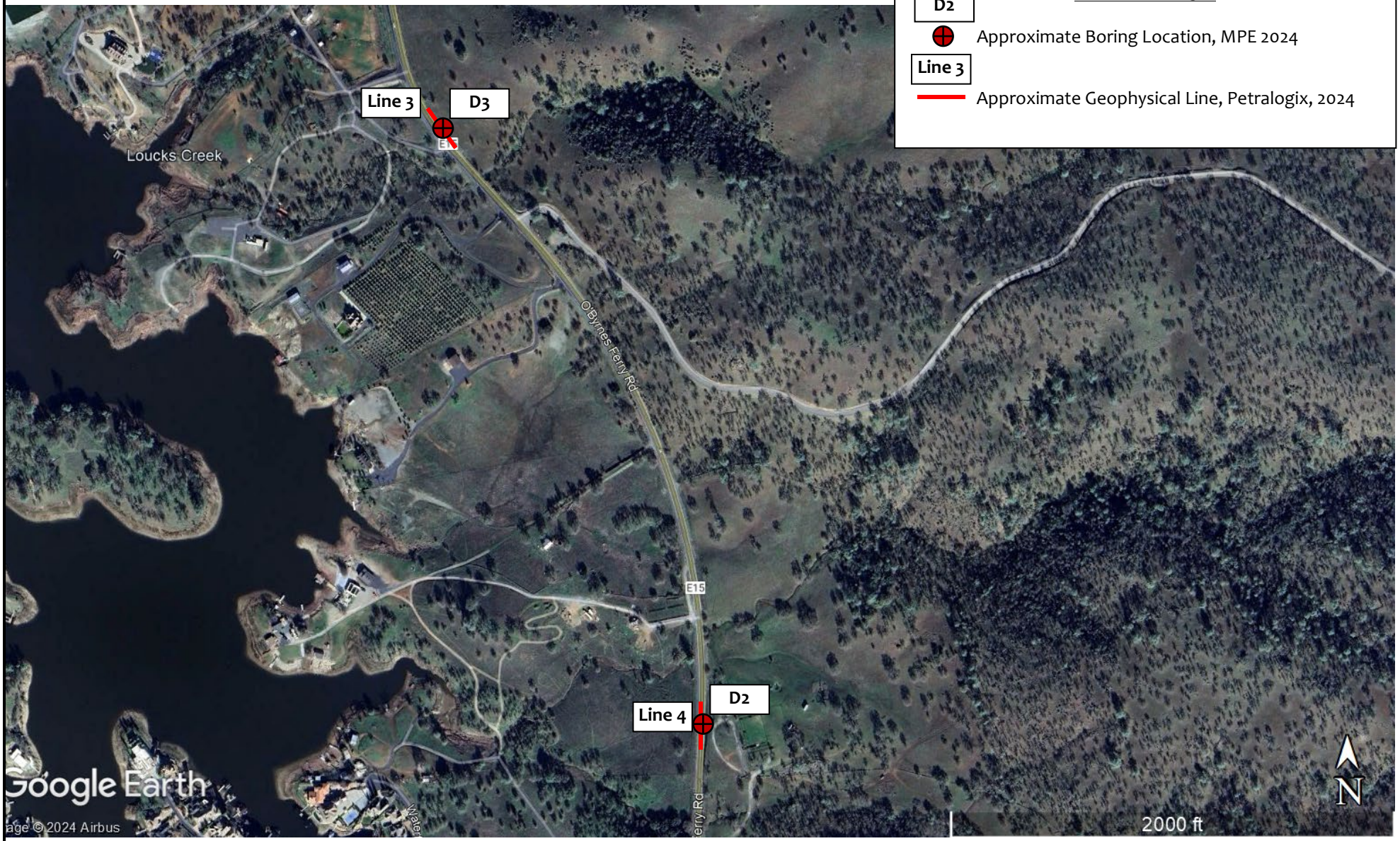
CCWD LAKE TULLOCH EMERGENCY INTERTIE PROJECT

O'Byrnes Ferry Road, between Copper Meadow Drive and Conner Estates Drive
Calaveras County, California

FIGURE 3

Date: 10/24

MPE No. 07191-01



MPE
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SITE INVESTIGATION MAP

CCWD LAKE TULLOCH EMERGENCY INTERTIE PROJECT

O'Byrnes Ferry Road, between Copper Meadow Drive and Conner Estates Drive
Calaveras County, California

FIGURE 4

Date: 10/24

MPE No. 07191-01

MPE
MID PACIFIC ENGINEERING, INC.

SITE INVESTIGATION MAP

CCWD LAKE TULLOCH EMERGENCY INTERTIE PROJECT

O'Byrnes Ferry Road, between Copper Meadow Drive and Conner Estates Drive
Calaveras County, California

FIGURE 5

Date: 10/24

MPE No. 07191-01

Project: CCWD Lake Tullock Emergency Intertie Project	LOG OF SOIL BORING D1
Project Location: O'Byrnes Ferry Road, Calaveras County, California	
MPE Number: 07191-01	Sheet 1 of 1

Date(s) Drilled	9/3/2024	Logged By	AW	Checked By	VVP
Drilling Method	Solid Flight Auger			Total Depth of Drill Hole	14½ Feet
Drill Rig Type	CME 75	Diameter(s) of Hole	6 inches	Approx. Surface Elevation, ft MSL	
Groundwater Depth, below ground surface	Not Encountered	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Neat Cement Grout
Remarks					

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
				SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			3½ inches AC over 19½ inches AB						
			Red Brown, moist, medium stiff, sandy lean clay (CL) with some rock fragments		D1-1	8	19.1	88	UCC 0.346 tsf
	5		Light Brown, Red Brown, moist, medium dense, clay fine sand (SC)		D1-2	16	18.8	90	
	10		Red Brown, Black, Light Brown, rock (RX) completely weathered		D1-3	18	8.2	96	
					D1-4	>100			
	15		Bottom of hole at 14½ feet No Groundwater Encountered Backfilled with Neat Cement Grout						
	20								
	25								

Project: CCWD Lake Tullock Emergency Intertie Project	LOG OF SOIL BORING D2
Project Location: O'Byrnes Ferry Road, Calaveras County, California	
MPE Number: 07191-01	Sheet 1 of 1

Date(s) Drilled	9/3/2024	Logged By	AW	Checked By	VVP
Drilling Method	Solid Flight Auger			Total Depth of Drill Hole	5½ Feet
Drill Rig Type	CME 75	Diameter(s) of Hole	6 inches	Approx. Surface Elevation, ft MSL	
Groundwater Depth, below ground surface	Not Encountered	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Neat Cement Grout
Remarks					

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
				SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			3 inches AC over 16 inches AB						
			White, Gray, Light Brown, rock (RX) serpentenized		D2-1	48			
	5				D2-2	>100			
			Bottom of hole at 5½ feet No Groundwater Encountered Backfilled with Neat Cement Grout						
	10								
	15								
	20								
	25								

Project: CCWD Lake Tullock Emergency Intertie Project	LOG OF SOIL BORING D3
Project Location: O'Byrnes Ferry Road, Calaveras County, California	
MPE Number: 07191-01	Sheet 1 of 1

Date(s) Drilled	9/3/2024	Logged By	AW	Checked By	VVP
Drilling Method	Solid Flight Auger			Total Depth of Drill Hole	5½ Feet
Drill Rig Type	CME 75	Diameter(s) of Hole	6 inches	Approx. Surface Elevation, ft MSL	
Groundwater Depth, below ground surface	Not Encountered	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Neat Cement Grout
Remarks					

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
				SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			3½ inches AC over 14½ inches AB						
			Dark Brown, Black, Red Brown, Light Brown, rock (RX) completely weathered, weak/friable		D3-1	>100			
	5				D3-2	>100			
			Bottom of hole at 5½ feet No Groundwater Encountered Backfilled with Neat Cement Grout						
	10								
	15								
	20								
	25								

Project: CCWD Lake Tullock Emergency Intertie Project	LOG OF SOIL BORING D4
Project Location: O'Byrnes Ferry Road, Calaveras County, California	
MPE Number: 07191-01	Sheet 1 of 1

Date(s) Drilled	9/3/2024	Logged By	AW	Checked By	VVP
Drilling Method	Solid Flight Auger			Total Depth of Drill Hole	5½ Feet
Drill Rig Type	CME 75	Diameter(s) of Hole	6 inches	Approx. Surface Elevation, ft MSL	
Groundwater Depth, below ground surface	Not Encountered	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Neat Cement Grout
Remarks					

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
				SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			5 inches AC over 15 inches AB						
			Light Brown, White Brown, Gray, rock (RX) metavolcanic		D4-1	>100			
	5				D4-2	>100			
			Bottom of hole at 5½ feet No Groundwater Encountered Backfilled with Neat Cement Grout						
	10								
	15								
	20								
	25								

MPE *Mid Pacific Engineering, Inc .*

FIGURE 4

Project: CCWD Lake Tullock Emergency Intertie Project	LOG OF SOIL BORING D5
Project Location: O'Byrnes Ferry Road, Calaveras County, California	
MPE Number: 07191-01	Sheet 1 of 1

Date(s) Drilled	9/3/2024	Logged By	AW	Checked By	VVP
Drilling Method	Solid Flight Auger			Total Depth of Drill Hole	6 Feet
Drill Rig Type	CME 75	Diameter(s) of Hole	6 inches	Approx. Surface Elevation, ft MSL	
Groundwater Depth, below ground surface	Not Encountered	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Neat Cement Grout
Remarks					

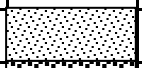
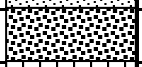
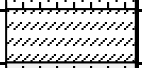
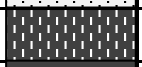
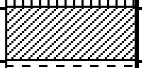
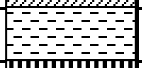
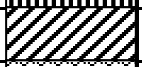
ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
				SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			4 inches AC over 10 inches AB						
			Tan Brown, moist, medium dense, silty fine to medium sand (SM-FILL)		D5-1	23	12.0	96	
	5		Brown, Dark Brown, Light Brown, Red Brown, rock (RX), highly weathered, friable		D5-2	>100			
					D5-3	>100			
			Bottom of hole at 6 feet No Groundwater Encountered Backfilled with Neat Cement Grout						
	10								
	15								
	20								
	25								

Project: CCWD Lake Tullock Emergency Intertie Project	LOG OF SOIL BORING D6
Project Location: O'Byrnes Ferry Road, Calaveras County, California	
MPE Number: 07191-01	Sheet 1 of 1

Date(s) Drilled	9/3/2024	Logged By	AW	Checked By	VVP
Drilling Method	Solid Flight Auger			Total Depth of Drill Hole	5½ Feet
Drill Rig Type	CME 75	Diameter(s) of Hole	6 inches	Approx. Surface Elevation, ft MSL	
Groundwater Depth, below ground surface	Not Encountered	Sampling Method(s)	140 lb Hammer/30 inch drop	Drill Hole Backfill	Neat Cement Grout
Remarks					

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA			TEST DATA		
				SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			2½ inches AC over 11½ inches AB						
			Red Brown, Black, Gray, Light Brown, White, rock (RX) metavolcanic		D6-1	71			
	5				D6-2	>100			
			Bottom of hole at 5½ feet No Groundwater Encountered Backfilled with Neat Cement Grout						
	10								
	15								
	20								
	25								

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		SYMBOL	CODE	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of soil > no. 200 sieve size)	GRAVELS (More than 50% of coarse fraction > no. 4 sieve size)	GW		Well graded gravels or gravel - sand mixtures, little or no fines
		GP		Poorly graded gravels or gravel - sand mixtures, little or no fines
		GM		Silty gravels, gravel - sand - silt mixtures
		GC		Clayey gravels, gravel - sand - silt mixtures
	SANDS (50% or more of coarse fraction < no. 4 sieve size)	SW		Well graded sands or gravelly sands, little or no fines
		SP		Poorly graded sands or gravelly sands, little or no fines
		SM		Silty sands, sand - silt mixtures
		SC		Clayey sands, sand clay mixtures
FINE GRAINED SOILS (More than 50% of soil < no. 200 sieve size)	SILTS & CLAYS LL< 50	ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL		Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays
		OL		Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LL ≥ 50	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH		Inorganic clays of high plasticity, fat clays
		OH		Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt		Peat and other highly organic soils
ROCK		RX		Rocks, weathered to fresh
FILL		FILL		Artificially placed fill material

OTHER SYMBOLS

 = Drive Sample: 2-1/2" O.D. Modified California sampler

 = Hand Driven Sample

 =SPT Sampler

 = Initial Water Level

 = Final Water Level

 = Estimated or gradational material change line

 = Observed material change line

Laboratory Tests

PI = Plasticity Index
EI =Expansive Index
UCC = Unconfined Compression Test
TR = Triaxial Compression Test
GR = Gradation Analysis (Sieve)
K = Permeability Test

GRAIN SIZE CLASSIFICATION

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL coarse (c) fine (f)	3" to No. 4 3" to 3/4" 3/4" to No. 4	76.2 to 4.76 76.2 to 19.1 19.1 to 4.76
SAND coarse (c) No. 4 to No. 10 Medium (m) No. 10 to No. 40 fine (f) No. 40 to No. 200	No. 4 to No. 200	4.76 to 0.074 4.76 to 2.00 2.00 to 0.420 0.420 to 0.074
SILT & CLAY	Below No. 200	Below 0.074

Mid Pacific Engineering, Inc.

UNIFIED SOIL CLASSIFICATION SYSTEM

CCWD LAKE TULLOCH EMERGENCY INTERIE PROJECT

O'Byrnes Ferry Road

Calaveras County, California

FIGURE 12

Date: 10/24

MPE No. 07191-01

FRACTURING	
LOG TERM	DEFINITION
Very Wide	> 6 feet
Wide	2 to 6 feet
Moderately	8 to 24 inches
Closely	2 1/2 to 8 inches
Very Closely	3/4 to 2 1/2 inches

ROCK QUALITY DESIGNATION (ROD)	
ROD (%)	ROCK QUALITY
90 to 100	Excellent
75 to 90	Good
50 to 75	Fair
25 to 50	Poor
0 to 25	Very Poor

WEATHERING	
LOG TERM	DESCRIPTION/DEFINITION
Fresh	No visible sign of decomposition or discoloration. Rings under hammer impact
Slightly Weathered	Slight discoloration inwards from open fractures; otherwise similar to fresh
Moderately Weathered	Discoloration throughout. Strength less than fresh rock, specimens cannot be broken by hand or scraped with knife
Highly Weathered	Specimens can be broken by hand with effort and shaved with knife. Textures becoming indistinct but fabric preserved
Completely Weathered	Mineral decomposed to soil but fabric and structure preserved. Specimens easily crumbled or penetrated.

COMPETENCY			
CLASS	LOG TERM	DESCRIPTION/DEFINITION	APPROXIMATE RANGE OF UNCONFINED COMPRESSIVE STRENGTHS (tsf)
I	Extremely Strong	Many blows with geologic hammer required to break intact specimens	>2000
II	Very Strong	Hand held specimens break with pick end of hammer under more than one blow	1000 to 2000
III	Strong	Hand held specimens can be broken with singer, moderate blow with pick end of hammer	500 to 1000
IV	Moderately Strong	Specimens can be scraped with knife; light blow with pick end of hammer causes indentations	250 to 500
V	Weak	Specimens crumble under moderate blow with pick end of hammer	10 to 250
VI	Friable	Specimens crumble in hand	N/A

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ROCK LEGEND

CCWD LAKE TULLOCH EMERGENCY INTERTIE PROJECT
O'Byrnes Ferry Road
Calaveras County, California

FIGURE 13
Date: 10/24
MPE No. 07191-01

APPENDICES

APPENDIX A

APPENDIX A

A. GENERAL INFORMATION

The performance of a Geotechnical Engineering Report for the proposed CCWD Lake Tulloch Emergency Intertie Project to be constructed in Calaveras County, California, was authorized by Mr. Michael Minkler on July 8, 2024. Authorization was for an investigation as described in our proposal letter of May 20, 2024, sent to Peterson Brustad, Inc., whose address is 80 Blue Ravine Road, Suite 280, Folsom, California 95630; e-mail Asmith@Pbieng.com; phone 916-608-2212.

B. FIELD EXPLORATION

On September 3, 2024, six (6) soil borings were drilled at the approximate locations indicated on Figures 3 through 5, utilizing a CME-75, track-mounted drill rig equipped with 6-inch O.D solid flight augers to the maximum depth of 14½ feet below ground surface (bgs).

At various intervals, relatively undisturbed soil samples were recovered with a 2½-inch O.D., 2-inch I.D. Modified California sampler (ASTM D3550), driven by a 140-pound hammer freely falling 30 inches. The number of blows of the hammer required to drive the 18-inch long sampler each 6-inch interval was recorded with the sum of the blows required to drive the sampler the lower 12-inch interval, or portion thereof, being designated the penetration resistance or "blow count" for that particular drive.

The samples obtained were retained in 2-inch diameter by 6-inch long, thin-walled brass tubes contained within the sampler. Immediately after recovery, the field engineer visually classified the soil in the tubes. The ends of the tubes were sealed to preserve the natural moisture contents. Disturbed bulk samples of the surface materials also were obtained at various locations and depths. Soil samples were taken to our laboratory for additional classification (ASTM D2488) and selection of samples for testing.

The Logs of Soil Borings, Figures 6 through 11, contain descriptions of the soils encountered in each boring. A Boring Legend explaining the Unified Soil Classification System and the symbols used on the logs is contained on Figure 12. A Rock Legend is contained on Figure 13.

C. LABORATORY TESTING

Selected undisturbed samples of the soils/rock were tested to determine dry unit weight (ASTM D2937), natural moisture content (ASTM D2216), and unconfined compressive strength (ASTM 2166). The results of these tests are included on the boring logs at the depth each sample was obtained.

One bulk sample of the anticipated pavement subgrade soils was subjected to Resistance ("R-") value testing. The results of the test were used in the pavement design and presented on Figure A1.

One sample of soil was subjected to Atterberg limits (ASTM D4318) tests. The results of the tests are presented on Figure A2.

Two soil/rock samples were submitted to Sunland Analytical in Rancho Cordova, California, for corrosivity testing in accordance with No. 643 (Modified Small Cell), CT 532, CT 422, and CT 417. The analytical results are presented in the text of the report.

RESISTANCE VALUE TEST RESULTS
(California Test 301)

Material Description: Red Brown, sandy lean clay (CL)

Location: D1 (2 – 5 feet)

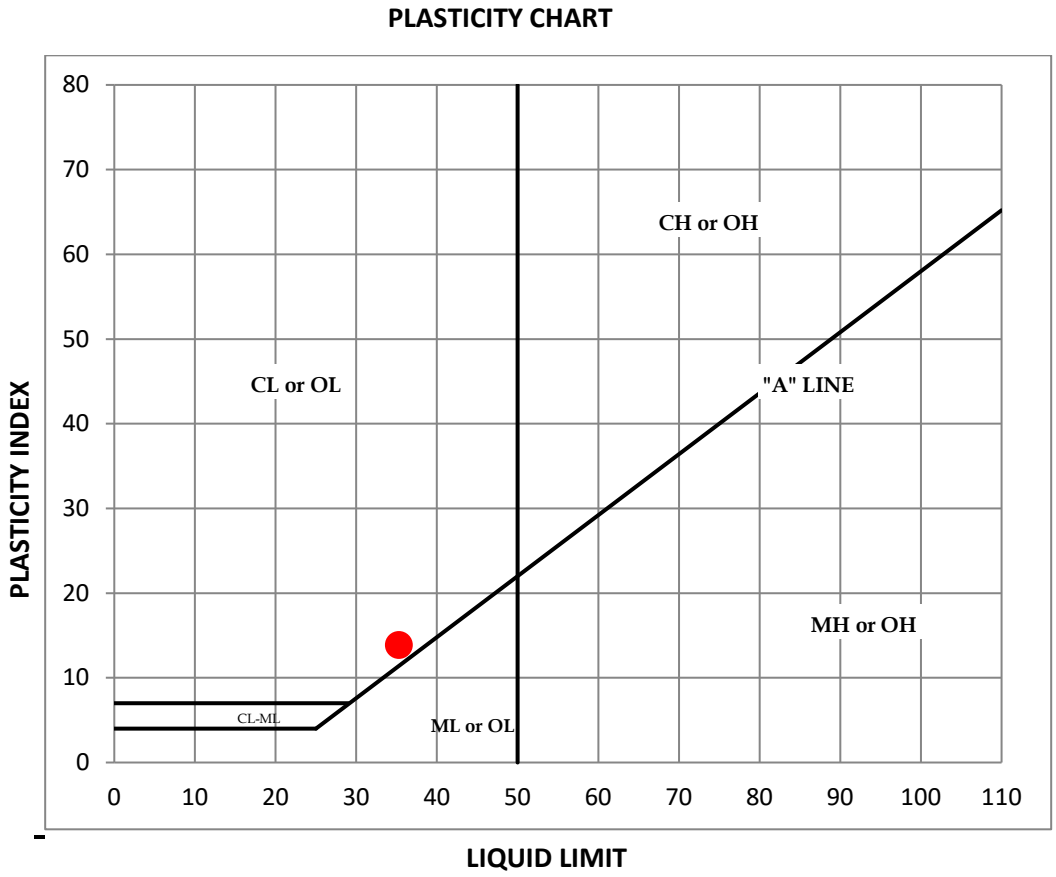
Specimen No.	Dry Unit Weight (pcf)	Moisture at Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
1	104.1	18.4	315	0	27
2	101.2	16.7	784	13	28
3	106.9	20.1	170	9	10

Resistance-value @ 300 psi = 27

MPE	**RESISTANCE VALUE TEST RESULTS** **CCWD LAKE TULLOCH EMERGENCY INTERTIE PROJECT** O'Byrnes Ferry Road, between Copper Meadow Drive and Conner Estates Drive Calaveras County, California	**FIGURE A1** Date: 10/24 MPE No. 07191-01

ATTERBERG LIMITS
(ASTM D4318)

Symbol	Sample	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)
●	D1 (2' – 3½')	36	23	13



MPE	**LABORATORY TEST RESULTS** **CCWD LAKE TULLOCH EMERGENCY INTERTIE PROJECT** O'Byrnes Ferry Road, between Copper Meadow Drive and Conner Estates Drive Calaveras County, California	**FIGURE A2** Date: 10/24 MPE No. 07191-01

APPENDIX B

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September 19, 2024

Vasiliy Parfenov, P.G., C.E.G
Mid Pacific Engineering, Inc.
840 Embarcadero Drive, Suite 20
West Sacramento, CA 95605
danielrivera@midpacificeng.com

Project No. 2024-00024

SUBJECT: Rippability Study
CCWD Lake Tulloch Emergency Intertie Project
Lake Tulloch, California

Dear Vasiliy,

We have completed our site assessment for the CCWD Lake Tulloch Emergency Intertie Project (Plate 1 – Vicinity Map) in order to assist in rippability characterization along sections of the proposed trenching and project area. Our services consisted of P-Wave Refraction profiling at six (6) locations. Below you will find a description of our investigation activities including but not limited to conducted field investigations, data processing, data analysis, and final conclusions. We appreciate the opportunity to work with you and MPE on this project. Please feel free to contact our firm with any questions or comments regarding our services and the findings or conclusions detailed in this letter report.

INTRODUCTION

Petralogix performed a total of six (6) individual standard P-Wave Refraction survey lines. The general locations of our survey lines are shown on Plate 2, with detailed (up close) locations of each survey line shown on Plate 2A through 2F. Plates 3 through 8 show standard P-Wave Refraction line data profiles. The exact Latitude and Longitude for transect lines was taken using a Trimble GeoXH 6000, and locations were differentially corrected using Pathfinder Software. The methods which were used to investigate the subsurface soils are more thoroughly explained below:

Standard P-Wave Refraction

The seismic refraction method of geophysical testing is used to obtain vertical p-wave profiles for soil property characterization. It is based on the principle that different materials within the earth have different sound wave propagation characteristics. When a signal source, or shot, is produced, a measurement of its arrival time to a receiver, or geophone, can be measured. When the source is activated, a seismic wave that moves through the interior of the earth is produced (as opposed to surface waves that travel near the earth's surface). This wave is known as a body wave. When this wave encounters a transition into denser material, at some depth, it is refracted into the lower layer as a head wave. Head waves are elastic waves that enter a high-velocity medium (refractor) near the critical angle and travel in the high-velocity medium nearly parallel

to the refractor surface before returning to the surface of the Earth. The objective in refraction surveys is to measure the arrival times of head waves as a function of source receiver distance so that the depth to the refractors in which they traveled can be determined (R. E. Sheriff[1]).

Refraction surveys consisted of 4.5 Hz geophones spaced 5 feet on center, with hammer shot points at geophone 1 and every 30 feet from geophone from 1 through 24. This survey line geometry yielded a total survey line length of 115+ feet. A total of 5 records were recorded for each location. A sample recording rate of 0.125 milliseconds was used for a total time of 0.500 seconds.

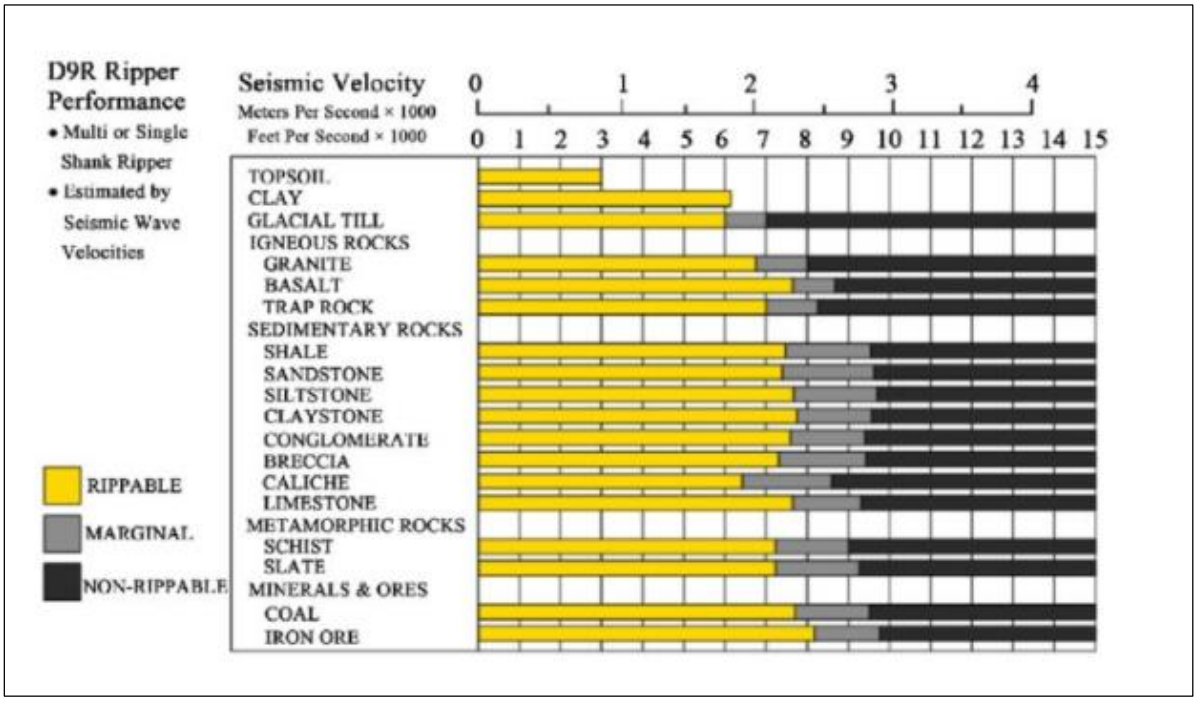
Data Processing:

For the Refraction survey, data records are input and analyzed using SeisOpt 2D 6.0 software (Optim Software). SeisOpt@2D uses only the first-arrival travel times and the survey geometry to derive subsurface velocity information. For this reason, accurate picks are important. It uses a nonlinear optimization technique called adaptive simulated annealing that involves forward modeling. Test velocity models are created, through which travel times are calculated. These calculated travel times are compared with the observed data. Testing every possible velocity model would take far too long, so SeisOpt@2D uses Optim's proprietary algorithm to search through only a small percentage of the many possible models, yet still finds the best model. It is called an optimization because the discrepancy, or error, between the calculated and observed travel times is optimized. In this case, the optimal solution is the velocity model with the minimum travel-time error. From this a 2D image is created that shows the compression wave velocity (P-wave) for the entire survey line.

FINDINGS AND CONCLUSIONS

Our review of the standard P-Wave Refraction data shows very dense soil both at the surface and at depth. This is interpreted to be a bedrock formation of metasedimentary or possibly volcanic rock. Therefore, we recommend that the following rippability chart (Figure 1) be used to assess the site for grading options. This chart is based on a Caterpillar D9R Ripper, and compares seismic velocity observed to three standards; 1) Rippable, 2) Marginal, and 3) Non-Rippable.

[1] R.E. Sheriff, L.P. Geldart, 1995, Exploration Seismology, 2nd Edition, University of Cambridge.



[2]

In reviewing the relation of p-wave values as shown on Plates 3 through 8 to the associated rippability chart, we observe that (in general) around the area of Line 3 and 4, cuts to about 5 feet will be rippable with a large dozer (D8, D9 or D10). At around 5 feet bgs, the rock is marginally rippable to around 10 feet bgs. Larger high velocity "non-rippable" zones may exist below this, and therefore deep grading should anticipate the need to do blasting. At the areas of Lines 1, 2, 5, and 6, deeper ripping (of around 10 feet in depth) could be expected using standard equipment. In addition to our findings, we further recommend that additional review be performed in conjunction with the Geotechnical Engineer of Record to confirm and compare our findings with onsite geological and geotechnical data (such as test pits and borings) within this area of concern for ripping vs. blasting.

LIMITATIONS

The professional findings contained in this geophysical assessment are strictly based on a limited testing over a large site, and are also based on the information provided regarding the proposed construction, and the geophysical sounding locations assessed. Furthermore, the analysis, conclusions and recommendations contained in this report are based on the site conditions as they existed at the time we performed our investigation.

Herein, it is assumed that the geophysical test locations are representative of the subsurface conditions throughout the site, however, it should be noted that they are non-unique in many cases. Without direct evidence a level of uncertainty exists. It is standard practice to perform test drilling in areas of hazard concern, and without this information a full evaluation cannot be completed. If there is a substantial lapse of time between the submission of this report and the start of the work at the site for test drilling, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, we urge that our report be reviewed to determine the applicability of the conclusions and recommendations considering the

[2] Caterpillar Inc. (2000). Handbook of Ripping. Twelfth Edition. Caterpillar Inc., Peoria, IL, 33 p.

changed conditions and time lapse. This report is applicable only for the project and site studied. This report should not be used after 3 years. Our professional services were performed, our findings obtained, and our professional opinions are in accordance with generally accepted geologic principles and practices. This warranty is in lieu of all other warranties either expressed or implied. Our findings do not constitute a guarantee or warranty, expressed or implied.

If you have any questions do not hesitate to call us to discuss in more detail. We appreciate the opportunity to work on this project. As a company that values long-term relationships, we look forward to being able to help you be a sustainable and long-term success and provide the best and most affordable services available.

Warm Regards,

Daniel E. Kramer, President
Professional Geologist 8657
Certified Engineering Geologist 2588
Professional Geophysicist 1078

Appendix A

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey
Vicinity Map

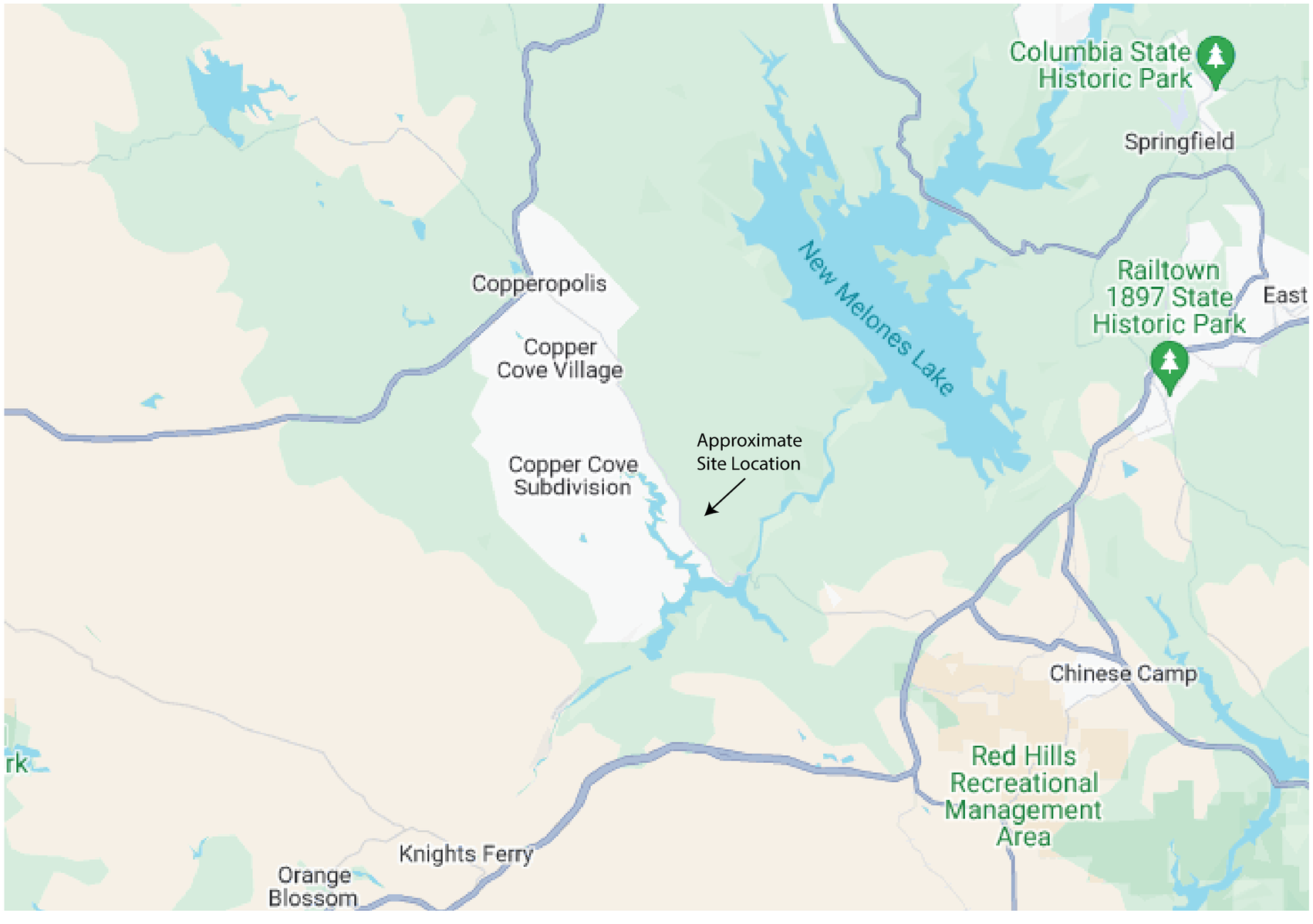


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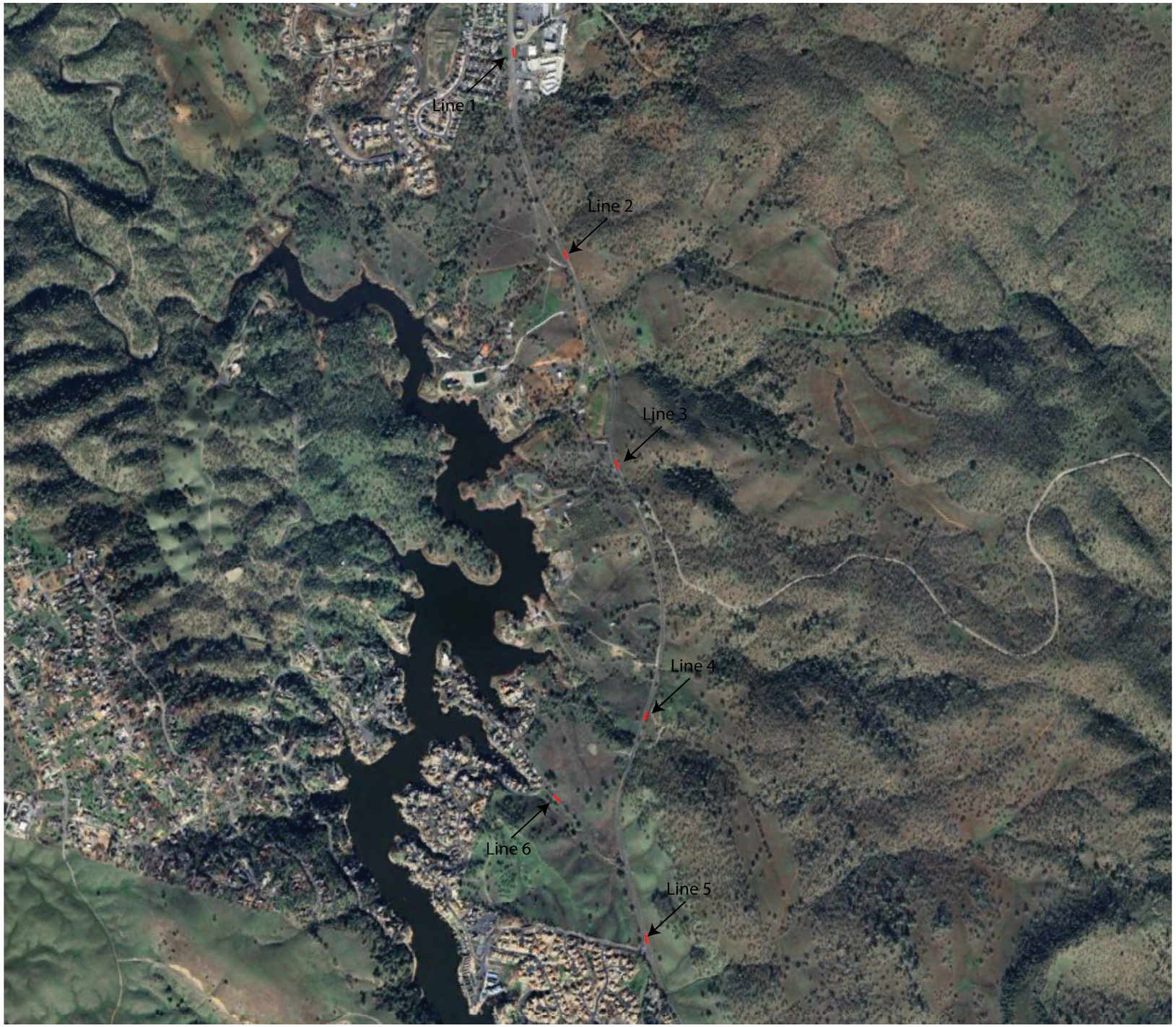
PLATE NO. 1

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey

Site Survey Map



LEGEND

Survey Line Locations

Survey Lines

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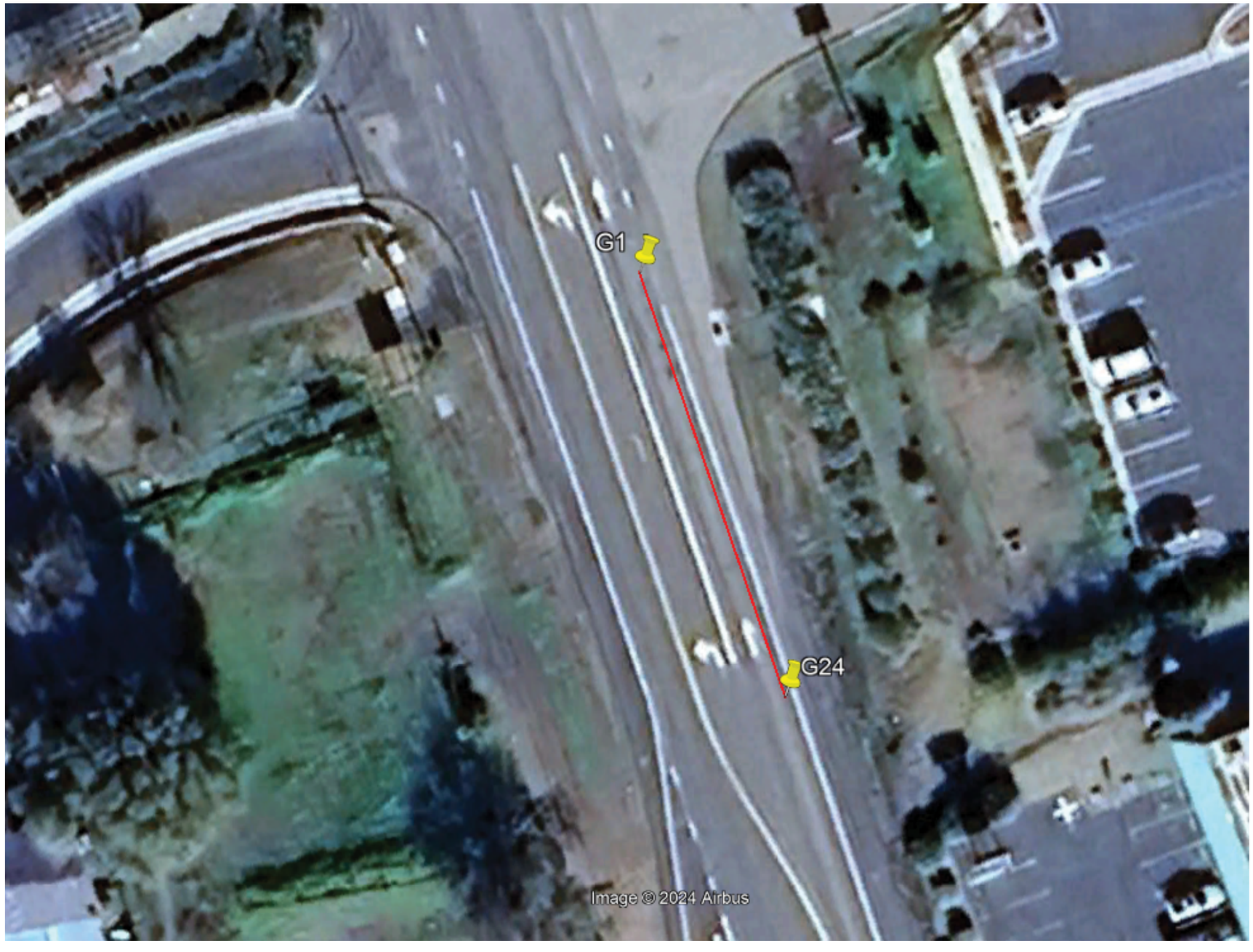
PLATE NO. 2

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey
Survey Line 1



LEGEND

Survey Line Locations

Survey Lines

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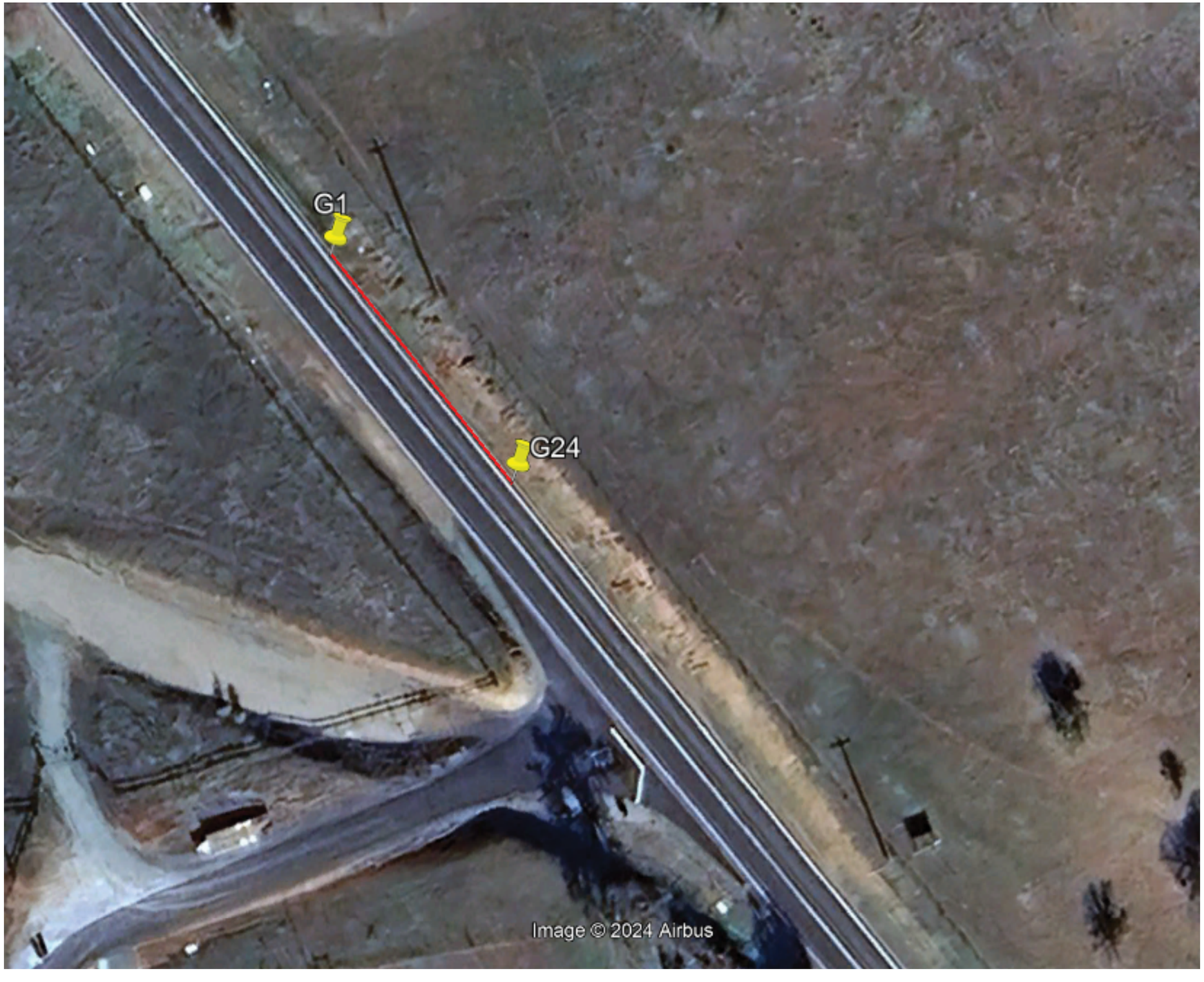
PLATE NO. 2A

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey
Survey Line 2



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Survey Line Locations

Survey Lines

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PLATE NO.2B

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey
Survey Line 3

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Survey Line Locations

Survey Lines

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PLATE NO. 2C

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey
Survey Line 4

LEGEND

Survey Line Locations

Survey Lines

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PLATE NO. 2D

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey
Survey Line 5

LEGEND

Survey Line Locations

Survey Lines

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PLATE NO. 2E

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey
Survey Line 6

LEGEND

Survey Line Locations

Survey Lines

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PLATE NO. 2F

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey

Line 1 - Refraction 2D Profile

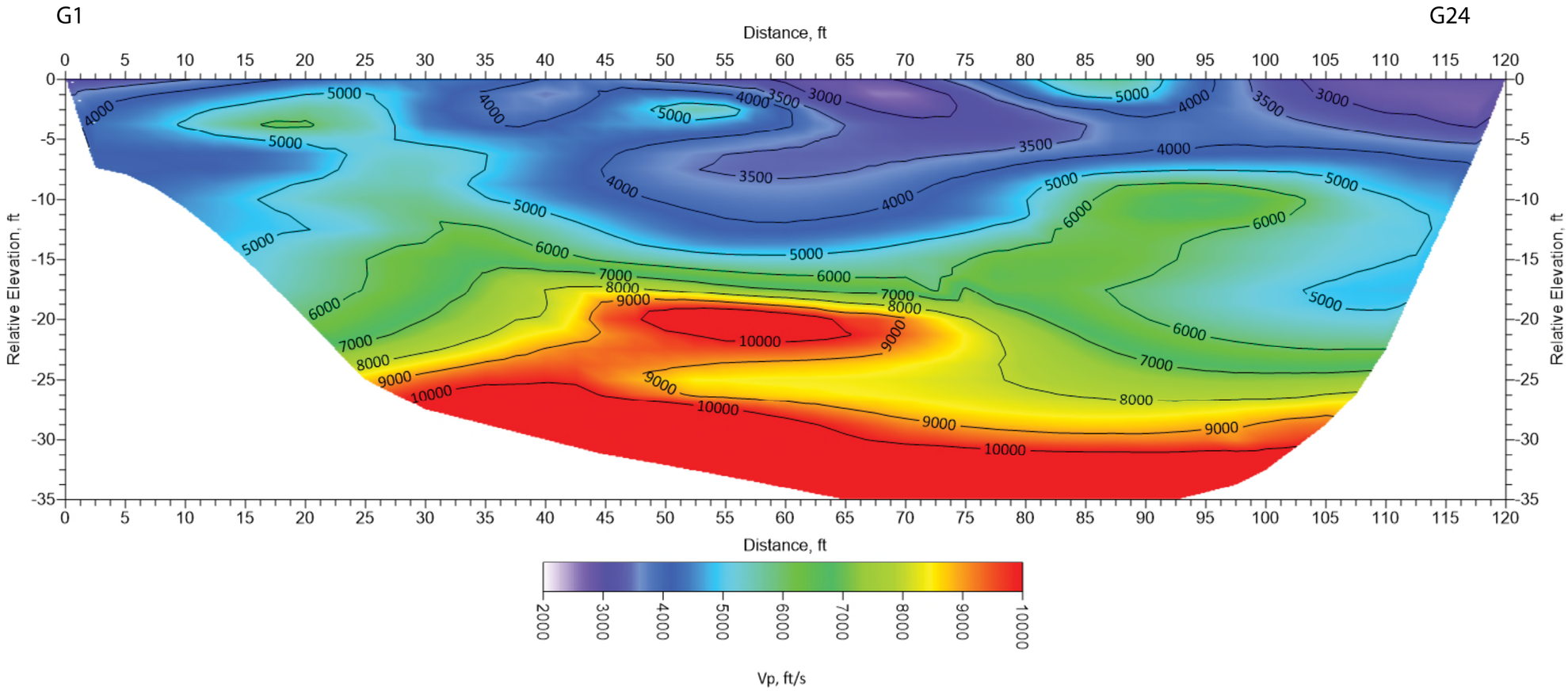

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PLATE NO. 3

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey
Line 2 - Refraction 2D Profile

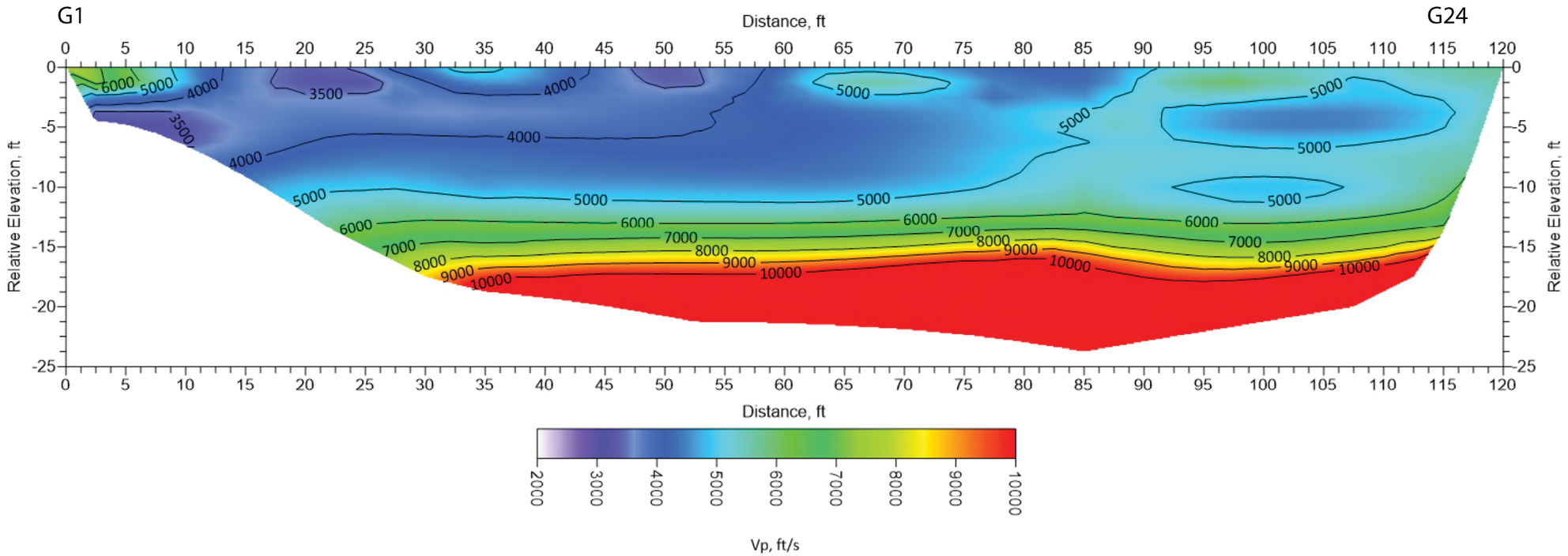

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PLATE NO. 4

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey
Line 3 - Refraction 2D Profile

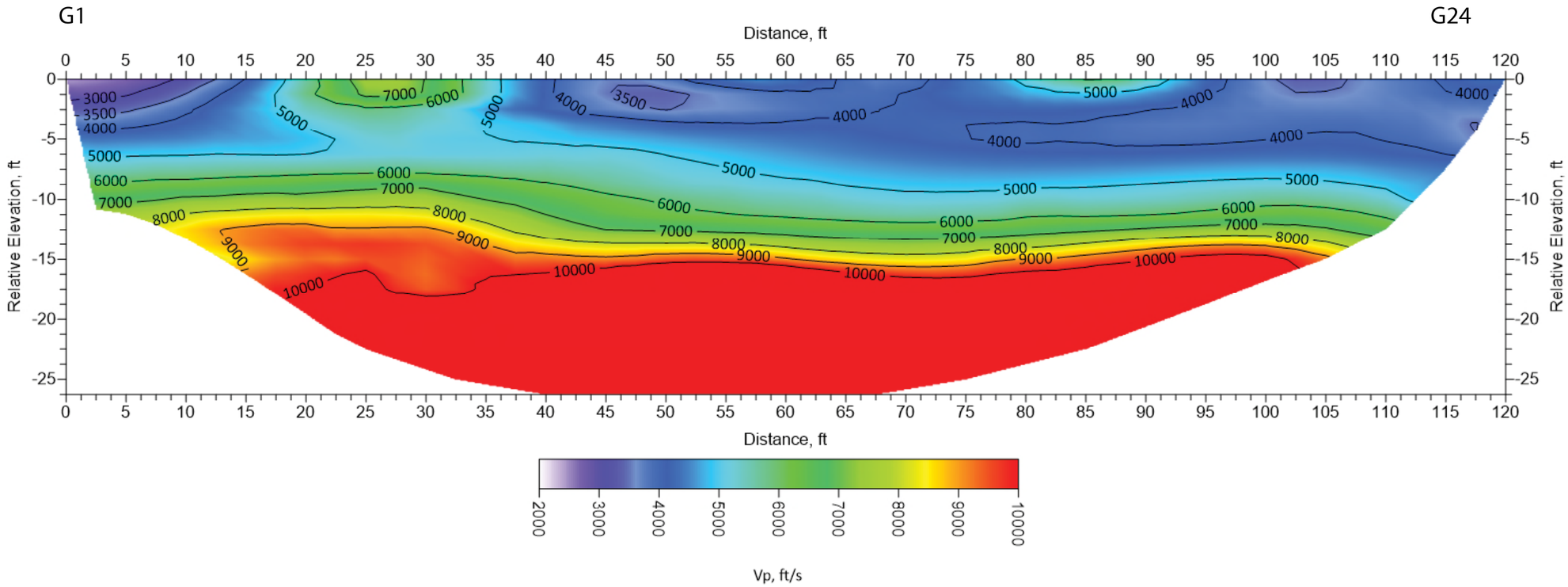

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PLATE NO. 5

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey
Line 4 - Refraction 2D Profile

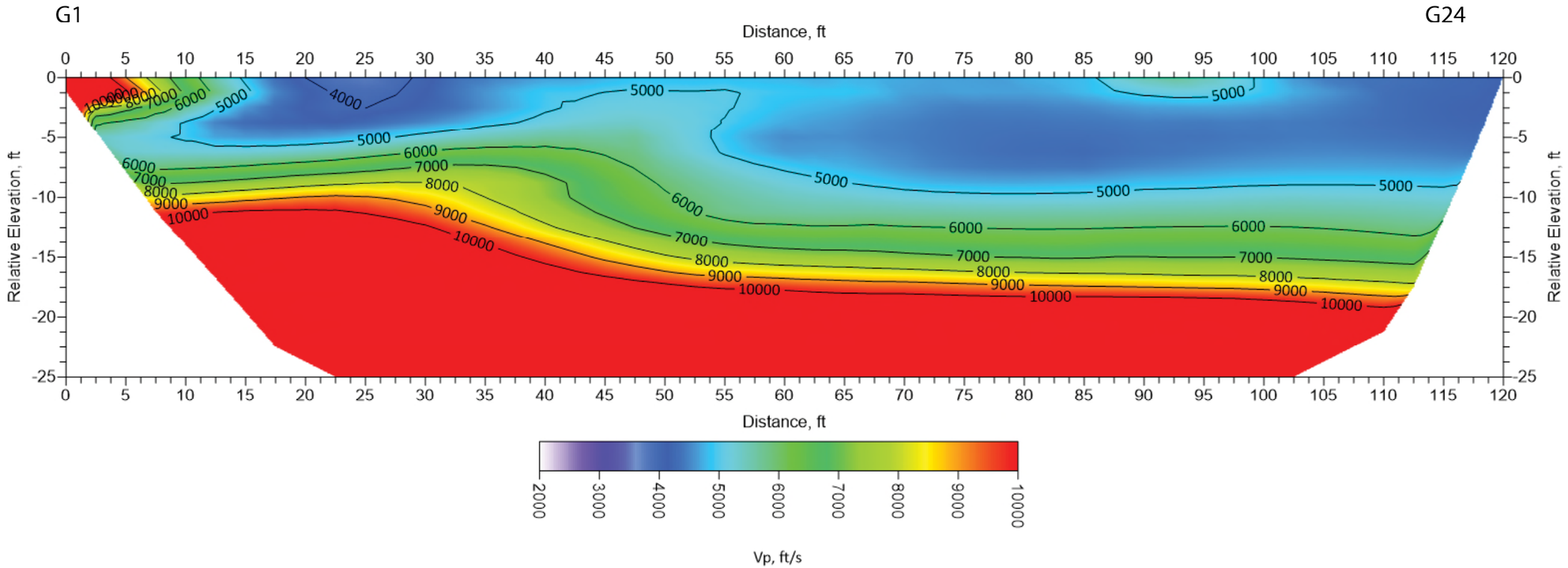

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PLATE NO. 6

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey
Line 5 - Refraction 2D Profile

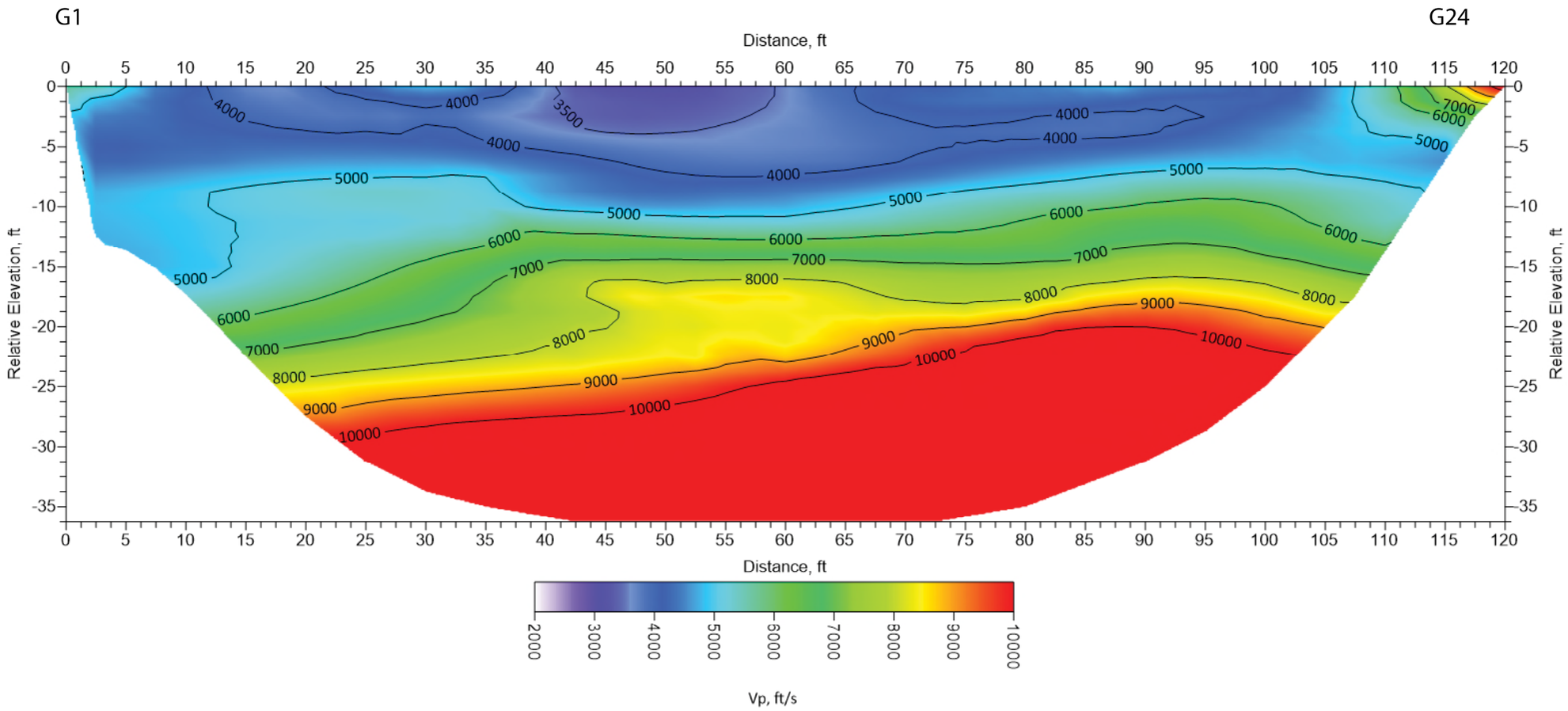

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PLATE NO. 7

CCWD Lake Tulloch Emergency Intertie Project - Geophysical Survey
Line 6 - Refraction 2D Profile

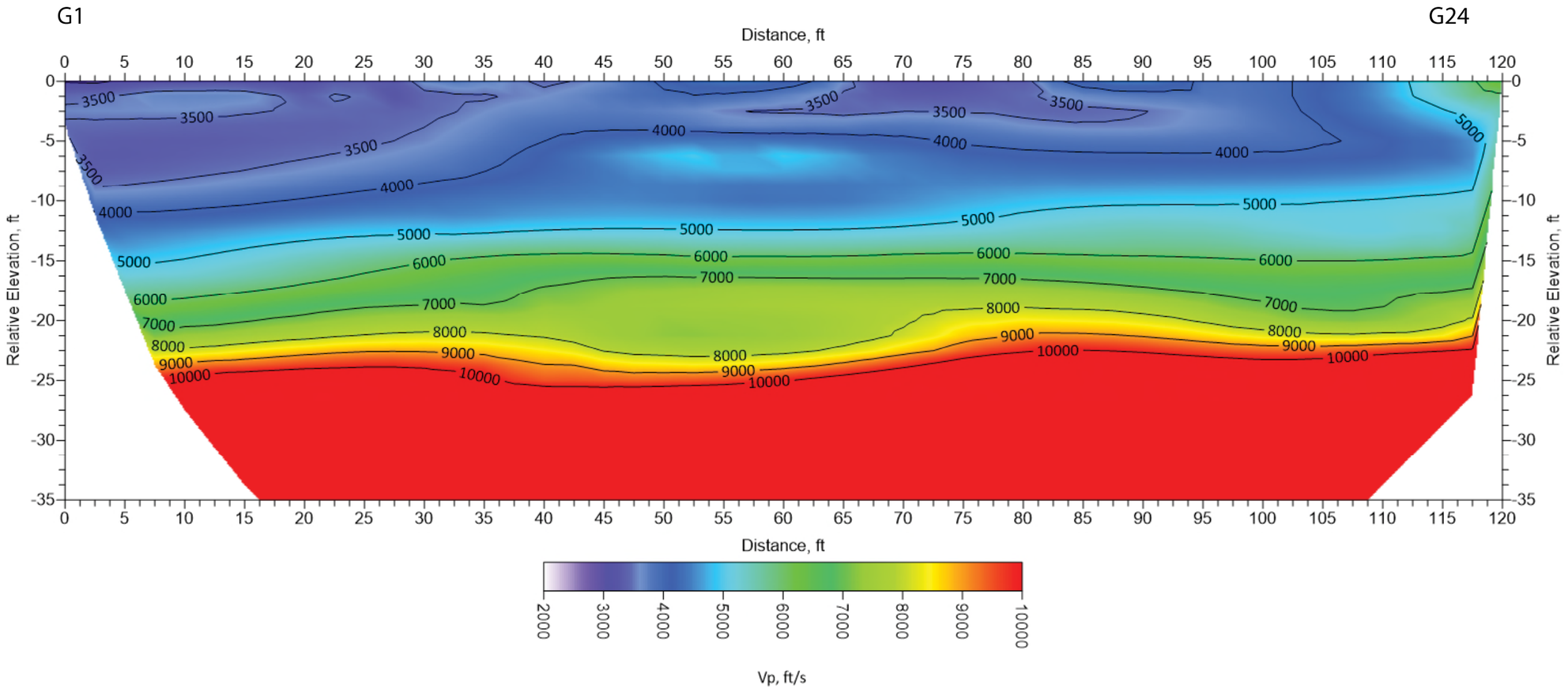

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PLATE NO. 8

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ATTACHMENT B:

CALAVERAS COUNTY PRELIMINARY ENCROACHMENT PERMIT

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COUNTY OF CALAVERAS
DEPARTMENT OF PUBLIC WORKS

PRELIMINARY ENCROACHMENT PERMIT

Application Date:11/05/2025 Utility: 77-UE-25
O'Byrnes Ferry Rd. Cosmic Ct. to Conner Estates Dr.

Prior to Permit Issuance (Items required are marked with "x")

_____ ☒ The submitted plans need the following changes.
- Corrections required, pgs Cover, 7, 10, 15, 20

_____ ☒ Provide traffic control plan that conforms to the current California Manual of Uniform Traffic Control Devices (MUTCD). Corrections reqd 23, 27, 28

_____ ☐ Provide evidence of Caltrans approval of signage for Hwy .

_____ ☒ Prepare and submit an Engineers Estimate for the cost of work to restore County right of way. **$**

_____ ☒ Post **$** Performance Bond (Based on 138% of Engineers Estimate).

_____ ☒ Post **$15,000.00** Inspection Fee Deposit **2100-2503**

_____ ☐ Pay $500 License Agreement Fee for in right of way.

_____ ☒ Provide evidence of $1 Million Liability Insurance with Calaveras County as Additional Insured for work in right of way.

_____ ☒ Provide Erosion and Sediment Control Plan Worksheet (ESCP)

_____ ☐ Provide haul route(s) /disposal area of excavated materials.

_____ ☐ Provide Permit to Excavate from the Division of Industrial Safety

_____ ☒ Permittee and Contractor sign and date Page 8, Utility Encroachment Permit

_____***Staff initial items when complete, *NA when not applicable***

Upon issuance of an Encroachment Permit, permission to encroach will be granted to the permittee and their designated contractor to perform the work specified in the application subject to the terms and conditions set forth in the County of Calaveras Department of Public Works General Permit Conditions and Specifications for Trench Cuts and Street Resurfacing, Calaveras County Code of Ordinances, and the **Utility Encroachment General Conditions** as follows**:**

Road PCI for pavement restoration: Obyrnes Ferry = 46 – 79

Utility Encroachment General Conditions

Acceptance of Provisions: It is expressly understood and agreed by the Permittee[1] that the work performed under this Encroachment Permit constitutes an acceptance of all the applicable provisions of the ***County of Calaveras Department of Public Works General Permit Conditions and Specifications for Trench Cuts and Street Resurfacing dated 10/16/2019 (Policy)***.

Encroachment Permit: Other than emergency repairs, there shall be no work performed in the public Right-of-Way until a Utility Encroachment Permit (Encroachment Permit or Blanket Permit) is issued. A copy of the Permit, a set of approved plans, and permits required by any other legally constituted authority shall be on site at all times construction is in progress. Encroachment Permits may be revoked at the discretion of the Director of Public Works.

Permittee Acknowledgment: By acceptance of this Permit, the Permittee agrees that whenever future construction, reconstruction, or maintenance work upon the road may require removal or relocation, installations or encroachment must be removed from the Right-of-Way in accordance with Municipal Code Section 12.08.320.

Prior Notice of Work Start: Permittee shall notify Public Works at 209-754-6401 a minimum of two full working days, excluding weekends and holidays, prior to starting a project and prior to each subsequent phase of construction. Before work is started, the Permittee shall furnish names and telephone numbers of persons on-call if the County requires emergency work at the jobsite. In addition, the Permittee shall notify Dig Alert/USA at 800-227-2600 a minimum of 48 hours (two working days) prior to any excavation. In emergencies, immediately contact the County Public Works Department at 209-754-6402. Where work impacts private driveway, notify resident 7 days in advance of work.

Standards and Specifications: All work within the public Right-of-Way shall be performed in accordance with the current applicable County of Calaveras and State of California standards, and Caltrans Standard Specifications.

Inspection: All construction performed in relation to an Encroachment Permit shall be inspected by the County prior to and during installation except as otherwise determined by the Director of Public Works.

Performance Period: Within two years from the time the County approves and accepts the Permittee's completed work or from the time the County accepts and closes out the encroachment permit, the County and/or Permittee shall inspect the work to ensure the pavement has not failed[2]. If the trench fails within this period, the Permittee will be required to make the necessary repairs as directed by the Director of Public Works.

Trench Failure and Repair: If the trench fails after the two-year Performance Period, and the Permittee did not follow the requirements outlined in the Policy, the Permittee will be required to make the necessary repairs as directed by the Director of Public Works. If the Permittee has submitted all compaction testing documentation, and if the failure is attributable to the excavation, repaving the excavation, or resulting from a failure of the utility service, the Permittee shall coordinate the proposed trench repair method and schedule with the Director of Public Works.

Traffic and Access: No road shall be closed without authorization from the Director of Public Works. An authorized road closure will allow the detour of *through* traffic only.

Traffic Control: Traffic control shall conform to the current California Manual of Uniform Traffic Control Devices (MUTCD).

[1] Permittee shall mean the Utility Encroachment Permit applicant and/or the owner of the facilities, or any and all successors in interest to the facilities, for which the permit was issued under the provisions of this Policy.

[2] Settlement of 3/8 inch or greater with a 6 foot straight edge will be cause for repair in the case of settlement, or replacement in the case of unsatisfactory workmanship. Trench settlement that results in water ponding or other drainage issues may also be considered inadequate despite meeting the aforementioned requirements.

Utility Encroachment General Conditions

Working Hours: Except for emergency repairs, no work shall be performed within County road Right-of-Way on weekends, County holidays, before 7 AM or after 6 PM unless authorized by the Director of Public Works.

Surplus Materials: There shall be no equipment or materials stored or stockpiled in road Right-of-Way except as approved by the Director of Public Works.

Clean up and Dust Control: Throughout all phases of construction, including suspension of work, the Permittee shall regularly clean and sweep to keep the work site clean and free from rubbish and debris.

County Facilities: Prior to construction, the Permittee may be asked to assess the condition of County facilities within project limits. Any damages to County facilities during construction shall immediately be brought to the attention of the County. If the County identifies any deficiencies as a result of Permittee activity, the condition assessment documentation shall provide a record of prior condition. Failure to provide condition assessment data could result in Permittee liability.

Pavement Removal: As much as possible, underground work shall be confined to the shoulder area outside of the traveled way. Trenching within the wheel path shall be prohibited unless no other options or alternatives exist. Paving shall be cut for removal and excavated in a manner that does not disturb the adjacent pavement. It is the permittee's responsibility to secure a disposal site and permission to use that site. For off-site disposal greater than 50 cubic yards, a grading permit is required.

Depth of Installation: Underground installations of wet utilities shall have a minimum cover below finished grade of 36 inches in accordance with Ordinance 2295 and as indicated by the attached drawings and applicable County standards.

Separation of Utilities: Adequate separation shall be maintained between new or replaced underground main lines from existing sewer lines, water lines and drainage culverts. The alignment of new main installations or replacement of existing mains shall be shown in the permit application. Unless specifically authorized by the Director of Public Works:

- The minimum separation for new or replaced main lines running parallel shall be 3 feet from outside of pipe to outside of pipe.
- The minimum separation for new or replaced main line crossings shall be 1 foot clear from outside of pipe to outside of pipe.

County requirements do not supersede State requirements.

Open Trench: The maximum length of open trench (excavation or backfill not resurfaced) allowed during construction within the paved surface or shoulder shall be the distance of construction that can be reasonably installed in a single day. Contractor's personnel shall protect the traveling public from any open trenches at all times. Where pavement has been removed, a minimum of 2 inches of temporary paving or sufficient temporary paving to match the grade of the travel way (as applicable) shall be placed before that area is made available to traffic.

Backfill Material: Material for backfill, with the exception of pipe bedding, shall be:

- Class II Aggregate Base (AB) for trenches within the roadway and up to 3-feet beyond the edge of pavement, or equal as approved by the Director of Public Works; or
- Native material for trenches outside of roadway and greater than 3-feet beyond the edge of pavement. Select native material shall be free from organic matter, debris, and rock larger than 4 inches, and shall generally conform to the following gradation

Sieve Size	% Passing
4”	100
3”	95-100
#4	50-100
#200	0-50

- Or two-sack slurry or greater.

Asphalt Concrete (AC): AC mix formula shall be prepared by an approved certified independent laboratory under the supervision of a certified asphalt technician. Finish coarse shall be 1/2-inch Type A, PG 64- 16 conforming to Caltrans State Standard Specifications, Sections 39 and 92. AC shall not be applied to ground temperatures lower than 50°F/10°C.

Relative Compaction (RC): AC shall be placed in layers not to exceed 0.20 feet and compacted to a minimum of 95% RC[3]. Aggregates placed beneath paved surfaces and within 3 feet of the edge of pavement shall be compacted to achieve a minimum 95% RC[4]. Soils placed beyond 3 feet of the edge of pavement shall be compacted to achieve a minimum of 90% RC[4].

Compaction Testing Frequency and Location: Trench backfill testing shall be at random 100-foot maximum intervals. After three (3) successful tests the intervals may be increased by 50 feet increments per successive successful tests up to a maximum interval of 250 feet. One test shall be performed for each 4 feet of depth or fraction thereof starting at the top of the installation. Twenty percent (20%) of laterals and one hundred (100%) of manholes shall be tested independently of the main line. Failure of a compaction test will result in the entire area represented by that test being uniformly reworked and retested at a random location. Additionally, a failed test, at the discretion of the County, may result in more frequent compaction testing to a minimum of 100-foot intervals. The use of two-sack slurry in lieu of compacted materials shall be exempt from compaction testing requirements.

Test Reports: Tests shall be certified by a registered California Civil or Geotechnical engineer or testing laboratory in accordance with the State of California test requirements. The test report shall include an accurate description of the test location. **Compaction reports shall be submitted to the County’s inspector and approved prior to permanent paving.**

Trench Pavement Repair: Trench edges shall be sawcut or cold planed with straight lines to a minimum depth of 2 inches and to a minimum of 1 foot beyond the edge of trench. The repaired section shall be patched with hot-mix asphalt of equal thickness to existing asphalt but not less than 2 inches thick, flush with the existing paving. A tack coat of emulsified asphalt shall be applied to all edges/surface of old pavement prior to placement of new asphalt concrete surface material.

Overlay Paving or Resurfacing: When a trench is 300 feet or longer, or when removing six or more separate areas of pavement equal to 15% of the total area of a lane (excluding work done within the paved shoulder) within a continuous 300-foot length of street, pavement restoration shall be required in accordance with Table 1.

[3] 95% RC of Caltrans Test Method CTM-308 or 92% RC of Caltrans Test Method CTM-309 (or equivalent).

[4] RC of ASTM D1557 or Caltrans Test Methods CTM 216 and CTM 231 (or equivalent).

Table 1 – Pavement Restoration Options

Street Category	Options
A	**Option 1 -** Trenching prohibited. Directional boring or jacking may be permitted. **Option 2 -** Grind and replace length of trench with 2" overlay over half road width. **Option 3 -** 1 ½" overlay over entire road surface for length of trench with shoulder backing as appropriate. **Option 4 - (Qualified Projects) -** CIP Project, eligible for in-lieu cash contribution.
B	**Option 1 -** Grind and replace length of trench with 2" overlay over half road width. **Option 2 -** Type II or Type III Microsurface across entire road width for length of trench. **Option 3 -** Other approved resurfacing method to conform to current road conditions. **Option 4 -** Directional boring or jacking may be permitted. **Option 5 - (Qualified Projects) -** CIP Project, eligible for in-lieu cash contribution.
C	**Option 1 -** Trench pavement repair (per Section 8.2) and crack seal trench. No additional pavement restoration required.

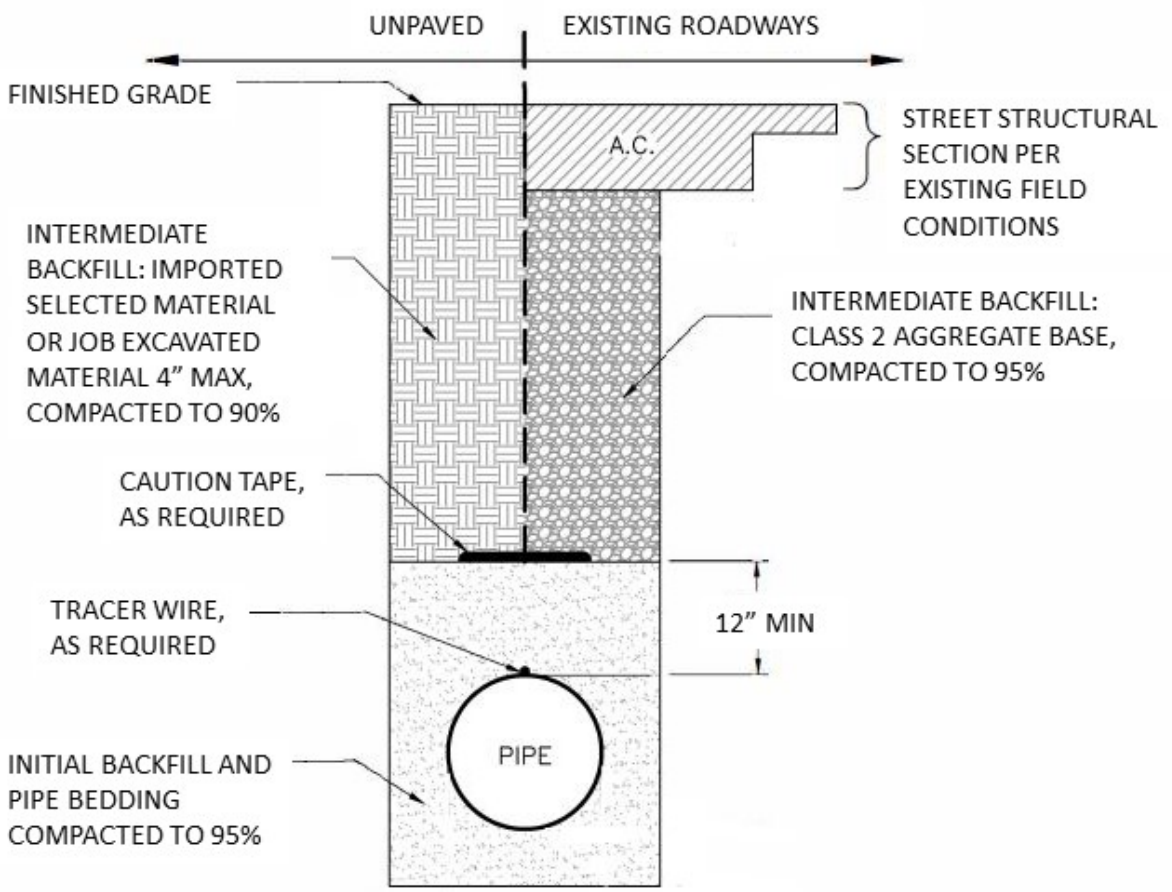
STREET CATEGORIES
A-Street newly constructed or repaved within 3 years of trench cut application date or PCI of 80 or greater.
B-Street in good or fair condition, not constructed or repaved within 3 years, and PCI of less than 80 or greater than 45.
C-Street in poor condition, PCI 45 or less.

Liability for Damages, Bonding, and Insurance: The Permittee is responsible for all liability for personal injury or property damage which may arise out of the permitted work, or which may arise out of failure on the Permittee's part to perform the requirements of this Permit.

Exceptions: Exceptions to the Policy are as follows:

- Emergencies that endanger life or property.
- Interruption of an Essential Utility service.
- Service for buildings where no other reasonable means of providing service exists.
- Boring is not feasible due to technical engineering reasons.

If an exception is granted by the Director of Public Works, trenching and restoration efforts shall continue to be governed by the Policy. All reasonable efforts must be made by the Permittee to restore the road to its original condition.



NOTES:

1. MINUMUM COVER FROM TOP OF PIPE TO FINISHED GRADE SHALL BE 36 INCHES.
2. PAVEMENT SAW CUT SHALL BE CLEAN AND STRAIGHT LINES, PARALLEL AND PERPENDICULAR TO EXISTING ROADWAY IMPROVEMENTS.
3. EXISTING ROADWAY INCLUDES 3 FEET BEYOND EDGE OF PAVEMENT.
4. SAWCUT OR GRIND PAVEMENT A MIN. OF 1 FOOT BEYOND EACH SIDE OF TRENCH CUT.
5. REPLACE PAVEMENT ALL THE WAY TO THE EDGE OF PAVEMENT IF EXCAVATION IS WITHIN 3 FEET OF THE EDGE OF PAVEMENT.
6. INITIAL BACKFILL MATERIAL TO BE SPECIFIED BY UTILITY.

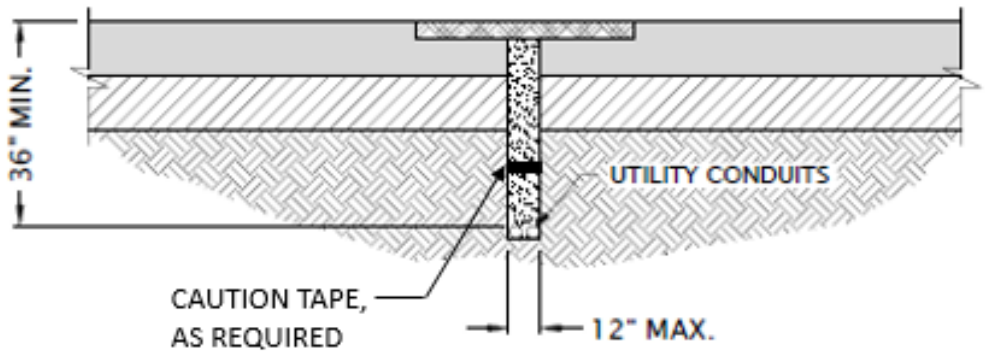
Department of Public Works
891 Mountain Ranch Road
San Andreas, CA 95249
Phone: (209) 754-6401
Fax: (209) 754-6664

TRENCH RESTORATION DETAIL

DATE: AUGUST 2019

HATCH LEGEND:

- NEW AC PAVEMENT
- EXISTING AC PAVEMENT
- EXISTING CRUSHED AGGREGATE BASE
- 2-SACK PCC SAND SLURRY
- EXISTING EARTH



NOTES:

1. SAWCUT OR GRIND PAVEMENT A MIN. OF 1 FOOT BEYOND EACH SIDE OF TRENCH CUT. REMOVE 2-INCH MINIMUM OF AC PAVEMENT BY COLD PLAINING
2. REPLACE PAVEMENT ALL THE WAY TO THE EDGE OF PAVEMENT IF EXCAVATION IS WITHIN 3 FEET OF THE EDGE OF PAVEMENT.
3. MINUMUM COVER FROM TOP OF PIPE TO FINISHED GRADE SHALL BE 36 INCHES.
4. PLACE AND COMPACT AC PAVEMENT PER THE COUNTY OF CALAVERAS TRENCH CUTS AND STREET RESURFACING POLICY
5. TRENCHES BEYOND 3 FEET OF THE EDGE OF PAVEMENT MAY BE BACKFILLED WITH IMPORTED SELECTED MATERIAL OR JOB EXCAVATED MATERIAL 4" MAX, COMPACTED TO 90%.

Department of Public Works
891 Mountain Ranch Road
San Andreas, CA 95249
Phone: (209) 754-6401
Fax: (209) 754-6664

TRENCH RESTORATION DETAIL – NARROW TRENCH

DATE: SEPTEMBER 2019

COUNTY OF CALAVERAS
DEPARTMENT OF PUBLIC WORKS

UTILITY ENCROACHMENT PERMIT

The undersigned agrees to perform all work in accordance with the rules and regulations as set forth by Chapter 12.08 of the Calaveras County Code. Section 12.08.120 states, "the applicant shall at all times comply with and shall cause all his agents and employees to comply with such laws, ordinances, regulation, decisions, court and similar authoritative orders; and shall protect and indemnify the County and all of its officers, agents and employees against any claims of liability proximately caused by the violation of any such law, ordinance, regulation or order issued under police power and in accordance with law, whether by himself or by his agents or employees."

Permittee: Date:

Contractor: Date:

Permission to encroach in accordance with the Application for Encroachment Permit, the Preliminary Encroachment Permit, and the plans and specifications, is hereby granted.

Issue Date: _____ Expiration Date: _____

Permit Issued By: Date:

Permit Finalized By: Date:

As specified in the Utility Encroachment General Conditions, a two-year Maintenance Bond shall be submitted once work is complete as a condition of release of the Performance Bond. The bond shall be 10% of the Performance Bond. For cash in lieu of bonds, 10% of the monies will be held in place of the Maintenance Bond.

Performance Bond Released By: Date:

Maintenance Bond Received By: Date:

Maintenance Bond Released By: Date:

891 Mountain Ranch Road ▪ San Andreas, CA 95249
Phone: (209) 754-6401 ▪ email: pubworks@co.calaveras.ca.us ▪ Website: publicworks.calaverasgov.us