

PROJECT MANUAL

FOR THE

HERITAGE RANCH COMMUNITY SERVICES DISTRICT

4870 HERITAGE ROAD

PASO ROBLES, CA 93446

(805) 227-6230

RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2

Prepared by:

WALLACE GROUP

612 Clarion Court

San Luis Obispo, CA 93401

805 544-4011

APRIL 2021

WG JOB NO 0160-0001-06



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CERTIFICATION

In accordance with the provisions of Section 6735 of the Business and Professions Code of the State of California, these specifications have been prepared by or under the direction of the following Professional Engineers licensed in the State of California:

A handwritten signature in blue ink that reads "Steven G. Tanaka" followed by a horizontal line.

STEVEN G. TANAKA, PE #C49779 EXP. 9/30/22

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PART I

NOTICE, PROPOSAL AND AGREEMENT FORMS

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NOTICE INVITING BIDS

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HERITAGE RANCH COMMUNITY SERVICES DISTRICT

RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2

NOTICE INVITING BIDS

NOTICE IS HEREBY GIVEN that the HERITAGE RANCH COMMUNITY SERVICES DISTRICT (Owner) hereby invites sealed bids which will be received at:

Wallace Group
612 Clarion Court
San Luis Obispo, California 93401

Until June 10, 2021, at 3:00 pm PST, or such later date as may be set by Addendum, at which time and at the above address, they will be reviewed, and tabulated bid results will be emailed to bidders by 11 a.m. the next business day following the date bids are due. No public bid opening will be conducted due to the coronavirus pandemic.

SUPPLEMENTAL BIDDING INSTRUCTIONS DUE TO CORONA VIRUS PANDEMIC – Bids shall be submitted by mail, delivery service, or in person at Wallace Group, 612 Clarion Court, San Luis Obispo, CA. Electronic submission of bids shall not be allowed. Bidders are responsible for confirming their bids are received by Wallace Group staff by the bid due date and time. Wallace Group and the District will not take any responsibility for late bids and will not be maintaining watch at the front door to witness when packages are delivered.

DESCRIPTION OF WORK: The work is comprised of providing a submersible turbine pump in an existing 40-foot deep vertical raw water intake facility, and pipeline tie-in to the District's existing raw water supply line near the District's raw water intake facility at the Nacimiento River. The Work includes setting of the submersible turbine pump at the intake facility, installing associated instruments and appurtenances including, but not limited to, a pressure transducer, propeller flow meter, and air-vacuum valve, installation of aboveground piping and valves, installation of a 4" ductile iron pipeline, tie-in at the existing 4" emergency Nacimiento Water turn out pipeline, and installation of a valve vault at the proposed tie-in location, electrical improvements, and all other work to make the vertical raw water facility complete and functional as specified, and as specified herein and as shown on the Contract Documents.

LOCATION OF THE WORK - The work is located in Heritage Ranch, California, and more specifically at the District's Raw Water Intake Facility north of the Water Treatment Plant site.

BID OPENING - Telephones will not be available to bidders for the preparation of the bids or for calling in bid results. Bid forms received after the designated time will not be accepted.

AWARD OF CONTRACT- The OWNER intends to award a contract **to the lowest, responsive, and responsible bidder to the bid schedule delineated in these contract documents.** All bids submitted shall be in accordance with the provisions of the Contract Documents and the OWNER may waive any minor irregularities or reject any and all bids. Any bid may be withdrawn prior to bid opening but not afterward.

FORM OF THE BID - Bidders must submit proposals on the proposal bid form provided. Proposals will not be considered unless submitted on proposal forms included in the Contract Documents obtained from the OWNER. It is **not mandatory**, but highly recommended, that the bidder attend the pre-bid job conference scheduled for Tuesday, June 1, 2021, **at 10 am**, at the Project Site (Pump Station No. 1, Water Treatment Plant, Heritage Ranch). The bidder may contact Steve Tanaka **at 805-441-2293** for additional information and directions to the project location.

BID SECURITY - Each proposal must be accompanied by cash, a certified or cashier's check, or bidder's bond on the prescribed form and made payable to the OWNER for an amount equal to at least 10 percent of the amount of the Bid, such guaranty to be forfeited should the apparent successful bidder to whom the contract is awarded fail to furnish the required bonds and insurance certificates, and enter into contract with the OWNER within the time stated in the Proposal requirements. Proposals cannot be withdrawn for the period of time specified in Article 10 of the Instructions to Bidders.

PERFORMANCE SECURITIES – The successful bidder will be required to furnish a payment bond and faithful performance bond in the full amount of the Contract price, and insurance with certificates and endorsements of insurance, as provided in the Contract Documents. The required bonds must be provided only by a surety insurer who is in good standing with the State of California Department of Insurance.

CONTRACTOR LICENSING - In accordance with the provisions of California Public Contract Code Section 3300, the OWNER has determined that the contractor shall possess a valid General A Contractor license at the time of bid issuance. Failure to possess the specified license shall render the Bid as non-responsive and shall act as a bar to award of the Contract to any bidder not possessing said license at the time of award. In the event of dispute over classification of the license required, the opinion of the contractor's State License Board shall prevail.

WAGE RATE REQUIREMENTS - In accordance with the provisions of California Labor Code Sections 1770, 1773, 1773.1, 1773.6 and 1773.7 as amended, the Director of the Department of Industrial Relations has determined the general prevailing rate of per diem wages in accordance with the standards set forth in Section 1773 for the locality in which the work is to be performed. A copy of said wage rates is on file at the office of the OWNER. It shall be mandatory upon the contractor to whom the work is awarded and upon any subcontractor under the contractor to pay not less than said specified rates to all workmen employed by them in the execution of the work.

CONTRACTOR REGISTRATION WITH DEPARTMENT OF INDUSTRIAL RELATIONS – In accordance with California Labor Code Section 1725.5, Contractors and Subcontractors (as defined by California Labor Code Section 1722.1) bidding on Public Works contracts in California shall be registered with the Department of Industrial Relations **prior to bidding**. Contractor shall verify that this requirement has been met, prior to award of Contract.

AGREEMENT TO ASSIGN - In accordance with Section 4552 of the California Government Code, the bidder shall conform to the following requirements: In submitting a bid to a public purchasing body, the bidder offers and agrees that if the bid is accepted, it will assign to the purchasing body all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act 15 U.S.C. 15, or under the Cartwright Act, Chapter 2.

DEPOSIT OF SECURITIES IN LIEU OF RETAINAGE - The Contractor may elect to receive 100 percent of payment due under the Contract Documents from time to time, without retention of any portion of the payment by the OWNER, by depositing securities of equivalent value with the OWNER in accordance with the provisions of Section 20300 of the California Public Contract Code. Such securities, if deposited by the Contractor, shall be valued by the OWNER, whose decision on valuation of the securities shall be final. Securities eligible for investment under this provision shall be limited to those listed in Section 16430 of the California Government Code or bank or savings and loan certificates of deposit.

CONTRACT DOCUMENTS - Only PDF electronic copies of the bid documents will be made available to bidders, at no charge to bidders. The special attention of prospective bidders is called to the Instructions to Bidders portion of the Contract Documents for full directions for bidding the Work. To request copies of the contract documents, contact the District Engineer, Steven Tanaka, Wallace Group, at (805) 441-2293 or email at stevent@wallacegroup.us. Contract documents may also be obtained by downloading from the District's website, <https://heritageranchcsd.ca.gov/>. **HOWEVER, IF YOUR FIRM INTENDS TO BID THE PROJECT, YOU MUST NOTIFY THE DISTRICT ENGINEER OF YOUR INTENT TO BID THE PROJECT SO THAT YOU WILL BE PLACED ON THE PLANHOLDERS' LIST. FAILURE TO DO SO MAY CAUSE YOU TO MISS ADDENDA AND OTHER IMPORTANT NOTIFICATIONS DURING THE BIDDING PROCESS, FOR WHICH THE DISTRICT AND DISTRICT ENGINEER WILL NOT BE RESPONSIBLE FOR.**

The successful bidder must insure that employees and applicants for employment are not discriminated against on the basis of age, color, race, national origin, ancestry, religion, sex, sexual preference, marital status, and shall comply with the Americans with Disabilities Act.

Date: May 21, 2021

OWNER:  FOR
SCOTT DUFFIELD, GENERAL MANAGER

END OF NOTICE INVITING BIDS

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INSTRUCTIONS TO BIDDERS

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HERITAGE RANCH COMMUNITY SERVICES DISTRICT

RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2

INSTRUCTIONS TO BIDDERS

- 1) Commencement of Work: No work shall commence before contract bonds and insurance certificates have been filed with the OWNER, the Contract has been signed by the OWNER and the Notice to Proceed has been issued by the OWNER.
- 2) Completion Time: The Contractor shall obligate him/herself to satisfactorily complete the work within ninety (90) **calendar days**. The date of the Notice to Proceed issued by the OWNER shall constitute the starting date of the Contract. Upon issuance of the Notice to Proceed, the Contractor shall immediately begin and diligently prosecute the work to completion.
- 3) Liquidated Damages: Per Article 6.1 of the Supplementary General Conditions.
- 4) Method of Payment: Payment will be made on the basis of the **lump sum** bid for each bid item in the bid schedule, and as set forth in the General Conditions and Supplementary General Conditions.
- 5) Form of the Bid and Signature: The proposal shall be submitted on the form attached hereto and shall be enclosed in a sealed envelope addressed and marked as hereinafter directed.

The bidder shall state the **price** on the bid form, for which he/she proposes to supply the labor, materials, supplies, or equipment, and perform the work required by the Specifications.

The low bidder, for purposes of award, shall be the conforming, responsible bidder offering the most favorable bid per the project base bid. All bids shall be evaluated on the same basis.

If the proposal is made by an individual, it shall be signed and his/her full name and mailing address shall be given; if it is made by a firm, it shall be signed with the partnership name of a member of the firm, who shall also sign his/her own name, and the name and address of each member shall be given; and if it is made by a corporation, the name of the corporation shall be signed by its duly authorized officer or officers attested by the corporate seal, and the names and titles of all officers of the corporation shall be given.

Bidder may only modify his bid by written communication received by the OWNER prior to said closing time; provided that it shall be the responsibility of the bidder to ensure receipt of such document by the OWNER prior to said closing time. Any written modification so received will be read aloud at the time and place fixed for opening and reading of bids. Written communication should not reveal the Bid price but should state the addition or subtraction or other modification so that the final prices or terms will not be known by the OWNER until the sealed bid is opened.

- 6) Interpretation and Addenda: No oral representation or interpretations will be made to any bidders as to the meaning of the Contract Documents. All questions about the meaning or

intent of the Contract Documents are to be directed to the engineer. Additions, deletions, or revisions to the Contract Documents considered necessary by the engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by the engineer or District as having received the Contract Documents. Questions received less than 14 days prior to the date of Bid opening may not be answered. Only answers to such questions issued by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

Addenda may also be used to make other additions, deletions, or revisions to the Contract Documents.

Bidders shall make no special interpretation or inference of intent from differing formats in the Technical Specifications.

7) Bidder's Examination of Contract Documents and Site:

- A. It is the responsibility of the Bidders to inspect the site of the work in order to satisfy themselves, by personal examination or by such other means as they may prefer, of the location of the proposed work and the actual conditions of and at the site. Bidders may apply to the Engineer for additional information and explanation before submitting bids. However, no supplemental information requested or furnished shall vary the terms of the Contract Documents or affect the Contractor's sole responsibility to satisfy himself as to the conditions of the work to be performed. No claim for additional compensation will be allowed which is based upon a lack of knowledge of the actual conditions or location of the Work.

Submission of a proposal by the bidder shall constitute acknowledgment that, if awarded the contract, the bidder has relied and is relying on their own examination of (a) the site of the work; (b) access to the site; and (c) all other data, matters, and things requisite to the fulfillment of the work and, on their own knowledge of existing facilities on and in the vicinity of the site of the work to be constructed under the contract, and not on any representation or warranty of the lack of knowledge of the above items. Removal, relocation, or protection of existing public utilities not identified by the District shall be done in conformance with Section 4215 of the Government Code.

- B. Each bidder shall thoroughly examine and be familiar with legal and procedural documents, general conditions, specifications, drawings and addenda (if any). Submission of a proposal shall constitute acknowledgment, upon which the Owner may rely, that the bidder has thoroughly examined and is familiar with the Contract Documents. Failure or neglect of a bidder to receive or examine any of the Contract Documents shall in no way relieve them of any obligation with respect to their proposal or to the Contract. No claim for additional compensation will be allowed which is based upon a lack of knowledge of any Contract Documents.
- C. Each bidder shall review the Plans and Specifications, prior to the submission of the bid, and report any errors and omissions noted by the Contractor to the Engineer. The review by the Contractor shall be confined to the Contractor's capacity as a contractor, and not as a licensed design professional.

- 8) OWNER Investigations and Testings: NOT USED
- 9) Addenda or Bulletins: Any addenda or bulletins issued during the time of bidding shall form a part of the Contract Documents and Specifications, shall be covered in the proposal, and shall be made part of the Contract. Receipt of addenda must be acknowledged in the appropriate space on the Proposal Form. Failure to acknowledge all such addenda will be cause to reject the bid as being non-responsive. It is the Bidder's responsibility to determine whether any addenda or bulletins have been issued.
- 10) Preparation of the Proposal: All blank spaces in the Proposal Forms, Contract Documents, and Bid Schedule shall be properly filled in. The phrasing of the proposal shall not be changed and no additions shall be made to the items mentioned therein. Unauthorized conditions, limitations, or provisions attached to a proposal will render it invalid and may cause its rejection. Alterations by erasure or inter-lineation must be explained or noted in the proposal over the signature of the bidder. Alternative proposals will not be considered unless specifically provided for in the Bid Schedule.

A Bidder may withdraw his/her proposal before the time fixed for opening of bids, without prejudice to himself, by submitting a written request to the OWNER for its withdrawal, and his proposal will be returned to him unopened when reached in the procedure of opening bids. No proposal may be withdrawn after the hour fixed for opening bids without rendering the accompanying certified or cashier's check or bidder's bond subject to forfeiture as liquidated damages in like manner as in the case of failure to execute the Contract after award, as provided hereinafter.

No proposal received after the time named or at any place other than the place stated in the Notice to Bidders will be considered. All proposals will be opened and declared publicly. Bidders, their representatives, and others interested are invited to be present at the opening. The OWNER reserves the right to waive any minor irregularities in any proposal, to reject any or all proposals, to reject one part of a proposal and accept the other, except to the extent that bids are qualified by specific limitations, and to make award to the apparent lowest responsible bidder for a period of 60 calendar days from the receipt of the award of bid. No proposal can be withdrawn for a period of 60 calendar days from the date of award of the bid, unless otherwise required by law. Where bonds are required, the bidder shall name in his/her bid the surety or sureties who have agreed to furnish said bonds.

- 11) Licensing of Contractors: Before submitting bids, Contractors shall be licensed in accordance with the provisions of Chapter 9, Division 3, of the Business and Professions Code of the State of California.

A photocopy of the appropriate license(s) shall be submitted with the proposal.

In accordance with California Labor Code Section 1725.5, Contractors and Subcontractors (as defined by California Labor Code Section 1722.1) bidding on Public Works contracts in California shall be registered with the Department of Industrial Relations prior to bidding. Proof of registration with the DIR will be required prior to award of any public works contract.

- 12) List of Subcontractors Filed With Bid: Each proposal shall have listed on the forms provided, the name and address of each subcontractor to whom the bidder proposes to

sublet portions of the work in excess of one-half of one percent of the total amount of the proposal or \$10,000, whichever is greater. For the purpose of this paragraph, a subcontractor is defined as anyone who contracts with the Contractor to furnish materials and labor, labor only, and/or one who specially fabricates and/or installs a portion of the work or improvement according to detailed drawings contained in the Contract Documents. All listings and subsequent substitutions, if any, shall be done in conformance with the Subletting and Subcontracting Fair Practices Act, Public Contract Code Section 4100 et seq.

- 13) Submission of Bids: All Bids must be submitted not later than the time prescribed, at the place and in the manner set forth in the Invitation to Bid. The OWNER shall not consider any Bid received after the time fixed or received at any place other than the place stated in the Invitation to Bid. Bids must be made on the prescribed Bid forms. A complete Bid requires submission of fully completed and executed: Bid, Designation of Subcontractors (if applicable), Bid Bond (or other bid guarantee), Experience Qualifications and Noncollusion Declaration. Each Bid must be submitted in a sealed envelope, so marked as to indicate its contents without being opened, and addressed in conformance with the instructions in the Notice Inviting Bids. The bidder is wholly responsible to see that its Bid is submitted at the time and place named for the opening of bids.

Bids shall acknowledge receipt of all addenda (identified by addendum no.) issued during the bidding period. Failure to acknowledge an addendum or clarification may result in the Bid being rejected as not responsive.

Bids shall be open at the time and place specified in the Notice Inviting Bids, unless changed by addendum. All Bids will be opened and read publicly. Bidders, their representatives and other interested parties, are invited to be present at the opening.

- 13a) Discrepancy in Bids: In the event of discrepancy between unit prices and totals, unit prices will prevail. [In case of discrepancy between words and figures, words will prevail.]
- 14) Bidders Interested in More Than One Bid: No person, firm, or corporation shall make, file, or be interested in more than one proposal for the same work unless alternate bids are specifically requested. A person, firm, or corporation who has submitted a sub-proposal to a bidder, or who has quoted prices of materials to a bidder, is not hereby disqualified from submitting a sub-proposal or quoting prices to other bidders.
- 15) Additive Bid Items: If additive bid items are called for, the Contract may be awarded at the election of the Governing Board to the lowest responsible bidder on the base bid, or on the base bid and any additive or combination of additives.
- 16) Award of Contract: Award of the contract, if awarded, will be made to the lowest responsive, responsible Bidder who's Bid complies with the requirements of the Contract Documents. Unless otherwise specified, any such award will be made within the period stated in the Notice Inviting Bids that the bids are to remain open. Unless otherwise indicated, a single award will be made for all the Bid items in an individual Bid Schedule. In the event the work is contained in more than one Bid Schedule, the owner may award Schedules individually or in combination. In the case of two or more Bid Schedules which are alternative to each other, only one of such alternative schedules will be awarded.

Before a Bid is considered for award, the OWNER may, in addition to the Experience

Qualifications form, require a Bidder to submit a statement of facts and detail as to his business, technical organization and financial resources and equipment available and to be used in performing the work. Additionally, the OWNER may require evidence that the Bidder has performed other work of comparable magnitude and type. The OWNER expressly reserves the right to reject any Bid if it determines that the business and technical organization, equipment, financial and other resources or other experience of the Bidder (including the Bidder's subcontractors) is not sufficiently qualified for the work bid upon and, therefore, justifies such rejection.

- 17) Return of Bid Security: Within 14 days after award of the contract, the owner will, if requested, return the Bid securities accompanying such Bids that are not being considered in making the award. All other Bid securities will be held until the Agreement has been finally executed. They will then be returned, if requested, to the respective Bidders who's Bids they accompany.
- 18) Lowest Responsible Bidder: In selecting the lowest responsible bidder, consideration will be given to the general competency of the bidder for the performance of the work covered by the bid. To receive favorable consideration, a bidder will be required to present evidence that he/she has successfully performed similar work of comparable magnitude or submit other evidence satisfactory to the OWNER that Bidder or his/her associates are personally competent to manage the proposed undertaking and to carry it forward to a successful conclusion. Professional integrity and honesty of purpose shall be essential requirements.
- 19) Local Conditions: Bidders shall read the Specifications, examine the reference drawings, inspect the project site, and make their own estimates of the existing facilities and the difficulties which will attend the execution of the work called for by the proposed contract, including local conditions, uncertainty of weather, project difficulty, and all other contingencies.

Bidders shall satisfy themselves by personal examination of the location of the proposed Work, and by such other means as they may choose as to actual conditions, actual quantities, and requirements and as to the accuracy of the quantities stated in the Bid Schedule. Information derived from the maps, plans, Specifications, profiles, or drawings, or from the Engineer or his/her assistants, shall not relieve the Bidder of this responsibility.

Bidders shall not at any time after the submittal of a bid make or have any claim for damages or anticipated profits or loss of profit or otherwise because of any difference between the quantities of work actually done and material furnished and the unit price stated in the Bid Schedule. **Bidders are encouraged to attend a pre-bid conference at the date, time, and location specified in the Notice Inviting Bids.**

- 20) Substitution of Materials: All materials are mentioned as standards. Should a Contractor desire to substitute materials or methods for those specified, he shall state on a separate sheet attached to his bid the price deduction he will make if such a substitution is accepted in material and/or method. Such substitution submittal, however, may not be used in the determination of the lowest qualified bidder. Question of all such substitution shall be determined prior to the award of the Contract, as no substitution will be permitted after the Contract is signed unless approved in writing by the Engineer.

- 21) Payments: Payments to the Contractor on account of the Contract shall be made in accordance with the terms set forth in Article 1.7, Section 20104.5 of the State Public Contract Code, General Conditions and Supplementary General Conditions.
- 22) Execution of Contract: The apparent successful bidder shall execute a written Contract on the Form of Agreement attached hereto, secure the payment of workmen's compensation, furnish good and approved bonds, and proof of specified insurance as required in the following Articles, all in accordance with the provisions hereof within 15 calendar days or such additional time as may be allowed by the Engineer from the date of the mailing of a notice of award of bid according to the address given by him, of the acceptance of his proposal. If a bidder to whom award is made fails or refuses to enter into Contract as herein provided, or to conform to any of the stipulated requirements in connection therewith, the money represented by Bidder's security check or Bond shall be forfeited to the OWNER, the award will be annulled, and at the discretion of the OWNER the Contract may be awarded to the next lowest bidder; and such bidders shall fulfill every stipulation embraced herein as if he were the party to whom the first award was made. A corporation to which an award is made may be required, before the Contract is finally executed, to furnish evidence of its corporate existence, of its right to do business in California, and of the authority of the officer signing the Contract and bonds for the corporation.
- 23) Bonds: A bidder to whom the Contract is awarded shall, within the time mentioned in the preceding Article, furnish a bond with a responsible corporate surety or corporate sureties conditioned upon the faithful performance of the said bidder of all covenants and stipulations in the Contract. Said bond is hereinafter referred to as the Faithful Performance Bond. Within the time mentioned in the preceding Article, the bidder to whom the Contract is awarded shall furnish such faithful performance bond, and shall also furnish a Payment Bond within said time frame. The Faithful Performance Bond and the Payment Bond shall be in the form approved by the OWNER and in the amount stipulated in the GENERAL CONDITIONS.

The surety or sureties on all bonds furnished must be satisfactory to the OWNER. The party required to furnish bonds pursuant to these instructions shall furnish such bonds at his/her own cost and expense. The OWNER reserves the right to reject any bond if, in the opinion of the Engineer, the sureties' acknowledgment is not in the form included within the Contract Documents or in another form substantially as prescribed by law.

- 24) Insurance Policies and Bonds: Attention is directed to the provisions of the Insurance Code of the State of California with reference to the writing of insurance policies and bonds covering risks located in this state, and the premiums and commissions thereon. A bidder to whom the Contract is awarded shall furnish, at the time his bond or bonds are submitted for approval, satisfactory evidence that the requirements of said Code have been observed, including proof of unemployment insurance. The required bonds must be provided only by surety insurer who is duly admitted by the Insurance Commissioner of the State of California.
- 25) Liability Insurance: Before the Contract is executed on behalf of the OWNER, a bidder to whom the Contract has been awarded shall furnish to the OWNER the necessary policy or certificate of liability insurance in which the OWNER and the Engineer shall be named as additional insureds with the bidder in the amount specified in the SUPPLEMENTARY GENERAL CONDITIONS, ARTICLE 11, entitled "Insurance." The policy shall insure the OWNER, the Engineer, the OWNER's officers and employees, the bidder, his employees

and his Subcontractors and their employees, and their heirs, agents, and employees, while acting within the scope of their duties, against all claims arising out of or in connection with the work to be performed and shall remain in full force and effect until the work is accepted by the OWNER. The Policy shall provide for the limits stated with any insurance policy carried out by the OWNER.

- 26) Assignment of Contract: No assignment by the Contractor of any contract to be entered into in accordance with the Notice Inviting Bids and these Instructions to Bidders, or any part thereof, or of funds to be received thereunder, will be recognized by the awarding authority unless such assignment has had prior approval of the awarding authority and the surety has had notice of such assignment in writing and has given his/her written consent thereto.
- 27) Non-Collusion Affidavit: Section 7106 of the Public Contract Code requires that each bidder execute a Non-collusion Affidavit on all public works contracts. Bidder shall execute the Noncollusion Affidavit included with the Contract Documents and submit it to the OWNER with the Proposal.
- 28) Disqualification of Bidder: If there is a reason to believe that collusion exists among any of the bidders, none of the bids of the participants in such collusion will be considered, and the OWNER may likewise elect to reject all bids received.
- 29) Rejection of Proposals: The OWNER reserves the right to reject any proposals which are incomplete, obscure, or irregular, any proposals which omit a bid on any one or more items for which bids are required; any proposals which omit unit prices if unit prices are required; any proposal in which unit prices are unbalanced in the opinion of the OWNER; any proposals accompanied by insufficient or irregular proposal guaranty; and any proposals from bidders who have previously failed to perform properly or to complete contracts of any nature on time.
- 30) Relief of Bidders: Attention is directed to the provisions of Public Contract Code Section 5100, et seq., concerning relief of bidders, and in particular to the requirement therein that if a bidder claims a mistake was made in its bid, the bidder shall give the OWNER written notice within five (5) calendar days after the opening of the bids of the alleged mistake, specifying in the notice, in detail, how the mistake occurred.
- 31) Debarred Contractors and Subcontractors: No contractor or subcontractor who is ineligible to bid work on, or be awarded, a public works project under Labor Code sections 1771.1 or 1777.7 can bid on, be awarded or perform work as a subcontractor on the Project. The Contractor is prohibited from performing work on the Project with a subcontractor who is ineligible to perform work on a public works project under these sections of the Labor Code.
- 32) Taxes: Bid prices shall include all applicable federal, state, and local taxes.
- 33) Bid Protest Procedures: Any bid protest relating to the form or content of the bidding or Contract Documents must be submitted in writing to the OWNER, HERITAGE RANCH COMMUNITY SERVICES DISTRICT, 4870 HERITAGE ROAD, PASO ROBLES, CA 93446 at least ten (10) business days before the original date set for the bid opening. Any bidder who submits a bid shall be deemed to have waived any protest to the form or content of the bidding or Contract Documents.

Any bid protest relating to the award of the contract for the work must be submitted in writing to Owner at the address specified above. The protest must be received before 5:00 p.m. of the third business day following bid opening.

The initial protest document shall contain a complete statement of the basis for the protest. The protest shall refer to the specific portion(s) of the bid documents which forms the basis for the protest. The protest shall include the name, address and telephone number of the person representing the protesting party.

The party filing the protest shall concurrently transmit a copy of the initial protest document and any attached documentation to all other parties who have a direct financial interest that may be adversely affected by the outcome of the protest. Such parties shall include all other bidders or proposers who appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest. The documents shall be transmitted by fax or overnight mail.

The procedure and time limits set forth in this paragraph are mandatory and are the Bidder's sole and exclusive remedy in the event of bid protest. Failure to comply with these procedures shall constitute a waiver of any right to further pursue the bid protest, including filing a Government Code claim or legal proceedings.

34) Items Required for a Completed Proposal:

- a) Signed Proposal Form
- b) Experience Qualifications Form
- c) Bid Schedule (acknowledge addenda, if any)
- d) Contractor's Licensing Statement
- e) List of Subcontractors
- f) List of Material/Equipment Suppliers
- g) Acknowledgment of Insurance Requirements
- h) Bid Security Form and Bid Bond
- i) Non-Collusion Affidavit
- j) Certificate of Bidder Regarding Affirmative Action Program
- k) Proof of Worker's Compensation Insurance
- l) One photo copy of each license required by these Instructions to Bidders
- m) References (or other information)

END INSTRUCTIONS TO BIDDERS

PROPOSAL

HERITAGE RANCH COMMUNITY SERVICES DISTRICT
4870 HERITAGE ROAD
Paso Robles, CA 93446

District Board of Directors:

The undersigned hereby proposes to perform all work for which a contract may be awarded to it and to furnish any and all supervision, plant, labor, services, material, accessories, tools, equipment, supplies, transportation, utilities, and all other items and facilities necessary therefore as provided in the Contract Documents, entitled:

RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2

together with all appurtenances thereto, all as set forth in the Contract Documents including Addenda _____, _____, and _____; and further proposes and agrees that, if its Proposal is accepted, it will contract in the form and manner stipulated to perform all the work called for in the Contract Documents, and to complete all such work in strict conformity therewith within the time limits set forth therein, and that it will accept as full payment therefore the price or prices set forth in the Bid Schedule forming a part hereof.

A bid bond or cashiers/certified check properly made payable to: HERITAGE RANCH COMMUNITY SERVICES DISTRICT

hereinafter designated as the OWNER, for the sum of:

_____ dollars (\$ _____), which amount is not less than 10 percent of the total amount of the bid, is attached hereto and is given as a guarantee that the undersigned will execute the Agreement and furnish the required bonds and insurance if awarded the contract and, in case of failure to do so within the time provided, the proceeds of said check shall be forfeited to the OWNER.*

* Sureties or surety liability to the OWNER for forfeiture of the face amount of the bond shall be considered as established.

It is understood and agreed that:

1. The undersigned has carefully examined all of the documents contained in the Table of Contents and which shall comprise those documents specifically referred to in ARTICLE 4 of the Agreement;
2. The undersigned has, by investigation at the site the Work and otherwise, satisfied itself as to the nature, location, and quantity of the Work and has fully informed itself as to all conditions and matters which can in any way affect the Work or the cost thereof;
3. The undersigned fully understands the scope of the Work and has checked carefully all words and figures inserted in its Proposal and further understands that the OWNER will in no way be responsible for any errors or omissions in the preparations of this Proposal;

4. The undersigned will execute the Agreement and furnish the required Performance and Payment Bonds and proof of the specified insurance coverage within the time frame specified in Articles 22 through 25 of the Instructions to Bidders. This Proposal may not be withdrawn for a period of time specified in Article 10 of the Instructions to Bidders, unless otherwise required by law. If any bidder shall withdraw its bid within said period, the Bidder shall be liable under the provisions of the Bid Security, or the Bidder and its Surety shall be liable under the Bid Bond, as the case may be;
5. The undersigned hereby certifies that this Proposal is genuine and not sham or collusive or made in the interest or in behalf of any person not herein named, and the undersigned has not directly or indirectly induced or solicited any other bidder to put in a sham bid, or any other person or corporation to refrain from bidding; the undersigned has not in any manner sought by collusion to secure for itself an advantage over any other bidder;
6. In conformance with the current statutory requirements of Section 1860 et. seq. of the Labor Code of the State of California, the undersigned confirms the following as his or her certification:

I am aware of the provisions of Section 3700 of the Labor Code which requires every employer to be insured against liability for worker's compensation or to undertake self insurance in accordance with the provisions before commencing the performance of the Work of this contract.

7. The undersigned has submitted the following with this proposal as required for a completed bid:
 - a) Signed Proposal Form
 - b) Experience Qualifications Form
 - c) Bid Schedule (acknowledge addenda, if any)
 - d) Contractor's Licensing Statement
 - e) List of Subcontractors
 - f) List of Material or Equipment Suppliers
 - g) Bid Security Form and Bid Bond
 - h) Non-Collusion Affidavit
 - i) Affirmative Action Form
 - j) Proof of Worker's Compensation Insurance
 - k) One photo copy of each license required by these Instructions to Bidders
 - l) References (or other information)
 - m) Certificate of Liability Insurance Endorsement
 - n) Proof of Unemployment Insurance

NOW: In compliance with the Notice Inviting Bids and all the provisions herein before stipulated; the undersigned with full cognizance thereof, hereby proposes to perform the entire Work for the prices set forth in the attached Bid Sheet(s) upon which award of contract is based.

Dated _____

Bidder _____

Bidders Post Office Address

By _____

License number, expiration date

Title _____

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EXPERIENCE QUALIFICATIONS

(To Accompany Proposal)

The bidder has been engaged in the contracting business, under the present business name, for 5 years. Experience in work of a nature similar to that covered in the proposal extends over a period of 5 years.

The bidder, as a contractor, has never failed to satisfactorily complete a contract awarded to him, except as follows:

The following contracts have been satisfactorily completed in the last three (3) years for the persons, firm, or authority indicated, and to whom reference is made:

YEAR	TYPE OF WORK	CONTRACT AMOUNT	LOCATION AND FOR WHOM PERFORMED
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

The following is a list of a plant and equipment owned by the bidder, which is definitely available for use on the proposed work as required:

QUANTITY	NAME, TYPE, AND CAPACITY	CONDITION	LOCATION
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Signed: _____

Title: _____
(Same as for signature on proposal)

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BID SCHEDULE

HERITAGE RANCH COMMUNITY SERVICES DISTRICT RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2

Refer to Section 01 20 00, Price and Payment Procedures, for further definitions of the bid items in this Bid Schedule.

	Item (includes installation)	Units	Quantity	Unit Price	Extended Price
1	Mobilization / de-mobilization and site cleanup.	Lump Sum	1		
2	Vertical Intake Improvements, Pipeline, and Appurtenances - Provide pump, pressure transducer and appurtenances in existing vertical intake casing, provide casing seal, aboveground and buried piping, valves fittings, flow meter. Bid item includes concrete wellhead pad and fencing.	Lump Sum	1		
3	Tie-in to existing 4" HDPE emergency supply pipeline - includes valves and valve vault	Lump Sum	1		
4	Electrical Improvements	Lump Sum	1		
TOTAL					

Total Bid Amount in Words: _____

Signature of Bidder: _____ Date: _____

The undersigned agrees to perform, for the benefit of the OWNER, the work itemized herein, and in accordance with all San Luis Obispo County, State, and Federal laws.

All materials and equipment used in the execution of the described work shall comply with all applicable State and Federal codes, regulations and requirements.

The Work to be performed described in the above BID SCHEDULE shall consist of furnishing all plant, 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.

The quantities of work or material stated in the Unit Price Items of the Bid Schedule (if applicable) are supplied only to give an indication of the general scope of the work; the OWNER does not expressly or by implication agree that the actual amount of work or material will correspond therewith, and reserves the right after award to increase or decrease the amount of any Unit Price Item of the work by an amount up to and including 25 percent of any Bid Item, without a change in the Unit Price, and shall have the right to delete any Bid Item in its entirety, or to add additional Bid Items up to and including an aggregate total amount not to exceed 25 percent of the Contract Price.

The receipt of the following addenda to the Specifications is acknowledged:

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

Addendum No. _____ Date _____

The representations made herein are made under penalty of perjury.

Dated: _____

Bidder: _____

By: _____

Contractor's License No. & Expiration Date: _____

Title: _____

END OF BID SCHEDULE

CONTRACTOR'S LICENSING STATEMENT

The undersigned is licensed in accordance with the laws of the State of California providing for the registration of Contractors, including Department of Industrial Relations (DIR) registration requirements mandated by California Labor Code Section 1725.5.

Contractor's License Classification and number: _____

Name of individual contractor (print or type): _____

Signature of Owner: _____

Business address: _____

Business telephone: _____

or

Name of Firm: _____

Business address: _____

Business telephone: _____

Signature, title, and address of members signing on behalf of partnership:

Name: _____ Title: _____

Address: _____

Name: _____ Title: _____

Address: _____

Name: _____ Title: _____

Address: _____

or

Name of Corporation: _____

Business address: _____

Corporation organized under the laws of the State of: _____

Signature of the President
of the Corporation

Signature of the Secretary
of the Corporation

Contractor's License number is: _____

The License expiration date is: _____

The representations made herein are made under penalty of perjury.

Authorized Signature of Contractor or Corporation _____

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LIST OF SUBCONTRACTORS

In accordance with the provisions of Section 4100 and 4104 et. seq. of the Government Code of the State of California, the bidder shall, in its bid, list the name, License Number and Classification, and place of business of each subcontractor who will perform work or labor or render service to the prime contractor in an amount in excess of one-half of 1 percent of the prime contractor's total bid, including the percentage of Prime Contractor's total base bid.

Name Under which Subcontractor is Licensed	License No. and Classification	Address of Office, Mill or Shop	Percent of Total Bid
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

NOTE: Do not list alternative subcontractors for same work.

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LIST OF MATERIAL/EQUIPMENT SUPPLIERS

Name the manufacturer or manufacturers of the items listed below and every major product or major piece of equipment whose cost exceeds fifteen percent (15%) of the total bid amount.

In addition, the bidder is required to fill out the following blanks, listing manufacturers from whom it intends to purchase the indicated items and which selections will be considered as binding upon the Bidder, provided that all such selections shall comply with the provisions of the Contract Documents, and may not be changed by the bidder without written approval of the Engineer.

Item	Material	Manufacturer
1.	<u>Vertical Well Pump & Motor</u>	_____
	_____	_____
2.	_____	_____
	_____	_____
3.	_____	_____
	_____	_____
4.	_____	_____
	_____	_____
5.	_____	_____
	_____	_____
6.	_____	_____
	_____	_____
7.	_____	_____
	_____	_____

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BID SECURITY FORM

(Check to accompany bid)

(Note: The following form shall be used when a check accompanies bid in lieu of a bid bond.)

Accompanying this proposal is a _____ *Certified _____ *Cashier's check made payable to the order of HERITAGE RANCH COMMUNITY SERVICES DISTRICT hereinafter referred to as "OWNER," for _____ dollars (\$_____), this amount being 10 percent of the total amount of the bid. The proceeds of this check shall become the property of said OWNER provided this proposal shall be accepted by the said OWNER through action of its legally constituted contracting authorities and the undersigned shall fail to execute a contract and furnish the required Performance Bond and proof of insurance coverage within the stipulated time; otherwise, the check shall be returned to the undersigned for a period of 60 calendar days from receipt of the award of bid. The proceeds of this check shall also become the property of the OWNER if the undersigned shall withdraw his bid within the period specified in Article 10 of the Instructions to Bidders, unless otherwise required by law, and notwithstanding the award of the Contract to another bidder.

Signature

Bidder

*Delete the inapplicable word

NOTE: If the bidder desires to use a bond instead of check, the Bid Bond form on the following page shall be executed. The sum of this bond shall be not less than 10 percent of the total amount of the bid.

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BID SECURITY FORM

BID BOND

KNOW ALL MEN BY THESE PRESENTS:

That we, _____ as principal and _____ as surety, are held and firmly bound unto HERITAGE RANCH COMMUNITY SERVICES DISTRICT hereinafter referred to as "OWNER," for the sum of _____dollars, (\$_____), the amount being 10 percent at least of the total amount of the bid, to be paid to the said OWNER, its successors, and assigns; for which payment, will and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that if the certain proposal of the above bounden for the completion of the **RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2** as specifically set forth in documents entitled Contract Documents and Specifications for the **RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2** in accordance with the Specifications and Construction Drawings on file at the office of the Engineer, WALLACE GROUP, 612 Clarion Court, San Luis Obispo, California 93401, or available on the District's website, <https://heritageranchcsd.ca.gov/>, is not withdrawn within the period specified in Article 10 of the Instructions to Bidders, unless otherwise required by law, and notwithstanding the award of the contract to another bidder, and that if said proposal is accepted by the OWNER through action of its legally constituted contracting authorities and if the above bounden his/her heirs, executors, administrators, successors and assigns, shall duly enter into and execute a contract for such construction and shall execute and deliver the required Performance and Payment Bonds and proof of insurance coverage within 15 calendar days (not including holidays) after the date of notification by and from the said OWNER that the said Contract is ready for execution, then this obligation shall become null and void; otherwise it shall be and remain in full force and virtue.

IN WITNESS WHEREOF, we hereunto set our hands and seals this day of

_____ 20_____

Signature

Title

Note: The standard printed bond form of any bonding company acceptable to the OWNER may be used in lieu of the foregoing approved sample bond form provided the security stipulations protecting the OWNER are not in anyway reduced by use of the surety company's printed standard form.

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ACKNOWLEDGMENT OF INSURANCE REQUIREMENTS

By signing below, Bidder acknowledges the insurance requirements as listed in the General Conditions, Article 6 – Bonds and Insurance, and Supplementary General Conditions, Article 11 - Insurance. By this acknowledgment, the Bidder and its insurance provider(s) and surety(ies) certify that they have read and understand the insurance and bonding requirements in their entirety, including limits of coverage, additional insureds and endorsements, and bonding requirements, and that the Bidder can provide the insurance coverage and bonds as required in the Contract documents without exception.

Bidder understands that if the insurance coverage provided in these referenced Sections above cannot be provided, its bid is subject to rejection by the Owner as non-responsive.

BIDDER

Company Name: _____

Authorized Signature: _____

Printed Name: _____

Title: _____

Date: _____

INSURANCE PROVIDER/SURETY REPRESENTATIVE

Insurer/Surety Name: _____

Authorized Signature: _____

Printed Name: _____

Title: _____

Date: _____

Bidder Must Provide This Acknowledgment for Each Insurer or Surety Providing Insurance Coverage or a Bond under this Contract

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NON-COLLUSION AFFIDAVIT

TO BE EXECUTED BY EACH AWARDEE OF A PRINCIPAL CONTRACT, STATE OF CALIFORNIA)

_____) SS
_____)

I, _____, being first duly sworn, deposes and says that

he/she is _____
(sole owner, a partner, president, secretary, etc.)

of _____

the party making the foregoing bid; that such bid is not made in the interest of, or on behalf of any undisclosed person, partnership, company association, organization, or corporation; that such bid is genuine and not collusive or sham; that said bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, nor that anyone shall refrain from bidding; that said bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of said bidder or of any other bidder, not to fix any overhead, profit, or cost element of such bid price, nor of that of any other bidder, nor to secure any advantage against the public body awarding the contract or anyone interested in the proposed contract; that all statements contained in such bid are true; and further, that said bidder has not directly or indirectly, submitted his/her bid price or any breakdown thereof, nor the contents thereof, nor divulged information or data relative thereto, nor paid and will not pay fee in connection therewith to any corporation, partnership, company, association, organization, bid depository, nor to any member or agent thereof, nor to any other individual except to such person or persons as have a partnership or their financial interest with said bidder in his/her general business.

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

Signature

Title

Subscribed and sworn to before me on this _____ day of _____, 20____

Seal of Notary

Notary Public _____

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**CERTIFICATE OF BIDDER REGARDING
AFFIRMATIVE ACTION PROGRAM**

The Bidder hereby certifies that he or she is in compliance with the Civil Rights Act of 1964, Executive Order No. 11246, the California Fair Employment Practices Act of 1964, Executive Order No. 11246, The California Fair Employment Practices Act, and all other applicable Federal and State laws and regulations relating to equal opportunity employment.

Bidder's Name: _____

Address: _____

Name and Title of Signer: _____

Signature

Date

(The above certification of the Bidder regarding its affirmative action program shall be filled out completely, signed and submitted by each bidder and shall be part of the Contract Documents.)

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WORKER'S COMPENSATION INSURANCE CERTIFICATE

Prior to execution of the Contract Agreement, the Contractor shall execute the following form as required by Sections 1860 and 1861 of the California Labor Code:

I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for Worker's Compensation or to undertake self-insurance in accordance with the provisions of said Code, and I will comply with such provisions before commencing the performance of the Work of this Contract.

Date: _____

Contractor _____

By _____
(Signature)

Title _____

Attest:

By _____
(Signature)

Title _____

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AGREEMENT

HERITAGE RANCH COMMUNITY SERVICES DISTRICT

RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2

This Agreement, made and entered into this _____ day of 20____, at _____, California, by and between the HERITAGE RANCH COMMUNITY SERVICES DISTRICT referred to as the "OWNER", and _____ hereinafter referred to as the "Contractor."

WHEREAS, the Contractor, as will appear by reference to the records of the Proceedings of the OWNER, was duly awarded the Contract for the Work hereinafter mentioned.

NOW, THEREFORE, IT IS HEREBY AGREED THAT:

ARTICLE 1 - Witness to, that for and in consideration of the payment and agreements hereinafter mentioned, to be made and performed by said OWNER, and under the conditions expressed in the two bonds, bearing even date with these present, and hereunto annexed, said Contractor agrees with said OWNER, at its own cost and expense, to do all the work and furnish all materials, except such as are mentioned in the Contract Documents to be furnished by the OWNER, necessary to construct and complete in good, workmanlike and substantial manner for the below described work in accordance with the Contract Documents as listed herein and are by such reference made a part hereof.

The work generally consists of the following: The work is comprised of providing a submersible vertical turbine pump in an existing 40-foot deep vertical raw water intake facility, and pipeline tie-in to the District's existing raw water supply line near the District's raw water intake facility at the Nacimiento River. The Work includes setting of the submersible turbine pump at the intake facility, installing associated instruments and appurtenances including, but not limited to, a pressure transducer, propeller flow meter, and air-vacuum valve, installation of aboveground piping and valves, installation of a 4" ductile iron pipeline, tie-in at the existing 4" emergency Nacimiento Water turn out pipeline, and installation of a valve vault at the proposed tie-in location, electrical improvements, and all other work to make the vertical raw water facility complete and functional as specified, and as specified herein and as shown on the Contract Documents.

ARTICLE 2 - The said OWNER hereby promises and agrees with the said Contractor to employ, and does hereby employ, the said Contractor to provide the materials and to do the work according to the terms and conditions herein contained and referred to, for the price aforesaid, and hereby contracts to pay the same at the time, in the manner, and upon the conditions above set forth; and the said parties for themselves, their heirs, executors, and administrators.

ARTICLE 3 - The said Contractor agrees to receive and accept the price stated in the preceding Bid Sheet as full compensation for furnishing all materials and for doing all the work contemplated and embraced in this Agreement; also for all loss or damage arising out of the nature of the work aforesaid, or from the action of the elements, or from any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the work until its acceptance by the said OWNER and for all expenses incurred by or in consequence of the

suspension or discontinuance of the Work; and for well and faithfully completing the Work, and the whole thereof in the manner and according to the requirements of the Contract Documents therefore, and the requirements of the Engineer under their terms, to wit. Refer to Article 4.6 of the Supplementary General Conditions for retention to be withheld from Progress Payments.

ARTICLE 4 - This contract constitutes the entire agreement of the parties. No other agreements, oral or written, pertaining to the work to be performed under this contract exist between the parties. This contract can be modified only by an agreement in writing signed by both parties. It is also expressly agreed by and between the parties hereto that the Contract Documents shall consist of:

- Notice Inviting Bids
- Instructions to Bidders
- Bid Forms including the Bid, Bid Schedule(s), Information Required of Bidder, Bid Bond, Acknowledgment of Insurance Requirements, Designation of Subcontractors, Experience Qualifications, Contractor's Licensing Statement, List of Material/Equipment Suppliers, Non-collusion Affidavit, Certificate of Bidder Regarding Affirmative Action Program, Worker's Compensation Insurance Certificate, and all required certificates and affidavits
- Performance Bond
- Payment Bond
- General Conditions
- Supplementary General Conditions
- Technical Specifications
- Drawings as listed in the List of Drawings
- Addenda numbers _____ to _____, inclusive
- Change Orders which may be delivered or issued after Effective Date of the Agreement and are not attached hereto

There are no Contract Documents other than those listed in this Article 4. The Contract Documents may only be amended by Change Order as provided in Article 10 of the General Conditions.

ARTICLE 5 - Contractor agrees to commence work pursuant to this Contract on the date specified in the Notice to Proceed, and to diligently prosecute the same to completion within the time stipulated in the INSTRUCTIONS TO BIDDERS, Article 2.

ARTICLE 6 - The Contractor shall defend, indemnify and save harmless the OWNER, its officers, agents and employees from any and all claims, demands, damages, costs, expenses or liability occasioned by the performance or attempted performance of the provisions hereof.

ARTICLE 7 - If either party becomes involved in arbitration or litigation arising out of this contract or the performance of it, the court or tribunal in such arbitration or litigation or in a separate suit shall award reasonable costs and expenses of arbitration and litigation, including expert witness fees and attorney fees, to the prevailing party or parties.

ARTICLE 8 - No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are 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.

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

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

HERITAGE RANCH COMMUNITY
SERVICES DISTRICT
BOARD PRESIDENT

CONTRACTOR _____

By _____

By _____
[CORPORATE SEAL]

Attest _____

Attest _____

Address for giving notices

Address for giving notices

License No. _____

Approved as to Form:

(Signature)

Agent for service of process: _____

(Title)

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PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS,

That I/we, _____ as Principal(s), are firmly bound unto the HERITAGE RANCH COMMUNITY SERVICES DISTRICT in the sum of:

_____ dollars, said sum being 100 percent of the amount of the following described contract, to be paid to the said HERITAGE RANCH COMMUNITY SERVICES DISTRICT, its successors and assigns; for which payment, will and truly to be made, we bind ourselves, our heirs, executors and administrators, successors or assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT,

WHEREAS, the Board of Directors of the HERITAGE RANCH COMMUNITY SERVICES DISTRICT , State of California, by formal action on the _____ day of _____, 20_____, awarded to said Principal, a contract for the:

**HERITAGE RANCH COMMUNITY SERVICES DISTRICT
RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2**

in strict conformity with the Contract Documents, and whereas, said Principal, his or her heirs, executors, administrators, successors or assigns shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in the said Contract, and any alteration thereof made and therein provided, on his/her 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 OWNER, its officers and agents, as therein stipulated, then this obligation shall become null and void; otherwise it shall remain in full force and effect.

And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract or to the work to be performed thereunder shall in any way affect its obligations on the bond, and it does hereby waive notice of any change, extension of time, alteration, or addition in terms of the Contract or to the Work.

IN WITNESS WHEREOF, this instrument has been duly executed by the Principal and Surety above named, on the _____ day of _____, 20 _____.

Contractor _____

Surety _____

By _____

By _____

Title _____

Title _____

(SEAL AND NOTARIAL ACKNOWLEDGMENT OF SURETY)

NOTE: Signature of person executing for the Surety must be properly acknowledged.

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PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS,

That we, _____ hereinafter referred to as "Contractor," as principal, and _____ as surety, are held and firmly bound unto OWNER in the sum of: _____ dollars (\$_____), lawful money of the United States of America, for the payment of which sum, well and truly to be made, we bind ourselves, jointly and severally, firmly by these presents.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT:

WHEREAS, said Contractor has been awarded and is about to enter into a Contract with said HERITAGE RANCH COMMUNITY SERVICES DISTRICT for the **RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2** project as specifically set forth in documents entitled, "Contract Documents and Specifications for HERITAGE RANCH COMMUNITY SERVICES DISTRICT – **RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2** and is required under the terms of the Contract to give this bond in connection with the execution of said Contract;

NOW, THEREFORE, if said Contractor, his Subcontractors, his or its heirs, executors, administrators, successors, or assigns, shall fail to pay for any materials, provisions, provender, equipment or other supplies used in, upon, for or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code or for any amounts required to be deducted, withheld, and paid over to the Franchise Tax Board from the wages of employees of the Contractor and his Subcontractors pursuant to Section 18806 of the Revenue and Taxation Code with respect to such labor, all as required by the provisions of Title XV, Chapter 7, Sections 3247-3252 inclusive, of the Civil Code of the State of California and acts amendatory therefore, and sections of other codes of the State of California referred to therein and acts amendatory thereof, and provided that the person, companies or corporations so furnishing said materials, provisions, provender, equipment or other supplies, appliances or power used in, upon, for or about performance of the work contracted to be executed or preformed, or any person, company or corporation renting or hiring implements or machinery or power for or contributing to said work to be done, or any person who performs work or labor upon the same, or any person who supplies both work and materials therefore, shall have complied with the provisions of said laws, then said surety will pay the same in an amount not exceeding the sum herein above set forth and also will pay, in case suit is brought upon this bond, a reasonable attorney's fee as shall be fixed by the court. This bond shall insure to the benefit of any and all persons named in Section 3181 of the Civil Code of the State of California so as to give a right of action to them or their assigns in any suit brought upon this bond.

PROVIDED, that any alterations in the work to be done, or the material to be furnished, which may be made pursuant to the terms of said Contract, shall not in any way release either the Contractor or the surety thereunder, nor shall any extensions of time granted under the

provisions of said contract release either the Contractor or the surety, and notice of such alterations or extensions of the Contract is hereby waived by the surety.

WITNESS our hands this _____ day of _____ 20 _____.

Contractor _____ Surety _____

By _____ By _____

Title _____ Title _____

Signature of person executing for the Surety must be properly acknowledged.

NOTICE OF AWARD

Date: _____, 20 _____

To: _____
(Bidder)

Project: HERITAGE RANCH COMMUNITY SERVICES DISTRICT
RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2

You are hereby notified that your bid dated _____, 20_____ for the above Contract has been considered. You are the apparent successful bidder and have been awarded a contract for:

(Indicate "Total Work", alternates, or sections of Work awarded)

The Contract Price of your contract is _____ Dollars (\$ _____), corresponding to Bid Schedule ____ in the Bid Documents.

You must comply with the following conditions within fifteen (15) calendar days of the date of this Notice of Award, that is, by _____, 20_____.

1. You must deliver to the OWNER three fully executed counterparts of the Agreement including all the Contract Documents.
2. You must deliver with the executed Agreement the Contract Security Bonds as specified in the Instructions to Bidders, ARTICLE 23; GENERAL CONDITIONS, ARTICLE 5.
3. You must also deliver certificates of insurance as specified in the Instructions to Bidders, ARTICLE 24 and 25; GENERAL CONDITIONS, ARTICLE 5; and SUPPLEMENTARY GENERAL CONDITIONS, ARTICLE 11.
4. (List other conditions precedent.)

Failure to comply with these conditions within the time specified will entitle the OWNER to consider your bid abandoned, to annul this Notice of Award, and to declare your Bid Security forfeited.

Within fifteen (15) calendar days after you comply with these conditions, the OWNER will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

By _____
SCOTT DUFFIELD, GENERAL MANAGER

Copy to the ENGINEER

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NOTICE TO PROCEED

Date: _____, 20_____

To: _____
(Contractor)

Project: HERITAGE RANCH COMMUNITY SERVICES DISTRICT
RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2

You are notified that the Contract Time under the above contract will commence to run on _____, 20_____. By that date, you are to start performing your obligations under the Contract Documents. In accordance with ARTICLE 2 of the Instructions to Bidders, the project is to be completed by _____ 20_____.

The Contract provides for an assessment of liquidated damages of the sum stipulated in Article 6.1 of the Supplementary General Conditions, for each consecutive calendar day after the above established contract completion date that the work remains incomplete.

Before you may start any Work at the site, you must

(add any applicable requirements)

HERITAGE RANCH COMMUNITY SERVICES DISTRICT

By: _____
SCOTT DUFFIELD, GENERAL MANAGER

Copy to ENGINEER

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CHANGE ORDER

Contract Changer Order No.

Date
Engineer's No. 0160-0001-06

CONTRACT TITLE: RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2

CONTRACTOR:

DESCRIPTION OF CHANGES	NET CHANGE
NET CHANGE IN CONTRACT PRICE	\$
Original Contract Amount	\$
Total Previous Changes	\$
Amount of this Change	\$\$
New Contract Total	
Change in Contract Time	

This document will become a supplement to the Contract and all provisions will apply hereto.

Recommended by ENGINEER

Date

Approved by CONTRACTOR

Date

Approved by OWNER

Date

CHANGE ORDER INSTRUCTIONS:

- A. General Information: This document was developed to provide a uniform format for handling contract changes that affect Contract Price or Contract Time. Changes that have been initiated by a Work Directive Change must be incorporated into a subsequent Change Order if they affect Contract Price or Contract Time.
- B. Completing the Change Order Form: Engineer initiates the form, including a description of the changes involved and attachments based upon documents and proposals submitted by Contractor, or requests from OWNER, or both.

Once Engineer has completed and signed the form, all copies should be sent to Contractor for approval. After approval by Contractor, all copies should be sent to OWNER for approval. Engineer should make distribution of executed copies after approval by OWNER.

If a change only applies to either price or to time, cross out the part of the tabulation that does not apply.

WORK DIRECTIVE CHANGE
(Instructions on reverse side)

No. _____

DATE: _____

PROJECT: RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2

CONTRACTOR:

ENGINEER: WALLACE GROUP (Project No. 0160-0001-06)

You are directed to proceed promptly with the following change(s):

Description:

Attachments:

If a claim is made that the above change(s) have affected Contract Price or Contract Time, any claim for a Change Order based thereon will involve one of the following methods of determining the effect of the change(s).

Method of determining change in Time:

Method of determining Contract Price:

RECOMMENDED:

AUTHORIZED:

By _____

By _____

Title _____

Title _____

WORK DIRECTIVE CHANGE INSTRUCTIONS

A. GENERAL INFORMATION

This document was developed for use in situations involving changes in the Work which, if not processed expeditiously, might delay the Project. These changes are often initiated in the field and may affect the Contract Price or the Contract Time. This is not a Change Order, but only a directive to proceed with Work that may be included in a subsequent Change Order.

For supplemental instructions and minor changes not involving a change in the Contract Price or the Contract Time, a Field Order may be used.

B. COMPLETING THE WORK DIRECTIVE CHANGE FORM

The Engineer initiates the form, including a description of the items involved and attachments.

Based on conversations between the Engineer and the Contractor, the Engineer completes the following:

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT PRICE: Mark the method to be used in determining the final cost of Work involved and the net effect on the Contract Price. If the change involves an increase in the Contract Price and the estimated amount is approached before the additional or changed Work is completed, another Work Directive change must be issued to change the time or Contractor may stop the changed Work when the estimated time is reached. If the Work Directive Change is not likely to change the Contract Time, the space for estimated increase (decrease) should be marked "Not Applicable."

METHOD OF DETERMINING CHANGE, IF ANY, IN CONTRACT TIME: Mark the Method to be used in determining the change in Contract Time and the estimated increase or decrease in Contract Time. If the change involves an increase in the Contract Time and the estimated time is approached before the additional or changed Work is completed, another Work Directive Change must be issued to change the time or Contractor may stop the changed Work when the estimated time is reached. If the Work Directive Change is not likely to change the Contract Price, the space for estimated increase (decrease) should be marked "Not Applicable."

Once the Engineer has completed and signed the form, all copies should be sent to the OWNER for authorization because the Engineer alone does not have authority to authorize changes in Price or Time. Once authorized by the OWNER, a copy should be sent by the Engineer to the Contractor.

Once the Work covered by this directive is completed or final cost and time determined, the Contractor should submit documentation for inclusion in a Change Order.

THIS IS A DIRECTIVE TO PROCEED WITH A CHANGE THAT MAY AFFECT THE CONTRACT PRICE OR THE CONTRACT TIME. A CHANGE ORDER, IF ANY, SHOULD BE CONSIDERED PROMPTLY.

RECORDING REQUESTED BY AND WHEN RECORDED MAIL TO:
WALLACE GROUP
612 Clarion Court
San Luis Obispo, California 93401

NOTICE OF COMPLETION

Project Title: **RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2**

Date: _____

OWNER: _____ APN NO. [_____]

The Project or portion of The Project completed is: **RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2**

The location of The Project is: CITY/COUNTY, STATE

The work performed under this contract has been inspected by authorized representatives of the OWNER, the Contractor, and the Engineer, and the Project (or specified part of the Project, as indicated above) is hereby accepted by the OWNER and declared to be substantially completed on the above date.

Completion of the Work shall be the date of such acceptance of the Work by the OWNER, as provided under California Civil Code Section 3086. Completion shall mean substantial performance of the contract as such is defined in Black's Law Dictionary, Revised Fourth Edition, West Publishing Company.

A list of all items remaining to be completed or corrected is appended hereto. All such work shall be completed or corrected to the satisfaction of the OWNER within 30 calendar days, otherwise the Contractor does hereby waive any and all claims to all monies withheld by the OWNER under the Contract to cover the value of such uncompleted or uncorrected items.

NO TRANSFERORS

WALLACE GROUP
Engineer

By _____
Authorized Representative/Date
STEVEN G. TANAKA

Date: _____

The Contractor hereby accepts the above Notice of Completion and agrees to complete and correct all of the items on the appended list within 30 calendar days or waives all rights to any monies withheld therefor.

Contractor

By _____
Authorized Representative/Date
(PRINTED NAME HERE)

Date: _____

The OWNER accepts the project or specified area of the project as substantially completed and will assume full possession of the Project or specified area of the Project at _____(time), on _____(date). The responsibility for heat, utilities, security, and insurance under the Contract Documents will be assumed by the OWNER after that date.

I, the undersigned say: I am the GENERAL MANAGER of the declarant of the foregoing Notice of Completion; I have read said Notice of Completion and know the contents thereof; the same is true of my own knowledge. I declare under penalty of perjury that the foregoing is true and correct.

FOR THE OWNER HERITAGE RANCH COMMUNITY SERVICES DISTRICT,
4870 HERITAGE ROAD, PASO ROBLES, CA 93446

By _____
Authorized Representative/Date
SCOTT DUFFIELD

REMARKS: The following supplementary sheets listing such items remaining to be completed or corrected are hereby made a part of this document by this reference thereto.

CONSENT OF SURETY - RETAINAGE
Request for Adjustment of Retainage

PROJECT TITLE _____ PROJECT NO _____

PROJECT MANAGER _____ CONTRACT NO. _____

RESIDENT PROJECT REPRESENTATIVE _____

CONTRACTOR _____

The Contractor, _____, hereby requests

that the percentage of progress payment estimates retained by the OWNER under the provisions of the Contract

Documents be REDUCED to _____ % DISCONTINUED.
(Delete inapplicable term)

by _____ Date _____
Contractor Representative

The Surety on the Performance Bond for said Project _____ hereby approves the foregoing request.

Power of Attorney must be attached to original copy by _____ Date _____
Attorney-in-fact

Approval IS/IS NOT recommended: The percentage of completion of _____ 20____ is _____ % and the present percentage of elapsed time as of _____ 20____ is _____ %.

by _____ Date _____
Resident Project Representative

Approval IS/IS NOT recommended:

by _____ Date _____
Project Manager

APPROVED/DISAPPROVED by _____ Date _____
Board President

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CONSENT OF SURETY - Final Payment

PROJECT NAME _____ PROJECT NO. _____

LOCATION _____ CONTRACT NO. _____

TYPE OF CONTRACT _____

AMOUNT OF CONTRACT _____

In accordance with the provisions of the above named contract between the OWNER and the Contractor, the following named surety:

on the Payment Bond of the following named Contractor:

hereby approves of final payment to the Contractor, and further agrees that said final payment to the Contractor shall not relieve the Surety Company named herein of any of its obligations to the OWNER, California, as set forth in said Surety company's bond.

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand and seal this _____ day of _____ 20_____.

(Name of Surety Company)

(Signature of Authorized Representative)

TITLE: _____

(Corporate Seal)

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UNCONDITIONAL WAIVER AND RELEASE UPON FINAL PAYMENT

(California Civil Code 3262(d)2)

The undersigned has been paid and has received a final payment in the sum of:

\$ _____ for labor, services, equipment, and material furnished to:

(Your Customer)

on the job of _____

(OWNER)

located at _____

(Job Description)

and does hereby waive and release pro tanto* any mechanic's lien, stop notice, or bond right that the undersigned has on the above referenced job to the following extent. This release covers a progress payment for labor, services, equipment, or material furnished to:

_____ through _____

only and does not cover any retention or items furnished after that date.

Dated _____

(Company Name)

By _____

(Title)

NOTICE TO PERSONS SIGNING THIS WAIVER: THIS DOCUMENT WAIVES RIGHTS UNCONDITIONALLY AND STATES THAT YOU HAVE BEEN PAID FOR GIVING UP THOSE RIGHTS. THIS DOCUMENT IS ENFORCEABLE AGAINST YOU IF YOU SIGN IT, EVEN IF YOU HAVE NOT BEEN PAID. IF YOU HAVE NOT BEEN PAID, USE A CONDITIONAL RELEASE FORM.

*For so much; for as much as may be; as for as it goes.

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PART II

CONDITIONS OF THE CONTRACT

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STANDARD GENERAL CONDITIONS

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GENERAL CONDITIONS

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

- requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.
- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
 13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
 14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
 16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
 17. *Cost of the Work*—See Paragraph 13.01 for definition.
 18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
 20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor’s plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 - 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 - 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 - 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

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

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

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

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

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

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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

5.03 *Subsurface and Physical Conditions*

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

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

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

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
- a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

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

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
- H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

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

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

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

7.10 *Taxes*

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

7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

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

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

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

7.15 *Emergencies*

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

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
1. Observations by Engineer;
 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. Use or occupancy of the Work or any part thereof by Owner;
 5. Any review and approval of a Shop Drawing or Sample submittal;
 6. The issuance of a notice of acceptability by Engineer;
 7. The end of the correction period established in Paragraph 15.08;
 8. Any inspection, test, or approval by others; or

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

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

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

9.03 *Furnish Data*

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

9.04 *Pay When Due*

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

- 9.05 *Lands and Easements; Reports, Tests, and Drawings*
- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
 - B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
 - C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 9.06 *Insurance*
- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.
- 9.07 *Change 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 (including obligations under proposed changes in the Work).
- 9.12 *Safety Programs*
- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
 - B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

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

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

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

10.05 *Determinations for Unit Price Work*

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

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

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

10.07 *Limitations on Engineer's Authority and Responsibilities*

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

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

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

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

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

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

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

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

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
 2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

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

ARTICLE 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

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

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
 5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
- 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
- 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

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

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
- 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 6. Expenses incurred in preparing and advancing Claims.
- 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
- 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances*: Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 2. agree with the other party to submit the dispute to another dispute resolution process; or
 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

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

18.09 *Successors and Assigns*

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

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SUPPLEMENTARY GENERAL CONDITIONS

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HERITAGE RANCH COMMUNITY SERVICES DISTRICT

RAW WATER VERTICAL INTAKE NO. 1 - PHASE 2

SUPPLEMENTARY GENERAL CONDITIONS

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SUPPLEMENTARY GENERAL CONDITIONS

1. SCOPE

The Work to be performed under this Contract shall consist of furnishing everything necessary for the fulfillment of the Contract in strict accordance with the requirements of the Contract Documents. The Work shall be complete, and anything not expressly shown or called for in the Contract Documents which may be necessary for the complete and proper construction of the Work in good faith shall be accomplished by the Contractor as though originally so indicated in the Contract Documents, at no increase in cost to the OWNER. The Contractor shall obligate him/herself to satisfactorily complete the Work within the time stipulated in Article 2 of the Instructions to Bidders. The date of the Notice to Proceed issued by the OWNER shall constitute the starting date of the Contract. Upon issuance of the Notice to Proceed, the Contractor shall immediately begin and diligently prosecute the work to completion.

2. GENERAL

These Supplementary General Conditions amend or supplement the Standard General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated. All provisions which are not so amended or supplemented remain in full force and effect. These Supplementary General Conditions are cross-referenced to EJCDC General Conditions, 2018 version.

3. SUPPLEMENTARY DEFINITIONS

Wherever in these Contract Documents the following terms are used, the intent and meaning shall be shown herein. All terms not listed in the following amended or supplementary definitions shall have the meanings assigned to them in the Standard General Conditions of the Construction Contract:

- 3.1 OWNER as referred to in ARTICLE 1 of the STANDARD GENERAL CONDITIONS of the Construction Contract shall be the HERITAGE RANCH COMMUNITY SERVICES DISTRICT. The official address of the OWNER is:

HERITAGE RANCH COMMUNITY SERVICES DISTRICT
4870 HERITAGE ROAD
PASO ROBLES, CA 93446

- 3.2 ENGINEER as referred to in ARTICLE 1 of the STANDARD GENERAL CONDITIONS of the Construction Contract shall be WALLACE GROUP acting either directly or through properly authorized agents acting within the scope of their particular duties delegated to them or when designated in the Contract.

The official address of the Engineer is:

WALLACE GROUP
612 Clarion Court
San Luis Obispo, California 93401

- 3.3 SUBSTANTIAL COMPLETION as defined in ARTICLE 1 of the STANDARD GENERAL CONDITIONS of the Construction Contract is hereby clarified with the following additional definition:

Substantial Completion shall exist when there has been no willful departure from the terms of the Contract, and no omission in essential points, and the Contract has been honestly and faithfully performed in its material and substantial particulars, and the only variance from the strict and literal performance consists of technical or unimportant omissions or defects, and that the Work may be utilized for the purposes for which it is intended. Substantial Completion shall mean Completion as evidenced by a certificate of completion filed by the **GOVERNING BODY** pursuant to the requirements of Sections 3086 and 3093 of the California Civil Code. The terms "substantially complete" and "substantially completed" as applied to any Work refer to Substantial Completion thereof.

- 3.4 SUPPLEMENTARY CONDITIONS as defined in ARTICLE 1 are also referred to as these Supplementary General Conditions.

4. AMENDMENTS OR SUPPLEMENTS TO STANDARD GENERAL CONDITIONS

- 4.1 Nothing herein shall be deemed to require the Owner to indicate the presence of existing service laterals or appurtenances wherever the presence of such utilities on the site of the construction project can be inferred from the presence of other visible facilities such as buildings, meter and junction boxes, on or adjacent to the site of construction; provided, however, that nothing herein shall relieve the Owner from identifying main or trunk lines in the plans and specifications.
- 4.3 If the Contractor, while performing the Contract, discovers utility facilities not identified by the OWNER, he shall immediately notify the OWNER and the utility owner in writing.
- 4.4 The public utility, where they are the owner, shall have the sole discretion to perform repairs or relocation work or permit the Contractor to do such repairs or relocation work at a reasonable price at the utility owner's expense.
- 4.5 Partial Payments: The provisions of ARTICLE 15 of the STANDARD GENERAL CONDITIONS of the Construction Contract are hereby amended to include the following provisions.
- 4.6 ARTICLE 15.01 PROGRESS PAYMENTS, PARAGRAPH B.4, RETAINAGE. Retainage shall be as specified in this Article 4.6 of the Supplementary General Conditions. The Contractor shall, once each month, accurately measure and submit in writing, the total amount of the work completed for each line item of the Bid Schedule at the time of such estimate. The OWNER will retain 5 percent of such estimated value of all work done as part security for the fulfillment of this Contract by the Contractor and shall pay monthly to the Contractor, while carrying on the Work, the balance not retained, as aforesaid, after deducting therefrom all previous payments and all sums to be kept or retained, under the

provisions of this Contract. No such estimate or payment will be required to be made when, in the judgment of the Engineer, the Work is not proceeding in accordance with the provisions of this Contract, or when in the Engineer's judgment the total value of the work done since the last estimate amounts to less than \$1000. No partial payment shall be made for materials on hand but not installed.

- 4.7 In order to confirm the amounts due under this paragraph, the Contractor shall file with the Engineer a schedule of values of the work completed, based upon the unit price set forth in the Bid Schedule, in the manner specified in ARTICLE 15.01 of the STANDARD GENERAL CONDITIONS of the Construction Contract provided that where the Schedule of Values is referred to, it shall mean the Bid Sheet.
- 4.8 The retained percentage as specified herein will be held by the OWNER and will be due and payable to the Contractor 35 calendar days after final acceptance of the Work by action of the **GOVERNING BODY**; provided, there have been no Stop Notices served upon the OWNER, as set forth in ARTICLE 4.6 of these SUPPLEMENTARY GENERAL CONDITIONS.

5. CONSTRUCTION DRAWINGS

- 5.1 Article 2.02.A of the General Conditions is modified as follows: Owner will furnish to Contractor only a PDF copy of the bid documents. Should Contractor desire hard copy prints, such prints shall be provided for by Contractor.

6. LIQUIDATED DAMAGES

- 6.1 General: It is agreed by the Contractor that in case all the Work called for under the Contract in all parts and requirements is not finished or completed within the time specified in the Contract, damages will be sustained by the OWNER, and that it is and will be impracticable and extremely difficult to ascertain and determine the actual damages which the OWNER will sustain in the event of and by reason of such delay; and it is therefore agreed that the Contractor will pay to the OWNER, the sum of \$500 **per day** for each and every working day's delay in finishing the Work in excess of the completion dates prescribed in Article 2 of the Instructions to Bidders. The Contractor agrees to pay said liquidated damages herein provided for, and further agrees that the OWNER may deduct the amount thereof from any monies due or that may become due by the Contractor under the Contract.
- 6.2 It is further agreed that in case the Work called for under the Contract is not finished and completed in all parts and requirements within the completion time specified, the OWNER shall have the right to increase the number of working days or not, as may be deemed best to serve the interest of the OWNER, and if it is deemed to increase the said number of working days, the OWNER shall further have the right to charge the Contractor, its heirs, assigns, or sureties and to deduct from the final payment for the Work or any part, as may be deemed proper, of the actual cost of engineering, inspection, superintendence, and other overhead expenses which are directly chargeable to the Contract, and which

accrue during the period of such extension, except that cost of final surveys and preparation of final estimate shall not be included in such charges.

- 6.3 The Contractor will be granted an extension of time and will not be assessed liquidated damages or the cost of engineering and inspection for any portion of the delay in completion of the Work beyond the time named in the Contract for the Completion of the Work caused by Acts of God, or of the public enemy, fire, floods, epidemics, quarantine restrictions, strikes, labor disputes, shortage of materials, and freight embargoes; provided, that the Contractor shall notify the Engineer in writing of the causes of the delay within 15 calendar days from the beginning of any such delay. The Engineer shall ascertain the facts within 5 working days and determine the extent of the delay, and the Engineer's findings thereon shall be final and conclusive.
- 6.4 No extension of time will be granted for a delay caused by a shortage of materials unless the Contractor furnishes to the Engineer documentary proof that he/she has diligently made every effort to obtain such materials from all known sources within reasonable reach of the Work and further proof in the form of supplementary progress schedules, as required for "Contractor's Schedules" in Technical Section entitled "Contractor Submittals," that the inability to obtain such materials when originally planned, did in fact cause delay in final completion of the entire Work which could not be compensated for by revising the sequence of the Contractor's operations. Only the physical shortage of material will be considered under these provisions as a cause for extension of time, and no consideration will be given to any claim that material could not be obtained at a reasonable, practical, or economic cost or price, unless it is shown to the satisfaction of the Engineer that such material could have been obtained only at exorbitant prices entirely out of line with current rates, taking into account the quantities involved and the usual practices in obtaining such quantities.
- 6.5 If the Contractor is delayed in completion of the Work by reason of changes made under the provisions of ARTICLE 11 of the STANDARD GENERAL CONDITIONS of the Construction Contract, or by any act of the Engineer not contemplated in the Contract, an extension of time commensurate with the delay in completion of the Work thus caused will be granted and the Contractor shall be relieved from any claim for liquidated damages, or engineering and inspection charges or other assessments for the period covered by such extension of time; provided further, that the Contractor shall notify the Engineer in writing of the causes of delay within 15 calendar days from the beginning of any such delay. The Engineer will ascertain the facts within 5 working days and determine the extent of the delay, and his or her finding thereon shall be final and conclusive.
- 6.6 The Contractor shall have no claim for damage or compensation for any delay or hindrance whether or not contemplated by the Contract.
- 6.7 The Contractor shall not be relieved of liability for liquidated damages or engineering or inspection charges for any period of delay in completion of the Work in excess of that expressly provided for in this Article.
- 6.8 California Code Requirements: In accordance with the requirements of Paragraph (b) of Section 4215 of the California Government Code, the

Contractor will not be assessed liquidated damages for delay in completing the Work to the extent that such delay is caused by the failure of the Owner or of a utility company, OWNER, or other agency to provide for or accomplish the relocation of an existing utility facility in a street, road, or highway.

7. PERMITS AND INSURANCE REQUIRED UNDER SUCH PERMITS

7.1 ARTICLE 7.09, PERMITS, is modified as follows:

7.1.1 Refer to Section 01 11 00, Summary of Work, for project-specific permitting requirements.

8. DELIVERY AND STORAGE OF MATERIALS

8.1 All packaged manufactured products for use on the Work shall be delivered to the Work site in their original, unopened packages, bearing thereon the manufacturer's name and the brand name of the product.

8.2 Whenever any product or material is selected to be used on the Work, all such products or materials shall be of the same brand and manufacture throughout the Work.

8.3 All materials shall be stored in such a manner that they will be completely protected from weather damage.

9. APPLICABLE ORDINANCES AND REGULATIONS

9.1 The Work is located in Heritage Ranch, San Luis Obispo County, California. In the performance of the Work the Contractor shall comply with all ordinances, regulations, and other lawful requirements of said OWNER and County and of the State, Federal, and other public authorities within their respective jurisdictions governing work on public property. In particular, the Contractor's attention is directed to the fact that all work hereunder shall conform to or exceed all requirements of the Construction Safety Orders of Cal-OSHA.

9.2 Nothing herein shall be construed to entitle the Contractor to the exclusive use of any public street, alleyway, or parking area during the performance of the Work hereunder.

10. ADDITIONAL CALIFORNIA CODE REQUIREMENTS

10.1 Deposit of Securities in Lieu of Retainage: On written request of the Contractor, and at the sole expense of the Contractor, the Contractor may deposit securities in an amount equivalent and in lieu of any monies retained by the OWNER pursuant to the terms of the Contract. Said deposits shall be made pursuant to and in accordance with the terms and provisions of Chapter 13 of the Division 5 of Title I of the Government Code, commencing at Section 4590. The securities may be deposited with the OWNER or with a State or Federally-chartered bank as an escrow agent. If the securities are deposited with a bank, the Contractor shall furnish the OWNER with written proof of said deposit and an executed counterpart of the escrow or deposit instructions. Said instructions must contain

a statement that said securities will not be released to anyone except upon written instructions of an authorized representative of the OWNER, which statement must recite that the purpose for which the deposit was made has been satisfied. Upon satisfactory completion of the Contract, the securities shall be returned to the Contractor.

- 10.2 Securities eligible for deposit under this section shall be those listed in Section 16430 of the Government Code, or bank or savings and loan certificates of deposit.
- 10.3 The Contractor shall be the beneficial owner of any securities substituted for monies retained, and the Contractor shall receive any interest that is paid thereon.
- 10.4 Assignment of Antitrust Claims: The Contractor offers and agrees to assign to the OWNER all rights, title, and interest in and to all causes of action it may have under Section 4 of the Clayton Act (14 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 commencing with Section 16700 of Part 2 of Division 7 of the California Business and Professions Code), arising from the purchase of goods, services, or materials pursuant to this Contract. This assignment shall become effective at the time that the OWNER tenders final payment to the Contractor, without further acknowledgment by the parties. The Contractor shall have the rights set forth in Sections 4553 and 4554 of the California Government Code.
- 10.5 Labor Discrimination: No discrimination shall be made in the employment of persons on the Work by the Contractor or by any subcontractor because of race, religious creed, color, national origin, ancestry, physical disability, medical condition, marital status, mental disability, sexual orientation or sex except as permitted by Section 12940 of the California Government Code.
- 10.6 Fair Employment Practice: In the performance of this Contract, the Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, ancestry, sex, age, national origin, physical disability, mental disability, medical condition or marital status. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated, without regard to their race, color, religion, ancestry, sex, sexual orientation, age, national origin, physical handicap, medical condition, or marital status. Such action shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. See Chapter 6 of Part 2.8 of Division 3 of the California Government Code commencing at Section 12940 for further details.
- 10.7 The Contractor shall permit access to its records of employment, employment advertisements, application forms, and other pertinent data and records by the State Fair Employment and Housing Commission, or any other agency of the State of California, for the purposes of investigation to ascertain compliance with the Fair Employment Practices section of this contract.
- 10.8 The OWNER may determine a willful violation of the Fair Employment Practices provision to have occurred upon receipt of a final judgment having that effect

from a court in an action to which the Contractor was a party, or upon receipt of a written notice from the Fair Employment and Housing Commission that it has investigated and determined that the Contractor has violated the Fair Employment and Housing Act and has issued an order, which has become final, or obtained an injunction.

- 10.9 For willful violation of this Fair Employment Practices provision, the OWNER shall have the right to terminate this Contract either in whole or in part, and any loss or damage sustained by the OWNER in securing the goods or services hereunder shall be borne and paid for by the Contractor and by its surety under the Performance Bond, if any, and the OWNER may deduct from any monies due or that thereafter may become due to the Contractor, the difference between the price named in the Contract and the actual cost thereof to the OWNER.
- 10.10 Notice to Labor Unions: The Contractor, and any subcontractors, shall give written notice of their obligation under this Fair Employment Practice section of this Contract and of the applicable sections of the California Fair Employment and Housing Act to the labor organization with which they have a collective bargaining or other agreement. (See California Government Code Section 12990).
- 10.11 Payroll Records: The Contractor and each subcontractor shall keep an accurate payroll record, showing the name, address, social security number, work classification, straight time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice worker, or other employee employed by him or her in connection with the public work. The payroll records shall be certified and shall be available for inspection at all reasonable hours at the principal office of the Contractor in the manner provided in Labor Code Section 1776. In the event of noncompliance with the requirements of this Section, the Contractor shall have 10 calendar days to comply subsequent to receipt of written notice specifying in what respects such Contractor must comply with this Section. Should noncompliance still be evident after such 10-day period, the Contractor shall, as a penalty, forfeit to the OWNER 25 dollars for each worker for each calendar day or portion thereof, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, such penalties shall be withheld from progress payments then due. The responsibility for compliance with this Section is with the Contractor.
- 10.12 Wage Rates: As required under Sections 1770 et seq of the California Labor Code, the Contractor shall pay not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations (DIR). The Contractor shall post a copy of such determination at each job site. Refer to the Instructions to Bidders, Article 11, for further California Labor Code requirements for Contractor registration with DIR in accordance with California Labor Code Section 1725.5.
- 10.13 In accordance with California Labor Code Section 1813, the Contractor shall, as a penalty to the OWNER, forfeit \$25.00 for each calendar day, or portion thereof, for each worker paid less than the prevailing rates as determined by the Director

for such work or craft in which such worker is employed for any public work done under the Contract by the Contractor or by any subcontractor under it.

- 10.14 Working Hours: The Contractor shall comply with all applicable provisions of Section 1810 to 1815, inclusive of the California Labor Code relating to working hours. The Contractor shall, as a penalty to the OWNER, forfeit \$25.00 for each worker employed in the execution of the Contract by the Contractor or by any subcontractor for each calendar day during which such worker was required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week, unless such worker receives compensation for all hours worked in excess of 8 hours at not less than 1-1/2 times the basic rate of pay.
- 10.15 First Aid For Employees: Pursuant to the provisions of the California Labor Code Section 6708, each Contractor and Subcontractor shall maintain or make available adequate emergency first aid treatment for its employees, agents, and representatives. As used herein, the word "adequate" shall be construed to mean sufficient to comply with the Federal Occupational Safety and Health Act (P.L. 91-596 OSHA) and the applicable requirements of Cal-OSHA. (See 29 USCA Section 651 et seq.)
- 10.16 Apprentices on Public Works: The Contractor shall comply with all applicable provisions of Section 1777.5 and 1777.6 of the California Labor Code relating to the employment of apprentices on public works.
- 10.17 Unpaid Claims: If at any time prior to the expiration of the period for service of a Stop Notice, there is served upon the OWNER a Stop Notice as provided in Sections 3170 through 3210 of the California Civil Code, the OWNER shall, until the discharge thereof, withhold the monies under its control so much of said monies due or to income due the Contractor under this Contract which shall be sufficient to answer the claim stated in such Stop Notice and to provide for the reasonable cost of any litigation thereunder; provided, that if the Engineer shall, in its discretion, permit the Contractor to file with the OWNER the Bond referred to in Section 3196 of the California Civil Code, said monies shall not thereafter be withheld on account of such Stop Notice.
- 10.18 Travel and Subsistence Pay: As required under Section 1773.8 of the California Labor Code, the Contractor shall pay travel and subsistence payments to each worker needed to execute the Work, as such travel and subsistence payments are defined in the applicable collective bargaining agreements filed in accordance with said Section 1773.8.

11. INSURANCE

- 11.1 General: In all insurance policies required hereunder, the insurance certificate shall evidence a firm commitment by the insurance company to notify the OWNER and Engineer of the expiration or cancellation of any of the insurance policies required hereunder not less than 30 calendar days before such expiration or cancellation is effective.
- 11.2 Insurance Amounts:

Policy Limits: Each of said policies of insurance shall provide coverage in the following minimum amounts: for personal injury \$1,000,000 each person, \$2,000,000 aggregate limit; property damage \$1,000,000 on account of any one occurrence, \$2,000,000 aggregate limit; except that insurance required to be maintained by Subcontractors above shall provide coverage in the following minimum amounts; for personal injury \$500,000 each person, \$1,000,000 aggregate limit; property damages \$500,000 on account of any one occurrence, \$1,000,000 aggregate limit.

Additional Named Insureds: All such insurance shall include as additional named insureds: the OWNER; the Engineer and its Consultants.

11.3 Article 6.04, Builder's Risk and Other Property Insurance, of the General Conditions, is deleted in its entirety.

12. ACCESS TO PROJECT SITE

12.1 48-Hours Notice: The Contractor shall give the OWNER a minimum of 48 hours notice prior to arriving at the project site at the start of construction.

13. INTERRUPTION TO UTILITY SERVICES

13.1 48-Hour Notice: The Contractor shall give the OWNER a minimum of 48 hours notice prior to the interruption of any utility service.

13.2 The interruption of utility services shall be only made during off-peak hours, with the expressed written permission of the OWNER. Off peak hours are defined as 9:00 p.m. to 5:00 a.m. Monday through Friday.

14. MODIFICATIONS; PERFORMANCE; PAYMENT

(Timely progress payments; legislative intent; payment requests)

14.1 It is the intent of the Legislature in enacting this section to require all local governments to pay their contractors on time so that these contractors can meet their own obligations. In requiring prompt payment by all local governments, the Legislature hereby finds and declares that the prompt payment of outstanding receipts is not merely a municipal affair, but is, instead, a matter of statewide concern.

It is the intent of the Legislature in enacting this article to fully occupy the field of public policy relating to the prompt payment of local payment of local governments' outstanding receipts. The Legislature finds and declares that all government officials, including those in local government, must set a standard of prompt payment that any business in the private sector which may contract for services should look towards for guidance.

14.2 Any local agency which fails to make any progress payment within 30 calendar days after receipt of an undisputed and properly submitted payment request from a contractor on a construction contract shall pay interest to the contractor equivalent to the legal rate set forth in subdivision (a) of Section 685.010 of the Code of Civil Procedure.

- 14.3 Upon receipt of a payment request, each local agency shall act in accordance with both of the following:

Each payment request shall be reviewed by the local agency as soon as possible as practicable after receipt for the purpose of determining that the payment request is a proper payment request.

Any payment request determined not to be a proper payment request suitable for payment shall be returned to the contractor as soon as practicable, but not later than seven calendar days, after receipt. A request returned pursuant to this paragraph shall be accompanied by a document setting forth in writing the reasons why the payment request is not proper.

- 14.4 The number of days available to a local agency to make a payment without incurring interest pursuant to this section shall be reduced by the number of days by which a local agency exceeds the seven-day return requirement set forth in paragraph (2) of subdivision (c).

- 14.5 For purposes of this article:

A "local agency" includes, but is not limited to, a city, including a charter city, a county, and a city and county, and is any public entity subject to this part.

A "progress payment" includes all payments due contractors, except that portion of the final payment designated by the contract as retention earnings.

A payment request shall be considered properly executed if funds are available for payment of the payment request, and payment is not delayed due to an audit inquiry by the financial officer of the local agency.

- 14.6 Each local agency shall require that this article, or a summary thereof, be set forth in terms of any contract subject to this article.

- 14.7 Bid Schedule:

All pay line items will be paid for at the unit prices named in the Bid Schedule for the respective items of work. The quantities of work or material stated as unit price items on the Bid Schedule are supplied only to give an indication of the general scope of the Work: The OWNER does not expressly nor by implication agree that the actual amount of work or material will correspond therewith, and reserves the right after award to increase or decrease the quantity of any item of work by an amount up to and including 25 percent of any bid item in its entirety, or to add additional bid items up to and including an aggregate total amount not to exceed 25 percent of the contract price.

Quantity variations in excess of the allowable quantity changes specified herein shall be subject to the provisions of Article 11 of the STANDARD GENERAL CONDITIONS.

15. DISPUTE RESOLUTION

15.1 Any question about interpretation or clarification, disagreement, or claim that has been timely referred to the Engineer in accordance with Article 10.05, except any which have been waived by the making or accepting of final payment, shall upon timely demand of either party be subject to resolution under the following provisions:

No demand for arbitration or litigation may be made until the earlier of the following listed times:

The sixty-first day after the date of the Engineer's receipt of a claim or dispute, or for an adjustment of contract terms, or both, if a decision has not been issued by that date.

Pending a resolution of the claim or dispute, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Engineer's decision unless the parties to this contract otherwise agree in writing.

16. OTHER FUNDING AGENCY REQUIREMENTS – NOT USED

END SUPPLEMENTARY GENERAL CONDITIONS

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PART III

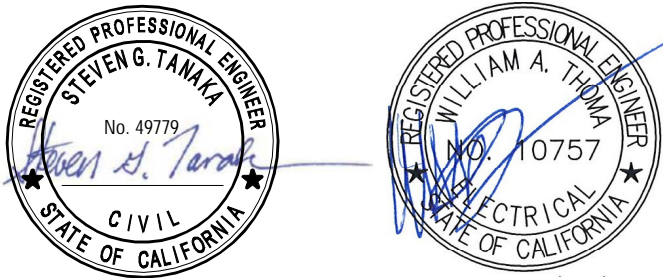
TECHNICAL SPECIFICATIONS

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PART III - TECHNICAL SPECIFICATIONS

These technical specifications were prepared by various professionals qualified in their respective disciplines. The following professionals were responsible for preparing these technical specifications, and their initials are indicated by each specification section as being the responsible engineer of record (EOR) for corresponding sections prepared by each respective EOR. Profession seals on these technical specifications correspond to the Specification Divisions noted:

- Steven G. Tanaka, P.E. (SGT), Wallace Group, License 49779, Divisions 01, 08, 09, 33.
- William A. Thoma, P.E. (WAT), Thoma Electric, License 10757, Division 26.



Division 01 – General Requirements

01 11 00	Summary of Work
01 20 00	Price and Payment Procedures
01 30 00	Administrative Requirements
01 33 00	Submittal Procedures
01 35 00	Special Project Procedures
01 50 00	Temporary Facilities and Controls
01 57 19	Construction Site Management
01 60 00	Product Requirements
01 70 00	Execution and Closeout Requirements
01 75 00	Starting and Adjusting

Division 08 – Openings

08 31 13	Access Doors and Frames
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Division 9 – Finishes

09 90 00	Painting and Coating
----------	----------------------

Division 26 – Electrical

26 05 00	Common Work Results for Electrical
26 05 01	Selective Electrical Demolition
26 05 19	Low Voltage Electrical Power Conductors and Cables
26 05 26	Grounding and Bonding for Electrical Systems
26 05 29	Hanger and Supports for Electrical Systems
26 05 33	Raceways and Boxes for Electrical Systems
26 05 34	Cabinets

26 05 48	Vibration and Seismic Controls for Electrical Systems
26 05 53	Identification of Electrical Systems
26 08 10	Electrical Acceptance Testing
26 09 00	Controls and Instrumentation
26 86 16	Enclosed Switches and Circuit Breakers

Division 33 – Utilities

33 11 35	Submersible Turbine Pump
33 34 00	Well Transmission Piping

SUMMARY OF WORK

PART 1 GENERAL

1.1 WORK INCLUDED

- A. The Work includes providing a submersible turbine pump in an existing 40-foot deep vertical raw water intake facility and pipeline tie-in to the District's existing raw water supply line near the District's existing raw water intake facility at the Nacimiento River and all other work to make the vertical raw water facility complete and functional as specified herein, and as shown in the Contract Documents:
1. Vertical Intake No. 1.
 - a. Submersible turbine pump, propeller flow meter, pressure transducer and PVC transducer casing/drop tube.
 - b. Vertical casing seal, penetrations, and improvements including vent, electrical power and controls penetration, and transducer casing penetration.
 - c. Vertical casing concrete pad and perimeter security fencing with double-swing gate.
 - d. Aboveground piping, valves and appurtenances.
 - e. Buried raw water pipeline to valve vault from vertical intake facility, tie-in to existing 4" HDPE Nacimiento Water Emergency Raw Water Pipeline with isolation gate valves and check valve.
 - f. Valve vault at tie-in
 - g. Electrical and controls conduits and wiring
 - h. Controls integration by Others (SCADA)
- B. The Work consists of items listed in the Base Bid. Refer to Section 01 20 00 for further definition.

1.2 WORK NOT INCLUDED

- A. Except for such auxiliary work as is shown or specified or is necessary as a part of the construction, the following work is NOT included in this Contract.
1. Work shown, but marked "NIC" (Not in Contract) or otherwise designated to be performed by others.

1.3 LOCATION OF SITE

- A. The Raw Water Vertical Intake No. 1 - Phase 2 project site is located as shown on the drawings, north of Heritage Ranch, California adjacent to, and immediately adjacent to and on the south bank of the Nacimiento River and north of the Heritage Ranch Water Treatment Plant. It is approximately 0.5 miles east of the Nacimiento Lake Dam. The site is accessible via a private road which intersects Bluegill Drive.

1.4 SPECIFICATIONS

- A. The Specifications are those bound in the Project Manual. All sections of the Project Manual, including Notice Inviting Bids and Instructions to Bidders, are part of the

Contract Documents for this Work. The Project Manual consists of the Notice Inviting Bids, Instructions to Bidders, Contract Agreement, General Conditions of the Contract for Construction, Supplementary General Conditions, Division 01, and Divisions 02 through 33 technical specifications, and Heritage Ranch Community Services District Standard Specifications and Drawings where referenced.

1.5 DRAWINGS

- A. The Drawings consist of nine (9) sheets prepared by Wallace Group and Thoma Electric, Inc.

1.6 INTERRUPTION OF SERVICES

- A. Interruptions to any services for the purpose of making or breaking connection shall be made only after consultation with the District and Engineer a minimum of one week in advance of connection break, and shall be at such time and of such duration as may be directed.
- B. Existing Heritage Ranch CSD raw water supply lines from the existing horizontal intake facilities shall remain fully operational during the Work, with no disruptions whatsoever.

1.7 SEQUENCE OF CONSTRUCTION OPERATIONS

- A. Submit Construction Work Plan at Pre-Construction Meeting, dovetailing sequencing details with Schedule as required in Section 01 30 00, Administrative Requirements. District shall approve such plan prior to Contractor starting construction operations. Work Plan shall describe the laydown areas, equipment access, overall schedule and order of work for the vertical intake facility installation.
- B. Prior to commencement of Work and within 7 calendar days of Notice to Proceed, verify and confirm, to the Owner's Representative in writing, the existing grades, elevations and conditions of the site. Any discrepancies between existing conditions and the contract documents must be brought to the Owner's attention during that time frame.
- C. Prepare schedules as set forth in Section 01 30 00, Administrative Requirements.

1.8 HOURS OF WORK

- A. See Article 7.03, General Conditions. Perform Work of this Contract on normal workdays and within normal work hours; 7:00 am to 4:00 pm Monday through Friday, and as specified for night work. After hours work and work on Saturdays, Sundays, and District holidays, may be permitted if approval is received from the Owner or Designee at least 3 working days in advance, at no additional cost to District. When Contractor schedules Work on non-working days or after hours work, the Contractor shall be responsible for the overtime costs incurred by the District for inspections or other related activities, unless such scheduled was requested by Engineer.
- B. Continuously keep existing PS1 site and Work area clean and free of mud and dirt, obstacles, etc., and protect against damage.

- C. Schedule the Work to accommodate District occupancy and use of the Site. Access road from PS1 to the vertical intake facility shall remain open at all times (except for momentary blockage when moving equipment in and out of Work zone) to District staff.
- D. Closeout Timetable. Coordinate with District to establish dates for equipment, testing, acceptance periods, and on-site instructional periods (as required under the Contract). Such dates shall be established not less than one week prior to beginning any of the foregoing items, to allow the District and their authorized representatives sufficient time to schedule attendance at such activities.
- E. Final Submittals: Prior to requesting final payment, obtain and submit the following items to the Engineer for transmittal to the District:
 - 1. Written guarantees, where required.
 - 2. Operating manuals and instructions.
 - 3. Completed record drawings per Section 01 70 00.
 - 4. Certificates of inspection and acceptance by local governing agencies having jurisdiction, including but not limited to Heritage Ranch Community Services District.
 - 5. Releases from all parties who are entitled to claims against the subject project, property, or improvement pursuant to the provisions of law.

1.9 PERMITS (NOT USED)

1.10 SITE ACCESS

- A. All Work is located on District-owned lands or lands for which District has secured easements. Property and easement boundaries are shown on the drawings; Contractor shall maintain all facilities within the established property and easement boundaries shown on the drawings.

1.11 EXCAVATIONS OR TRENCHING FOR UNDERGROUND UTILITIES AND STORM DRAINS

- A. Time intervals between excavation or trenching and installation of conduit or piping or other work concerned, and backfilling operations shall be kept to absolute minimum.
- B. Excavations or trenching crossing roadways and other traffic areas shall be provided with skid-resistant traffic bearing steel plates; pedestrian and bicycle paths shall be provided with skid-resistant traffic bearing steel plates, or other materials approved by District.

1.12 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. Refer to the General Conditions and other Division 01 Sections for Contractor responsibilities.
- B. Damage to existing improvements caused by Contractor's operations, either on-site or on adjacent sites, shall be repaired to restore damaged items to their original condition. Cost of such repair shall be borne entirely by Contractor.
- C. Drawings indicate existing structures, drainage lines, water, gas, electrical and other similar items and utilities that are known to the District.

- D. Locate known existing structures and utilities before proceeding with construction. Maintain them in service, except as otherwise specified. Provide protection and repair damage to them caused by the Work at no increase in Contract price.

1.13 GEOTECHNICAL INVESTIGATION

- A. A Well Completion Report for the District's Raw Water Vertical Intake No. 1 – Phase 1 project dated December 15, 2020 by Cleath-Harris Geologists, Inc. is included herein for reference. The report includes drilling logs generated during installation of the existing vertical intake. The information presented in the report represents conditions at the time of vertical intake installation and is provided for informational purposes only.

END OF SECTION



December 15, 2020

Scott Duffield
Heritage Ranch Community Services District
4870 Heritage Road
Paso Robles, CA 93446

SUBJECT: Drilling, Construction and Testing Report for HRCSD Vertical Intake Structure #1, Paso Robles, San Luis Obispo County, California

Dear Mr. Duffield,

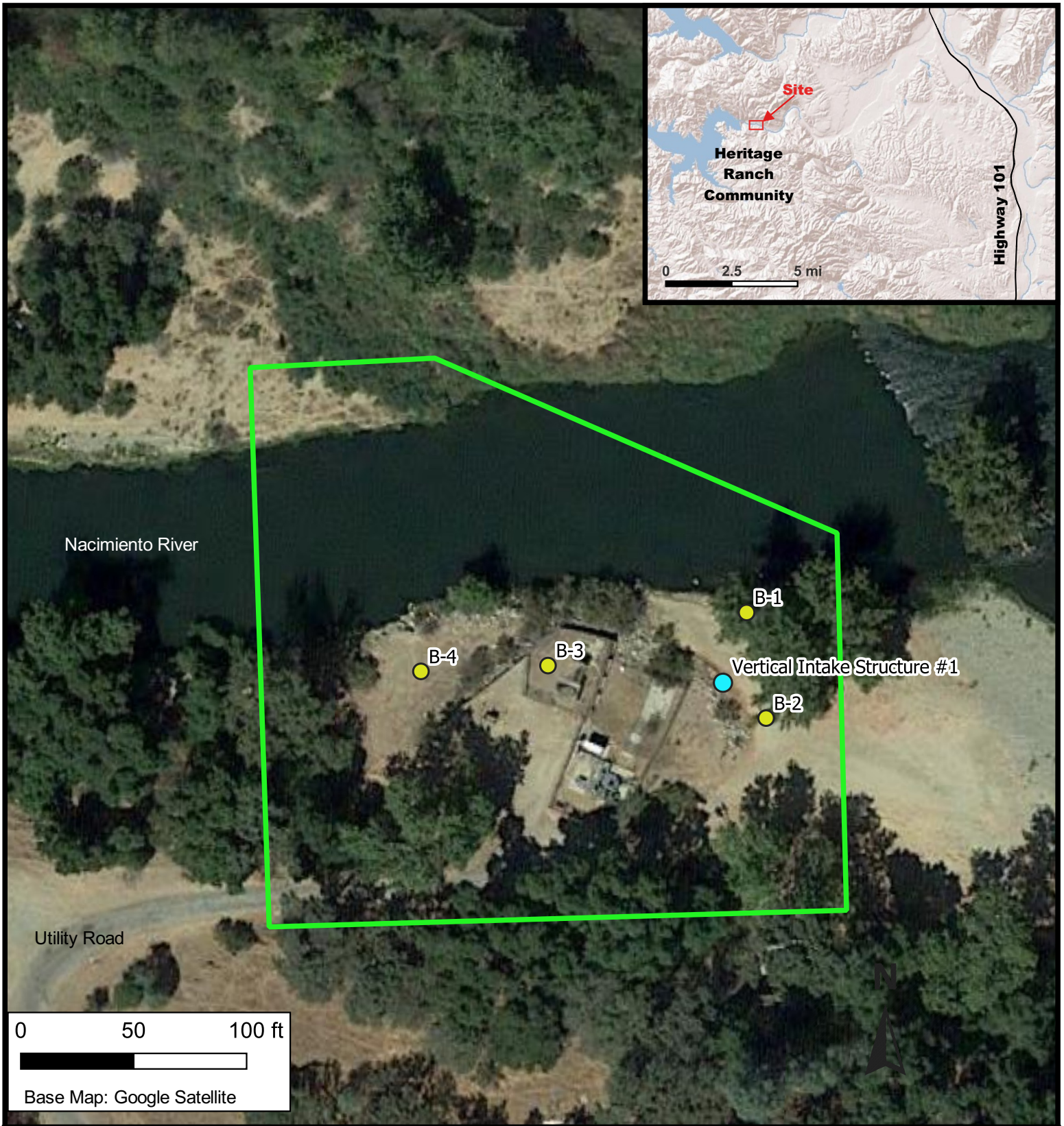
Cleath-Harris Geologists (CHG) was retained by the Heritage Ranch Community Services District (HRCSD) to provide hydrogeologic and drilling inspection services for the new Vertical Intake Structure. This structure is intended to supplement the existing water diversion gallery underneath the Nacimiento River. This report documents the drilling, construction and testing activities of the new structure by All-American Drilling Inc. and Fisher Pump of Santa Maria, California, and Myers Brothers Drilling of Morro Bay, California.

Background Information

The Vertical Intake Structure that is the subject of this report lies approximately 2,800 feet downstream of the Lake Nacimiento Dam, near facilities that operate the existing water diversion gallery (Figure 1). In 2012, four test boreholes were drilled on the site to assess the depth to bedrock, and this information was used to select the site for the new structure. Geographic coordinates for the structure is at 35.759050° N & 120.875340° W (NW 1/4 Sec 15, T25S, R10E Mount Diablo Base & Meridian). The ground surface elevation is approximately 615 feet above sea level based on topographic maps. The site is on the southern bank of the Nacimiento River next to the booster facility that serves the existing diversion gallery. The target aquifer was the Nacimiento River Alluvium, which is underlain by shales of the Miocene Monterey Formation.

Drilling

Drilling and construction of the structure took place on November 4, 2020. The borehole drilling involved drilling a 24-inch pilot hole using a flight auger attached to a telescoping-kelly drilling rig. Polymer was added by hand, as needed, to prevent the walls of the borehole from collapsing. The pilot borehole was completed to a depth of 38 feet. Cuttings were collected and logged by CHG in 5-foot intervals, and consisted of river alluvium underlain by clay and shale of the Monterey Formation. A table of generalized lithology penetrated in the drilling process is shown in Table 1. The lithologic log is shown in Appendix A.



Explanation

- Vertical Intake Structure #1
- 2012 Borehole locations
- Gallery Easement Boundary

Figure 1
Vertical Intake Structure #1
Heritage Ranch CSD

Cleath-Harris Geologists



**Table 1
Generalized Lithology**

Depths in feet below grade		Thickness (feet)	Description
From	To		
0	10	10	Topsoil, sand and gravel
10	15	5	Gravel and sand
15	24	9	Gravel and clay
24	29	5	Shale and clay (Bedrock)
29	38	9	Shale (Bedrock)

Well Construction

The borehole was drilled to the final 24-inch diameter in one pass to a depth of 38 feet. Well construction then commenced using Johnson Screens well casing materials. A summary of well construction is presented in Table 2 below. The well completion report is in Appendix A.

**Table 2
Installed Well Casing Summary**

Depths in feet below grade		Length (feet)	Description
From	To		
+2 feet above ground surface	13	15	12-inch diameter, 3/8-inch wall thickness, stainless steel 304 blank water well casing.
13	28	15	12-inch diameter, 3/8-inch wall thickness, stainless steel wire-wrap water well casing with 0.040-inch slots.
28	38	10	12-inch diameter, 3/8-inch wall thickness, stainless steel 304 blank water well casing with bullnose.

A set of three stainless steel centralizers were installed at 28 and 12 feet depth. From 38 to 28-foot depth, approximately one yard of pea gravel was placed around the blank interval at the bottom. From 28 to 10 feet depth, approximately two yards of 1.7-2.0 millimeter diameter glass beads were placed opposite the screened intervals. The well was sealed from 10 feet depth to ground surface with approximately one yard of 10.3 sack cement slurry. A diagram of the final construction is shown in Figure 2. All construction materials tickets are in Appendix B.

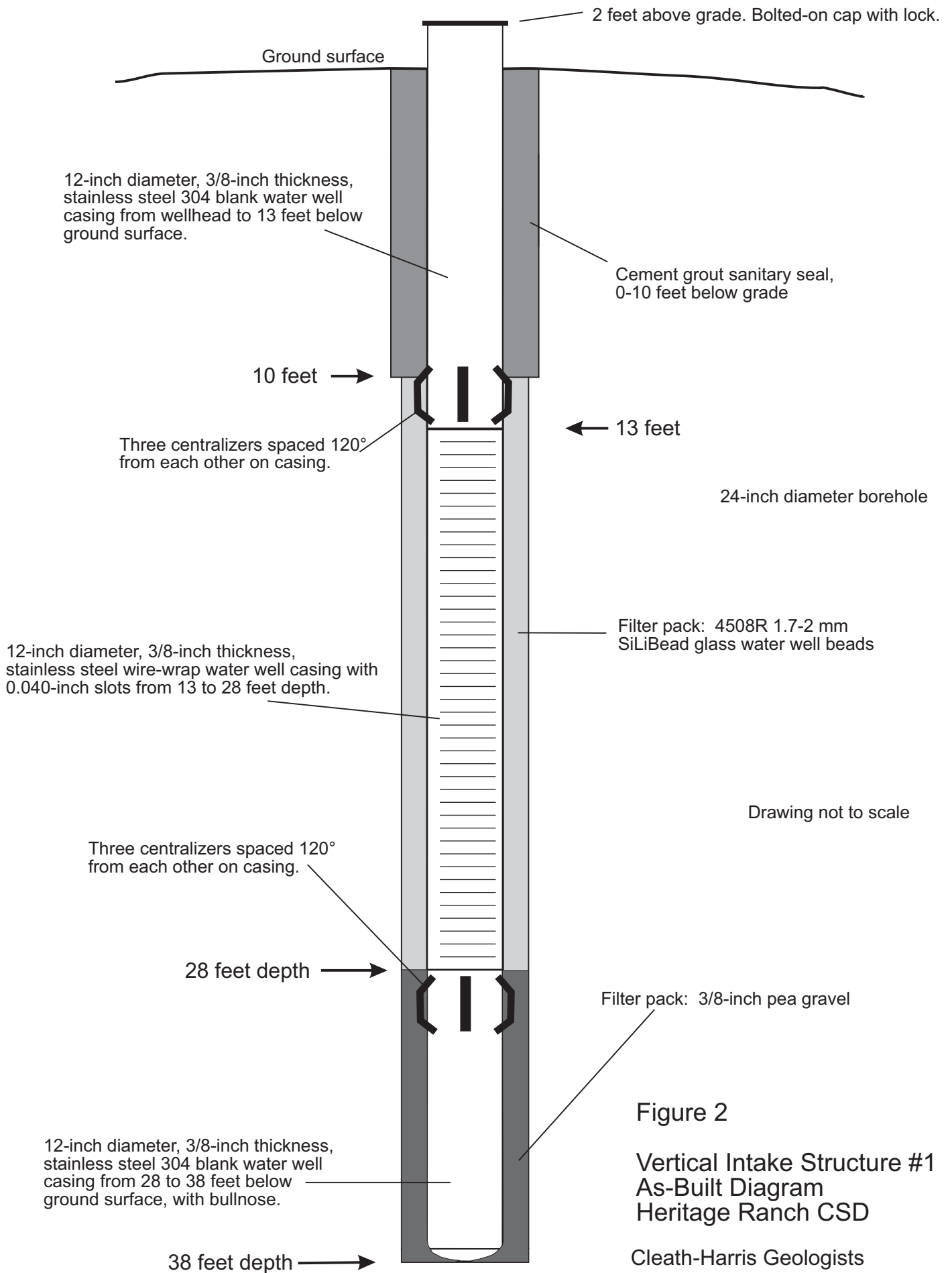


Figure 2

Vertical Intake Structure #1
As-Built Diagram
Heritage Ranch CSD

Cleath-Harris Geologists



Development and Testing

The Vertical Intake Structure was pump developed on November 9, 2020 to remove any remaining polymer and to clear the well of sand and mud. The night before, two cups of liquid bleach were poured into the well to break up any remaining polymer in the hole. Produced water was pumped to a percolation pit located 100 feet away from the river against the hillside. The test pump was installed to a depth of 30 feet. Pump and surge development was reported to have been done at 65-85 gallons per minute (gpm), there was no flowmeter installed.

An 8-hour constant discharge test was completed on November 10, 2020 from 8 am to 4 pm. The average pumping rate was 86 gpm, and total water level drawdown was 6 feet. Water level measurements in Appendix D were taken from the top of the casing, which is two feet above ground surface. Water quality samples were collected by HRCSD towards the end of the test. Discharged water was routed to the same percolation pond, which had dried up overnight since development.

Water Quality Results

Dissolved and total organic carbon analyses of the produced water were performed as a reference for the water treatment system. HRCSD does regular testing of the river water with a wider spectrum of analyses, and these two analytes were the only ones needed by HRCSD for preliminary water quality evaluation of the new structure. The results of the analyses are in Appendix C.

Design Flow

The water levels recorded during the constant discharge test show initial drawdown followed by very little fluctuation due to a recharge boundary at the Nacimiento River (Appendix D). Using the calculated specific capacity of 14.3 gallons per minute per foot, and a maximum allowable drawdown of nine feet, the constant-rate discharge test indicates that the well is capable of yielding up to 130 gpm of maximum discharge, provided there is surface water flow in the river. Maximum flow calculations are as follows:

$$86 \text{ gpm} / 6 \text{ feet of drawdown} = 14.3 \text{ gpm/ft specific capacity}$$

$$\text{Max recommended drawdown} = 9 \text{ feet (15 feet below ground surface - 6 feet static)}$$

$$x \text{ gpm} / 9 \text{ feet} = 14.3 \text{ gpm/foot}$$

$$x \text{ gpm} = 128.7 \text{ gpm}$$



The maximum recommended drawdown of nine feet (15 feet below ground surface) was based on a review of the site lithology. The basal alluvial gravels were logged from 15 to 24 feet depth, and maintaining saturation of these gravels is recommended to minimize declines in aquifer transmissivity and specific capacity. For sustained discharge, CHG recommends a pump design flow rate of 110 gpm from a pumping water level of 14 feet below ground surface, with the permanent pump set at a depth of 30 feet.

Summary

A new Vertical Intake Structure for the Heritage Ranch Community Services District was drilled and completed on November 4, 2020, as a supplement to the existing water diversion gallery that serves the community. It is constructed with 12-inch diameter stainless steel casing to a depth of 38 feet, with a screened interval from 13-28 feet below ground surface. This new structure is estimated to be capable of producing 130 gpm for the Heritage Ranch Water System.

Respectfully submitted,

CLEATH-HARRIS GEOLOGISTS, INC

Andrea M. Berge, PG #9734
Project Geologist

Appendix A

Well Drilling and Construction Information

Well Completion Report
Lithologic Log

State of California
Well Completion Report
 Form DWR 188 Complete 12/29/2020
 WCR2020-016210

Owner's Well Number 1 Date Work Began 11/04/2020 Date Work Ended 11/13/2020
 Local Permit Agency San Luis Obispo County Environmental Health Services
 Secondary Permit Agency _____ Permit Number 2020_116 Permit Date 10/20/2020

Well Owner (must remain confidential pursuant to Water Code 13752)	Planned Use and Activity
Name <u>XXXXXXXXXXXXXXXXXXXX</u>	Activity <u>New Well</u>
Mailing Address <u>XXXXXXXXXXXXXXXXXXXX</u> <u>XXXXXXXXXXXXXXXXXXXX</u>	Planned Use <u>Water Supply Public</u>
City <u>XXXXXXXXXXXXXXXXXXXX</u> State <u>XX</u> Zip <u>XXXXX</u>	

Well Location	
Address _____	APN <u>012-371-004</u>
City _____ Zip _____ County <u>San Luis Obispo</u>	Township <u>25 S</u>
Latitude <u>35</u> <u>45</u> <u>29.6823</u> N Longitude <u>-120</u> <u>52</u> <u>23.9768</u> W	Range <u>10 E</u>
Deg. Min. Sec. Deg. Min. Sec.	Section <u>15</u>
Dec. Lat. <u>35.7582451</u> Dec. Long. <u>-120.8733269</u>	Baseline Meridian <u>Mount Diablo</u>
Vertical Datum _____ Horizontal Datum <u>WGS84</u>	Ground Surface Elevation <u>610</u>
Location Accuracy _____ Location Determination Method _____	Elevation Accuracy <u>10 Ft</u>
	Elevation Determination Method <u>GPS</u>

Borehole Information	
Orientation <u>Vertical</u> Specify _____	
Drilling Method <u>Auger</u> Drilling Fluid <u>Polymer</u>	
Total Depth of Boring <u>38</u> Feet	
Total Depth of Completed Well <u>38</u> Feet	

Water Level and Yield of Completed Well	
Depth to first water <u>8</u> (Feet below surface)	
Depth to Static _____	
Water Level <u>8</u> (Feet) Date Measured <u>11/09/2020</u>	
Estimated Yield* <u>100</u> (GPM) Test Type <u>Pump</u>	
Test Length <u>8</u> (Hours) Total Drawdown <u>6</u> (feet)	
*May not be representative of a well's long term yield.	

Geologic Log - Free Form		
Depth from Surface	Feet to Feet	Description
0	5	Sand and Gravel
5	15	Gravel and Sand, fine rounded white and clear quartz gravel
15	24	Gravel with Clay
24	29	Shale and Clay
29	38	Shale Bedrock; dark gray-black, very hard, angular up to 2-inch diameter fragments of banded slightly calcareous shale

**VERTICAL INTAKE STRUCTURE #1
HERITAGE RANCH COMMUNITY SERVICES DISTRICT**

Date: November 4, 2020

Location: Off Bluegill Drive in Paso Robles, California, at the end of the utility road on the Nacimiento River next to the booster station.

Elevation: Approximately 615 feet above mean sea level (based on topographic map)

Latitude: 35.759050 °; Longitude: 120.875340°

Geologist: Andrea Berge

Drilling company: All-American Drilling, Inc.

Drilling method: Telescoping flight auger

Pilot Hole diameter: 24 inches; ground surface to 38 feet depth

Total depth: 38 feet

Lithologic Log

Depth to top and bottom in feet

<u>Top</u>	<u>Bottom</u>	<u>Thickness</u>	<u>Description</u>
0	10	10	Sand & Gravel; light brown to gray-brown; medium to coarse, well rounded white, gray and clear quartz sand; 1/2-inch to 1-inch diameter sandstone gravel.
10	15	5	Gravel & Sand; medium brown; fine to very fine, rounded white and clear quartz gravel; medium to coarse, rounded white, gray, clear quartz sand.
15	24	9	Gravel with Clay; dark brown-black; fine to very fine, rounded white and clear quartz gravel; stiff non-plastic clay; trace medium quartz sand, black shale fragments.
24	29	5	Shale & Clay; dark gray-black; hard, angular, sharp fragments of shale; very hard to stiff, non-plastic, calcareous clay, strong odor.
29	38	9	Shale Bedrock; dark gray-black; very hard, angular, up to 2-inch diameter fragments of banded, slightly calcareous shale.

Total Depth: 38 feet

Appendix B

Construction Materials Documentation

STRAIGHT BILL OF LADING

ORIGINAL - NOT NEGOTIABLE

I. P. S.

Date 10-28-20

(Name of Carrier)	
TO: Consignee <i>All American Drilling</i>	FROM: Shipper <i>I. P. S.</i>
Address	Address <i>5303 Rosedale Hwy Bakersfield, CA 93308</i>

Quantity	HM*	Description of Articles	Weight (Subject to correction)
<i>2</i>		<i>12 3/4 x .375 New Stainless Steel Pipe 304L with mid weld & lugs & collars</i>	
<i>1</i>		<i>12 3/4 Continuous wire wrap screen</i>	

When transporting hazardous materials include the technical or chemical name for n.o.s. (not otherwise specified) or generic description of material with appropriate UN or NA number as defined in US DOT Emergency Communication Standard (HM-126C). Provide emergency response phone number in case of incident or accident in box above.

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning a person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms

and conditions in the governing classification on the date of shipment.

Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

NOTICE: Freight moving under this Bill of Lading is subject to the classifications and lawfully filed tariffs in effect on the date of the Bill of Lading. This notice supersedes and negates any claimed, alleged or asserted oral or written contract, promise, representation or understanding between the parties with respect to this freight, except to the extent of any written contract which establishes lawful contract carriage and is signed by authorized representatives of both parties to the contract.

SHIPPER <i>I. P. S.</i>	CARRIER <i>[Signature]</i>
PER <i>J. Brimmer</i>	PER <i>[Signature]</i>
DATE <i>10-28-20</i>	DATE

HAZARDOUS MATERIALS MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS REFERENCED IN 49CFR/172.202.

STRAIGHT BILL OF LADING

ORIGINAL - NOT NEGOTIABLE

I.P.S.

Date 10/28/10

TO: Consignee <i>ALL AMERICAN PARTS</i>		FROM: Shipper <i>INDEPENDENT PIPE</i>	
Address <i>SANTA MARIA CA</i>		Address <i>5303 Rosedale Way Bakersfield CA</i>	

Quantity	HM*	Description of Articles	Weight (Subject to correction)
<i>2</i>	<i>bags</i>	<i>1600# GRAVEL</i>	
<i>1</i>	<i>unit</i>	<i>balls</i>	
		<i>[Signature]</i>	

When transporting hazardous materials include the technical or chemical name for n.o.s. (not otherwise specified) or generic description of material with appropriate UN or NA number as defined in US DOT Emergency Communication Standard (HM-126C). Provide emergency response phone number in case of incident or accident in box above.

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning an person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of said property over all or any portion of said route to destination and as to each party at any time interested in all or any said property, that every service to be performed hereunder shall be subject to all the Bill of Lading terms

and conditions in the governing classification on the date of shipment. Shipper hereby certifies that he is familiar with all the Bill of Lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns. NOTICE: Freight moving under this Bill of Lading is subject to the classifications and lawfully filed tariffs in effect on the date of the Bill of Lading. This notice supersedes and negates any claimed, alleged or asserted oral or written contract, promise, representation or understanding between the parties with respect to this freight, except to the extent of any written contract which establishes lawful contract carriage and is signed by authorized representatives of both parties to the contract.

SHIPPER <i>I.P.S.</i>	CARRIER
PER <i>Sam Probst</i>	PER <i>*</i>
DATE <i>10/28/10</i>	DATE

HAZARDOUS MATERIALS MARK WITH "X" TO DESIGNATE HAZARDOUS MATERIALS AS REFERENCED IN 49CFR/172.202.



INDEPENDENT PIPE
 661.325.0398
 5303 Rosedale Highway
 Bakersfield, CA 93308
 www.indps.com

TALLY NO. 9851
 TALLY DATE 10-28-20

TALLY

RECEIVING SHIPPING OTHER

VENDOR/CUSTOMER All American Drilling

ITEM	DESCRIPTION O.D. AND WALL THICKNESS REQUIRED	FOOTAGE	WEIGHT	PIECES
1	12 3/4 x .375 New Stainless Steel Pipe			2
2				
3	12 3/4 x Continuous Wire Wrap screen			1
4				
5				
6				

TTL PCS. _____ TTL WT. _____

12 3/4 x .375				12 3/4 Screen							
1	15'-3	1	E59A	1	18'-3	1	NA	1		1	
2	10'-10	2	E59A/522668	2		2		2		2	
3		3		3		3		3		3	
4		4		4		4		4		4	
5		5		5		5		5		5	
6		6		6		6		6		6	
7		7		7		7		7		7	
8		8		8		8		8		8	
9		9		9		9		9		9	
10		10		10		10		10		10	
11		11		11		11		11		11	
12		12		12		12		12		12	
13		13		13		13		13		13	
14		14		14		14		14		14	
15		15		15		15		15		15	
16		16		16		16		16		16	
17		17		17		17		17		17	
18		18		18		18		18		18	
19		19		19		19		19		19	
20		20		20		20		20		20	
TTL	26'-1	TTL		TTL	18'-3	TTL		TTL		TTL	

CARRIER NAME: _____ TIME - IN _____
 TRAILER #: _____ TIME - OUT _____
 LOADED / UNLOADED BY: J Brown COMMENTS _____
 TALLIED BY: _____



TROESH COLEMAN PACIFIC, INC.

2280 Hutton Road
Nipomo, CA 93444

Invoice

Date	Invoice #
11/4/2020	17558

Bill To
All American Drilling, Inc. 2361 A St. Santa Maria, CA 93455

S.O. No.	P.O. Number	Rep
	50500 - hrcasb	Sara

Item	Description	Quantity	U/M	Price	Amount
3/8" GPS Pea Gra...	3/8" GPS Pea Gravel	2	1yrd	55.00	110.00T
Discount	Discount			-10.00%	-11.00

Customer Signature _____	Subtotal	\$99.00
	Sales Tax (7.25%)	\$7.18
Thank You for Your Business!	Total	\$106.18
	Payments/Credits	\$0.00
Office: 805-922-9993 Fax: 805-928-1196 Website: www.troeshcoleman.com	Balance Due	\$106.18



No. 11241

Triple J Ready Mix

SOLD BY
WEIGHED/
MEASURED AT: **1860 W. BETTERAVIA RD, SANTA MARIA, CA 93455**
PH: 805-623-5945 FAX: 805-982-2089

Santa Maria, Ca

**"Superior Quality,
Value & Service
From a Locally
Owned Company"**

Five (5) min. per yard free unloading time allowed. Additional unloading time charged at current hourly truck rate.
*Additional water added to Concrete will reduce its strength. Any water added over the ordered slump is done at customers risk.

**WE MAKE ALL DELIVERIES INSIDE CURB AND ON LOT AT CUSTOMERS RISK ONLY
AND ACCEPT NO RESPONSIBILITY FOR DAMAGES RESULTING FROM SUCH DELIVERY.**

IT IS CUSTOMERS RESPONSIBILITY TO HANDLE THESE MATERIALS SAFELY AND PROPERLY.

If buyer fails to pay the amount owed when due, buyer agrees to pay monthly service charges equal to 1 1/2% per month (18% per annum) of the outstanding balance of principal due as liquidated damages. A SERVICE CHARGES of \$20 will be charged on any returned check.

Necessary ATTORNEY FEES, COLLECTION AND SUIT COSTS will be charged on any unpaid bills.

WARNING: Materials are irritating to the skin and eyes because they contain Portland Cement, so wear rubber boots and gloves. Prolonged contact may cause burns. Avoid contact with eyes and prolonged contact with skin. In case of contact with skin or eyes flush thoroughly with water. If irritation persists, get medical attention. Precaution must be observed because alkali burns occur with little warning and little heat is sensed.

TIME LOADED	2:03 PM
ARRIVE JOB	
START POUR	
END POUR	
ARRIVE PLANT	

WATER ADDED AT JOB:	GALLONS	RECEIVED BY:
----------------------------	----------------	---------------------

CUSTOMER ID ALLDRI	PHONE NUMBER	JOB P.O. NUMBER	DATE 11/4/20	TICKET 11241
-----------------------	--------------	-----------------	-----------------	-----------------

SOLD TO ALL AMERICAN DRILLING INC	DELIVER TO BLUEGILL X NACIMENTO LAKE DR PASO ROBLES
--------------------------------------	--

QUANTITY THIS LOAD	QUANTITY ORDERED	QUANTITY DELIVERED	PRODUCT CODE	PRODUCT DESCRIPTION	UNIT OF MEASURE	UNIT PRICE	EXTENDED PRICE
4.00	4.00	4.00	103000	10.3 SACK SLURRY MIX M	yd		
1.00	1.00	1.00	SHORTLOAD	3 SHORT LOAD FEE 3-4 YAR	/L		
4.00	4.00	4.00	2303	RETARDER @ 15 OZS	yd		
-1.00	1.00	1.00	ENV SUR	ENVIRONMENTAL SURCHARE	/L		

STAND BY CHARGE	TOTAL MINUTES	ALLOWED MINUTES	CHARGED MINUTES	SUB TOTAL SALES TAX STAND BY OTHER TOTAL
			@ /MINUTE	
No. 11241	SLUMP: 7.00 in		15:27	

WEIGHMASTER CERTIFICATE	Triple JJJ Ready Mix	WEIGHMASTER
THIS IS TO CERTIFY THAT THE ABOVE DESCRIBED COMMODITY WAS WEIGHED, MEASURED, OR COUNTED BY A WEIGHMASTER, WHOSE SIGNATURE IS ON THIS CERTIFICATE, WHO IS A RECOGNIZED AUTHORITY OF ACCURACY, AS PRESCRIBED BY CHAPTER 7 (COMMENCING WITH SECTION 12700) OF DIVISIONS OF THE CALIFORNIA BUSINESS AND PROFESSIONS CODE, ADMINISTERED BY THE DIVISION OF MEASUREMENT STANDARDS OF THE CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURE.	BY ALEX AHUMADO	DEPUTY

Truck	Driver	User	Disp	Ticket Num	Ticket ID	Time	Date
88	J-88	AHUMADO		11241		14:03	11/4/20
Load Size	Mix Code	Returned	Qty	Mix Age	Seq	Load ID	
4.00 yd	103000				D	16	
Material	Design Qty	Required	Batched	% Var	% Moisture	Actual	Wat
TYPE II	969.0 lb	3876.0 lb	3880.0 lb	0.10%			
WATER	65.00 gl	148.84 gl	149.00 gl	0.10%		149.00	gl
SAND	2000 lb	8260 lb	8180 lb	-0.97%	3.25% M	31	gl
EUCON DS	15.00 oz	60.00 oz	60.00 oz	0.00%			
Actual	13307 lb	Design 0.560	Water/Cement 0.559 T	Design 260.0 gl	Actual 179.9 gl	To Add: 80.1	
Slump: 7.00 in	Water in Truck: 0.0 gl	Adjust Water: 0.0 gl / Load	Trim Water: 20.0 gl / yd				
Actual W/C Ratio: 0.387	Actual Water: 180 gl	Batched Cement: 3880 lb	Allowable Water: 671 lb				

Appendix C

Water Quality Results



ADK1343

Main Project - e COC
20-6118 Heritage Ranch CSD

Certificate of Analysis

Sample ID: ADK1343-01
Sampled By: Roy Arnold
Sample Description: Vertical Intake Structure

Sample Date - Time: 11/10/2020 - 12:25
Matrix: Water
Sample Type: Grab

BSK Associates Laboratory Fresno
General Chemistry

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Dissolved Organic Carbon	SM 5310C	2.6	0.20	mg/L	1	ADK1137	11/23/20	11/23/20	
Total Organic Carbon	SM 5310C	3.9	0.20	mg/L	1	ADK0964	11/20/20	11/20/20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Appendix D

Sand Test
Pumping Test Data

Sand Production in HRCSD Vertical Intake #1

Day	Time	Elapsed Time	Accumulated Sand	Sand Content
Mo./Day/Yr	hr:min	minutes	milliliters	parts per million
11/10/20	8:00	0	0.00	0
	8:05	5	0.02	2.11
	8:10	10	0.02	0.00
	8:15	15	0.02	0.00
	8:20	20	0.02	0.00
	8:25	25	0.02	0.00
	8:30	30	0.02	0.00
	8:35	35	0.02	0.00
	8:40	40	0.02	0.00
	8:45	45	0.02	0.00
	8:50	50	0.02	0.00
	8:55	55	0.02	0.00
	9:00	60	0.02	0.00
	9:05	65	0.02	0.00
	9:10	70	0.02	0.00
	9:15	75	0.02	0.00
	9:20	80	0.02	0.00
	9:25	85	0.02	0.00
	9:30	90	0.02	0.00
	9:35	95	0.02	0.00
	9:40	100	0.02	0.00
	9:45	105	0.02	0.00
	9:50	110	0.02	0.00
	9:55	115	0.02	0.00
	10:00	120	0.02	0.00

0.09

Average ppm over 2-hour test

Well pumping at 86 gpm
 Sand test flow at 0.5 gpm
 Static water level = 6 feet bgs at 8:00 am
 Pumping water level = 12 feet bgs at 10:00 am

Meter reading:
 End 761100
 Start 750800
 Total pumped: 10300
 Ave rate: **86 gpm**

All American Drilling Inc/Fisher Pump & Well Service

2361 "A" Street, Santa Maria, CA 93455

Ph 805 346 2422 Fax 805 346 1844

CA License 1031330



Customer Heritage Ranch CSD

Date: 11/10/2020

Page: 1 of 1

Meter: McCrometer

Static Level: 8

Airline Depth: 30'

Operator Mike H.

Hours / Day: _____

Total Hours: 8

Time	P.P.M.	G.P.M.	Pumping Level	Draw-Down	Engine R.P.M.	Specific Capacity	Guage	Comments
800		86	8	0				14.35 Specific Capacity
805		86	14	6		14.33		
810		86	14	6		14.33		
815		86	14	6		14.33		
820		86	14	6		14.33		
825		68	14	6		14.33		
830		86	14	6		14.33		
835		86	14	6		14.33		
840		86	14	6		14.33		
845		86	14	6		14.33		
850		86	14	6		14.33		
855		86	14	6		14.33		
900		86	14	6		14.33		
930		86	14	6		14.33		
1000		83	14	6		13.83		7611
1030		80	14	6		13.33		7635
1100		85	14	6		14.16		7662
1200		91	14	6		15.16		7717
100		86	14	6		14.33		7769
130		86	14	6		14.33		
200		90	14	6		15		7823
300		86	14	6		14.33		7875
330		86	14	6		14.33		
400		90	14	6		15		7929

14.3517391



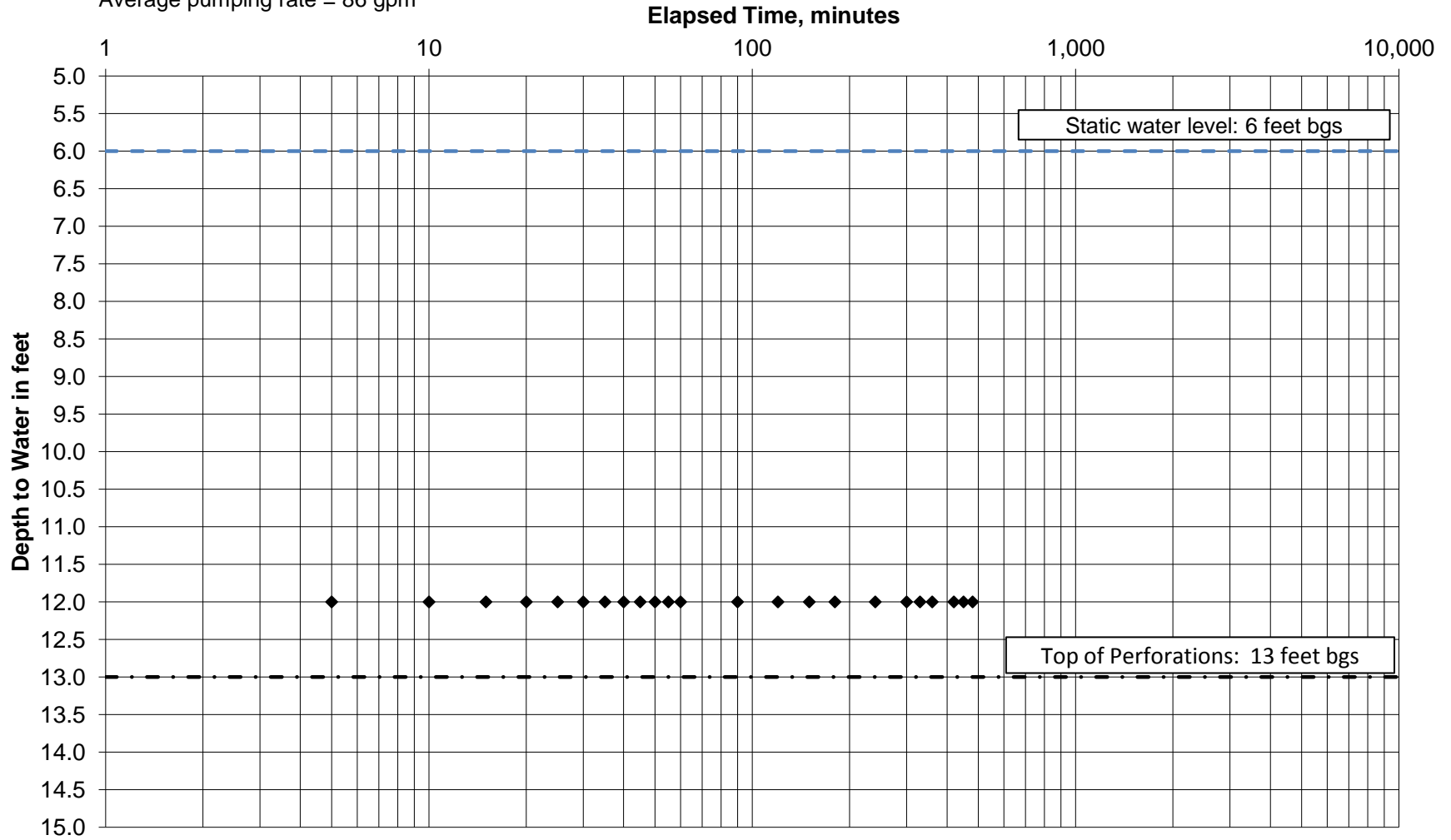
Pumping Test (8-hour), HRCSD Vertical Intake Structure #1

Day	Time	Elapsed Time	Depth to Water (original toc)	Depth to Water (adj for bgs)	Drawdown	Totalizer	Rate
Mo./Day/Yr	hr:min	minutes	feet	feet	feet	Gal *100	GPM
11/10/20	8:00	0	8	6	0.00	0	86
	8:05	5	14	12	6.00		86
	8:10	10	14	12	6.00		86
	8:15	15	14	12	6.00	7520	86
	8:20	20	14	12	6.00		86
	8:25	25	14	12	6.00		86
	8:30	30	14	12	6.00	7533	86
	8:35	35	14	12	6.00		86
	8:40	40	14	12	6.00		86
	8:45	45	14	12	6.00		86
	8:50	50	14	12	6.00	7550	86
	8:55	55	14	12	6.00		86
	9:00	60	14	12	6.00		86
	9:30	90	14	12	6.00	7585	86
	10:00	120	14	12	6.00	7611	83
	10:30	150	14	12	6.00		80
	11:00	180	14	12	6.00		85
	12:00	240	14	12	6.00		91
	13:00	300	14	12	6.00	7769	86
	13:30	330	14	12	6.00		86
	14:00	360	14	12	6.00	7823	90
	15:00	420	14	12	6.00	7875	86
	15:30	450	14	12	6.00		86
	16:00	480	14	12	6.00	7929	90
average rate							86.2 gpm

**Pumping Test (8-hour)
Vertical Intake #1
Heritage Ranch CSD
11/10/2020**

Perforated interval:
13-28 feet depth

Average pumping rate = 86 gpm



Appendix E

Photographs



1: Mobilizing the rig and attaching the flight auger



2: Breaking ground.



3: The stainless steel casing and the glass bead supersacks.



4: Installing the stainless steel screened interval.



5: Placing the glass bead filter pack.



6: The completed well with cement seal showing at the surface.

SECTION 01 20 00

PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

- 1.01 This Section describes the methods of measurement and payment for the specific bid items. All other provisions of the Contract Documents which relate to measurement and payment are applicable, except that where conflicts occur between this section and other provisions of the technical specifications or reference specifications, this measurement and payment section shall prevail.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 GENERAL

- A. All work shown, described, or otherwise required by the Contract Documents, shall be included within the given bid items.
- B. Payment for all bid items shall include full compensation for all equipment, materials, labor, tools, trucking, and all other incidental work necessary to construct complete and operational systems which conform to the Contract Documents.

3.02 MEASUREMENT AND PAYMENT FOR BID ITEMS

- A. All lengths shall be measured in a horizontal plane (plan view dimensions), unless otherwise specified. All areas measured shall be based on the specified measurement definition included in each bid item description.
- B. All work shown, described, or otherwise required by the Contract Documents, shall be included within the given bid items.
- C. Basis for the submitted bid shall be on the quantities shown for the items on the Bid Sheet.
- D. Unit definitions of Measurement and Payment
1. "Lump Sum", or "LS", shall mean a single Lump Sum Payment for the identified bid item. Partial payments may be made, based on the Engineer's estimate of the percent completion of the specified item. Provide schedule of values for lump sum bid items with pay designation of "SV" on the bid schedule. Refer to Section 01 30 00, Administrative Requirements, Para. 1.04 for submittal requirements for Schedule of Values.

2. "Each" shall mean the actual number of identified bid items provided. Payment for the identified bid item will be based on providing each item, complete and in place in accordance with the contract documents.
3. Measurable units of quantity expressed in "Linear Feet" or "LF"; "Cubic Yard or CY"; "Ton"; "SF" or "SY" shall mean the number of indicated measurable quantities of the bid item. Payment for the identified bid item will be based on actual and measured quantities of the bid item installed.
4. For quantity changes for unit price work, refer to the General Conditions, Paragraph 11.03, and the Supplemental Conditions, Paragraph 14.7.

E. Final Pay Quantities.

1. Bid items that are designated a Final Pay Quantity bid item by having the notation (F) or (S-F) shown on the bid sheet or by designation in this Section 01 20 00, Measurement and Payment.
2. The quantity shown on the bid sheet for a Final Pay Quantity shall be the final pay quantity used for the purpose of payments, unless the dimensions of any portion of the item are modified by the Engineer, or the item or any portion of the item is eliminated.
3. If the dimensions of any portion of a Final Pay Quantity bid item are changed, and the changes result in an increase or decrease in the quantity of the item, the final pay quantity will be revised by the change in quantity.
4. If a portion of a Final Pay Quantity item, or the item is eliminated, the final pay quantity will be adjusted by the quantity eliminated.
5. The estimated quantity shown on the bid sheet for a Final Pay Quantity bid item shall be considered as an estimate only and no guarantee is made that a quantity computed based on the details and the plans, will equal the estimated quantity shown on the bid sheet. No allowance is made in the event that a computed quantity does not equal the estimate quantity.
6. In the case of a discrepancy between a quantity shown on the plans, and an estimated quantity shown on the bid sheet for a Final Pay Quantity item, payment will be based on the quantity shown on the bid sheet.

3.03 BASE BID

- A. The base bid is comprised of the following:
- Bid Item No. 1 – Mobilization/Demobilization and Site Cleanup
 - Bid Item No. 2 – Vertical Intake Improvements, Pipeline, and Appurtenances
 - Bid Item No. 3 – Tie-In to Existing 4" HDPE Emergency Supply Pipeline
 - Bid Item No. 4 – Electrical, Instrumentation and Controls

Bid Item No. 1 – Mobilization/Demobilization and Site Cleanup

- A. Units: Lump Sum
- B. Measurement: Partial payments based on Engineer's determination, and per Item C of this Pay Item.
- C. Payment: Payment includes full compensation for all work required to complete the contract requirements for mobilization/demobilization and site cleanup.

1. No payment for mobilization/demolition and site cleanup work will be made until all the listed items have been completed to the satisfaction of the Owner.
 2. Value for this pay item on first progress payment shall not exceed 50% of lump sum value.
 3. Intermediate partial payments based on Engineer's determination, and total value approved for payment shall not exceed actual percent complete of Contract Work.
 4. Final pay request shall include the remaining 10% of value for this pay item.
- D. Scope of bid item: Mobilization/demobilization and site cleanup includes, but is not limited to the following:
1. Obtaining all required bonds and insurance.
 2. Posting all OSHA required notices and establishment of safety programs and injury and illness prevention plan (IIPP).
 3. Moving onto the site of all Contractors' equipment required for project operations.
 4. Arranging for and erection of Contractor's work and storage yard.
 5. Providing and installing temporary utilities, communication facilities.
 6. Providing and installing construction water facilities.
 7. Providing on-site sanitary facilities.
 8. Designation of the Contractor's superintendent who will be present at the job site during drilling and development/installation operations.
 9. Submittal of work plan describing the order of Work to ensure proper installation and testing of work, coordination with Owner's staff, local agency coordination, proper management and disposal of construction materials, and other key aspects of the Work.
 10. Submittal of the work schedule required in Section 01 30 00, Administrative Requirements.
 11. Documenting construction progress, including pre- and post-construction photographs, and progress photographs.
 12. Preparing and submitting field record drawings.
 13. USA notifications, potholing and verifying location of existing utilities and improvements.
 14. Control of surface of ground and surface waters, sediment and dust control.
 15. Removing equipment, personnel, temporary facilities, and other construction resources at job completion.
 16. Site cleanup, restoration of work site.
 17. All other incidental work as specified in Division 01 of the Specifications, and as necessary to complete mobilization/demobilization and site cleanup in accordance with the Contract Documents.

Bid Item No. 2 – Vertical Intake Improvements, Pipeline, and Appurtenances

- A. Units: Lump Sum

- B. Measurement: Lump sum, partial payments based on Engineer's determination.
- C. Payment: Payment includes full compensation for all work required to complete the contract requirements for vertical intake improvements, pipeline, and appurtenances.
- D. Scope of bid item: vertical intake improvements and aboveground piping and appurtenances includes, but is not limited to the following:
 - 1. All work defined in Sections 33 11 35 and 33 34 00, and as shown on the drawings, for the provision and installation of:
 - a. Vertical intake submersible vertical turbine pump
 - b. Pressure transducer and drop pipe conduit
 - c. Vertical intake casing seal and penetrations
 - d. Vertical intake aboveground steel and ductile iron piping, valves and fittings
 - e. Propeller flow meter and transmitter
 - f. Air and vacuum valve, sampling port and pressure indicator
 - g. Vertical Intake concrete pad and security fencing/gates
 - h. Underground/buried raw water pipe as shown on the drawings, adapters, and fittings.
 - i. Pipe couplings, thrust blocks, restrained joints.
 - 2. Trenching, hand-digging, exposing, backfilling, compaction, including existing grade restoration.
 - 3. Hauling and disposing of all waste, unsuitable, and excess material in accordance with the Contract Documents.
 - 4. Verification of adjacent utilities.
 - 5. Pressure testing per Sections 01 75 00 and 33 34 00.
 - 6. All other incidental work necessary to complete vertical intake improvements, pipeline, and appurtenances in accordance with the Contract Documents.

Bid Item No. 3 – Tie-In to Existing 4” HDPE Emergency Supply Pipeline

- A. Units: Lump Sum
- B. Measurement: Lump sum, partial payments based on Engineer's determination.
- C. Payment: Includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work required tie-in to existing 4” HDPE emergency supply pipeline in accordance with the contract documents.
- D. Scope of bid item: tie-in to existing 4” HDPE emergency supply pipeline includes, but is not limited to the following:
 - 1. All work defined in Section 33 34 00, and as shown on the drawings, for the construction of:

- a. Tie in to existing 4" HDPE pipeline and connection to new 4" ductile iron pipe
 - b. Gate and check valves
 - c. 4" tee, blind flange, 2" threaded nipple, male cam lock fitting (2" blowoff assembly)
 - d. Valve vault and cover
 - e. Excavation, backfill, bedding, compaction, and surface restoration.
2. All other incidental work necessary to complete tie-in to existing 4" HDPE emergency supply pipeline in accordance with the Contract Documents.

Bid Item No. 4 - Electrical, Instrumentation and Controls

- A. Units: Lump Sum (LS)
- B. Measurement: Partial payments based on Engineer's determination
- C. Payment includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work required to install complete and in place the electrical, instrumentation and controls in accordance with the contract documents.
- D. Scope of bid item: electrical, instrumentation & controls includes, but is not limited to the following:
 1. All electrical, instrumentation and controls including:
 - a. All work described on the electrical construction documents which includes Division 26 of the Technical Specifications and related or referred to Specifications, and all electrical drawings and details.
 - b. Vertical intake pressure transducer electrical supply and control wiring, conduit.
 - c. Propeller flow meter control wiring and conduit.
 - d. Submersible pump power supply and controls wiring and conduit.
 - e. Buried conduits, wiring, handholes.
 - f. Junction boxes and pull boxes.
 - g. Coordination with PG&E, communications companies, and compliance with their construction requirements.
 - h. Provisions for temporary electrical service during construction.
 - i. Electrical service to instrumentation and controls equipment specified.
 2. All other incidental work necessary to install electrical, instrumentation and controls in accordance with the Contract Documents.

3.04 TESTING

- A. The District will perform or will contract for the performance of the following tests. The District will pay for the costs of the initial tests. Should test results show that any work, construction, materials, or methods is unacceptable, the Contractor shall pay for all costs associated with any necessary retesting before or after corrective measures have been made. Such costs will be deducted from payments due to the Contractor.
 1. Compaction Test and R-Values- Testing for soil compaction and R-Values will be provided by a Soils Engineer under separate contract with the District.
- B. The Contractor shall furnish and pay for all labor, materials, tools, and supplies required to make the following performance tests in the presence of the Engineer:

1. Pipe pressure testing
2. Electrical testing for the electrical system, SCADA system/controls testing.
3. Other Test Required by the Contract Documents

All tests must be passed, and any test reports requested by the District shall be provided to the District prior to acceptance of the work.

END OF SECTION

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 PROJECT CONTROL

- A. The District's Representative will outline and detail communication, correspondence and coordination procedures at the Project pre-construction meeting.
- B. Condition of Work in Place: Inspect and take responsibility for previously prepared or installed work of other contractors before applying subsequent materials or finishes. If work is in unsatisfactory condition, notify the District. Do not proceed until defective work has been corrected.
- C. Coordination:
 - 1. Subletting and Subcontracting Responsibilities: Refer to General Conditions of the Contract for Construction, Article 7.07.
 - 2. Perform and complete checking and coordination before commencing construction in the affected areas.
 - 3. Carefully examine Drawings relating to entire work with actual conditions so that Work will be accommodated in spaces provided. General arrangement and location of elements of various systems is shown on the Drawings or specified. Final locations, levels, etc., shall be governed by actual material size used, by conditions encountered, and by work of all trades. Space conflicts and interferences shall be resolved before work is installed.
 - 4. Utilize the Contract Documents, submittals, and layout drawings of the various trades to check and coordinate the Work so that no interferences or conflicts between trades will occur. This checking and coordination shall be performed and completed before construction is commenced in each affected area.
 - 5. Coordinate the work to assure efficient and orderly sequence of installation of construction elements. District staff will coordinate with the Heritage Ranch Homeowner's Association (HROA) for notifications of the Work. Contractor and Contractor's equipment and work zones shall not encroach beyond the property boundary and easement lines shown on the drawings. .
 - 6. Verify that the characteristics of interrelated operating equipment are compatible, and coordinate all Work required for installing, connecting and placing such equipment into service.

1.02 LOCATIONS, ELEVATIONS, AND LAYOUT OF WORK

- A. Property lines, location ties and dimensions, and well depth/elevations are approximately shown on the Drawings. Prior to installing improvements, the locations shall be approved by District Engineer.
- B. District will lay out public right of way/private property line delineation as part of above improvement location approval.

- C. Lay out the Work and furnish surveys required for alignment and elevations of the Work, and pay all costs therefore. Provide necessary lines, levels, locations, measurements and markers for all on the Work and be responsible for their accuracy.

1.03 SCHEDULES AND MEETINGS

- A. Planning and Scheduling: Provide a project schedule as outlined herein.
- B. Provide updated project schedules per Paragraph 1.03.C below, including realistic activity sequences and durations, allocation of labor and materials, processing of shop drawings, and samples and purchase and delivery of products requiring long lead-time procurement. This schedule will be broken down into activities of 4 weeks maximum duration, with the exception of procurement. Each activity shall be explicit in definition and location of work.
- C. The schedule shall be updated 1) biweekly, 2) whenever work is behind schedule to an extent greater than 14 days, and 3) to add change order work which impacts schedule.
- D. Project and Pre-installation Meetings: Contractor or his duly appointed representative shall attend project meetings at regular intervals as set by the District and shall attend pre-installation meetings as required by pertinent Specification Sections. Attendance shall be limited to the Contractor and his immediate subordinates, subcontractors where so specified, the District, and representatives of the Engineer and Consultants, as requested. District, or District's duly appointed representative, will keep minutes of meetings; with copies sent to all who attend. Meetings shall be held at the job site.

1.04 SCHEDULE OF VALUES

- A. Provide a Schedule of Values for those contract lump sum items identified in the Bid Schedule. Submit Schedule of Values to the Engineer for review and approval within 5 working days following notice to proceed, or at the pre-construction kickoff meeting, whichever occurs first. Schedule of Values will be approved, in writing, by the Engineer before any partial payment will be made for the applicable lump sum items of Work.
- B. Submit to the District for acceptance, in the form directed by or acceptable to the District, a complete schedule of the values of the various portions of the Work, including quantities and unit prices if required by the District, aggregating the Contract Price (except in cases and to the extent that accepted unit prices form the basis for payment). The schedule shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction and to coordinate with the progress schedule required for this Work, and shall be supported by such data to substantiate its correctness as the District may require. Each item in the schedule of values shall include its proper share of overhead and profit. An unbalanced breakdown providing for overpayment to the Contractor on items of Work which would be performed first will not be approved. The schedule of values, when accepted by the District, shall be used only as a basis for the Contractor's applications for payment and not for additions to or deductions from the Contract Price. The initial submittal for the schedule of values shall be provide at the preconstruction conference or within 10 days of the Notice to Proceed, whichever comes sooner.

- C. Determine the quantities required to complete the Work shown on the plans. The quantities and their values shall be included in the cost breakdowns submitted to the Engineer for approval. The Contractor shall be responsible for the accuracy of the quantities and values used in the cost breakdowns submitted for approval. The sum of the amounts for the line items of work listed in each cost breakdown table for the lump sum items shall be equal to the contract lump sum price bid for same items.
- D. No adjustment in compensation will be made in the contract lump sum prices paid for these lump sum bid items resulting from differences between the quantities shown in the cost breakdowns furnished by the Contractor and the quantities required to complete the Work as shown on the plans and as specified in these Technical Specifications.
- E. Individual line item values in the approved cost breakdown tables will be used to determine partial payments during the progress of the Work and as the basis for calculating an adjustment in compensation for the contract lump sum items due to changes in line items of work ordered by the Engineer.

END OF SECTION

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SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 DESCRIPTION

This Section covers requirements for submittals in addition to those stated in elsewhere in the Contract Documents, and forms a part of all other Specification Sections in which submittals are specified or required. Refer to the specific Sections and Divisions of the Specifications for additional submittal requirements.

- A. Submittal Requirements Included in this Section.
1. Number of submittal copies required.
 2. CPM progress schedule.
 3. Shop drawings.
 4. Samples.
 5. Materials lists and equipment data.
 6. Instruction (operation and maintenance) manuals.
 7. Installation instructions.
 8. Seismic calculations.
 9. Record drawings and specifications.
 10. Certificates.
 11. Schedule of values.
- B. Submittal Requirements in General Conditions and Other Sections.
1. Applications for payments, Article 15 of the General Conditions.
 2. Closeout Submittals Article 15 of the General Conditions and Section 01 70 00, Execution and Closeout Requirements
 3. Schedule of testing laboratory services.
 4. Written guarantees and warranties.
 5. Factory test reports.
 6. Manufacturers' certified reports.
 7. System validation test procedures and results.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 SUBMITTAL - GENERAL REQUIREMENTS

All items required to be submitted for review shall be furnished by and at the expense of the Contractor and any work affected by them shall not proceed without such review. Except for record documents, test plans, and instructional manuals for operation and maintenance, submittal shall be approved before the material or equipment covered by the submittal is delivered to the site.

A. Number of Submittals.

1. General. Except for manufacturer's instruction manuals and samples, the District shall require and retain a complete PDF copy of all submittals plus one hard copy, specified or required in this and all other Sections of these Specifications, for Contractor's and Contractor's representatives' use, unless otherwise specifically noted in a specific Specification section. The Contractor may at Contractor's own expense, submit additional hard copies, not to exceed 3, to be reviewed and returned for Contractor's use. For submitted drawings 11 by 17 inches and larger, submittal of a reproducible copy is preferred and encouraged. The reproducible set will be returned to the Contractor marked to show the required corrections or approval.
2. Samples. Provide the number of samples for each material or equipment item in accordance with Paragraph 3.04 herein and as required in the respective section of these Specifications.
3. Manufacturer's Instruction Manuals. Provide the number of copies of the submittals in accordance with Paragraph 3.01A above. Upon approval of the preliminary submittals, deliver one PDF plus 1 hard copy of each manual to the District, unless otherwise specified or directed.

B. Method of Submittal. Equipment which is specified in one section of the Specifications shall not be combined in a single submittal with equipment specified in other Sections of the Specifications, unless unit responsibility for a package system is required. In each transmittal the Contractor shall state the District's Project Number and Name, Name and Address of Contractor, Name and Address of Subcontractor, Manufacturer, Supplier or Distributor as applicable, Plan Reference and Specification Section, Articles, and paragraphs to which the submittal pertains; accompanying data sheets, catalogs, and brochures shall be identified in the same manner. Submittal transmittals shall fully index all items submitted.

C. Piecemeal Submittals. Except for reinforcing steel submittals, piecemeal submittals will be returned unreviewed. However, for mechanical equipment and the like, separate submittals for embedded items, embedded metal work and anchors will be accepted for review.

D. Number of Submittal Re-Reviews. The District will provide required submittal/re-submittal review up to three occurrences per submittal. Contractor shall reimburse the District the cost of District's, District's Representative's, and Engineer's time required for all subsequent reviews beyond three reviews. Such costs for excessive review of

incomplete or non-conforming submittals shall be deducted from Contractor's monthly pay requests at the time such charges are incurred.

- E. Engineer's Submittal Review Schedule. Engineer will review and return submittals within 10 working days from date of receipt from District's Representative. Engineer will review and return re-submittals within 5 working days from the date of receipt from District's Representative.

3.02 NOT USED

3.03 SHOP DRAWINGS

- A. Title Block and Identification. On each shop drawing, provide a space for the Engineer's approval or correction stamp and a title block showing the following:
1. Name and address of Contractor.
 2. Name and address of Subcontractor, manufacturer, supplier, or distributor, as applicable.
 3. Name and address of District.
 4. Date, scale of drawings, and identification number.
 5. Contractor's review and approval stamp.
 6. District's Project Number (if applicable).
 7. Drawing Reference and Specification Section reference.
 8. Project Name.
- B. Preparation and Size. Details and information shall be clearly drawn, dimensioned, noted, and cross referenced. Unless otherwise approved, prepare shop drawings shall be PDF copies. Unless otherwise approved, prepare shop drawings on 8-1/2 by 11 inch sheets or 11 x 17 inch sheets. Refer to Paragraph 3.01.A above regarding use of a reproducible drawing copy.
- C. Data. Unless the following data is included in instruction manuals or equipment data submitted prior to or with the shop drawings, submit with the shop drawings complete catalog and technical data for all manufactured products, materials, machinery, and equipment covered by the shop drawing submittal. Include data showing for each item, as applicable, the following information:
1. Manufacturer's specifications and details.
 2. Applicable technical data and performance curves.
 3. Preparation, assembly, and installation instruction with allowable tolerances.
 4. Connection requirements.
 5. Pre-start-up servicing and operating methods.
 6. Other data and information necessary to demonstrate that the proposed items conform to the Contract Documents.
- D. Information Required. Shop drawings shall contain details and information fully developing the pertinent Contract Document requirements and such other information as may be specified or required for approval, including but not limited to:

1. Related work with cross references to applicable portions of the Contract Documents.
 2. Dimensions, including variations between indicated dimensions and actual conditions.
 3. Physical configurations with critical dimensions for clearance, access, and servicing.
 4. List of materials, including fasteners and connectors.
 5. Structural construction and assemblies, welds shown by AWS symbols, and each fastener and connector shown by type and class.
 6. Grouting work, including grouting space and material.
 7. Concrete foundations and bases for machinery and equipment including joints, joint filler and sealer, and reinforcing.
 8. Anchor bolt details showing type and class, sizes, embedments, projections, and locations measured with respect to permanent structural features. An anchor bolt template shall be shown on the Shop Drawings and shall be furnished unless waived in writing by the District.
 9. Protective coatings and factory finishes fully described as to materials, number of coats, plated and metallic coating finishes, treatments, and similar information, all based on specified requirements. The term "as specified" is not acceptable for this purpose.
 10. Machinery and equipment details. Standard catalog items need not be illustrated in detail, but indicate and detail sizes, supports, and connections.
 11. Location of auxiliary items that are parts of machinery and equipment including sight glasses, petcocks, gauges, lubrication fittings and access, and maintenance monitoring devices.
 12. Piping systems and piping including layout, fittings, valves, appurtenances, hangers and supports, and sleeves.
 13. Electrical equipment showing plans, elevations, sections, arrangements, materials, anchor bolts, supports, weights, wiring and circuit diagrams, internal connections, busses, grounding, conduit spaces, layout of instruments, gauges, meters, and other components.
 14. Underground duct banks showing typical details of conduits, joints, spacers, and means of securing conduits in place during concrete placement.
 15. Dielectric connections, and materials and methods to be used to isolate dissimilar materials.
 16. Full-size lettering layouts for data plate and nameplate inscriptions.
 17. Written descriptions fully describing the operation of all control circuits, start-up sequencing, shutdown sequencing, and alarms.
- E. Details and Connections. Satisfactorily detail all connections required to complete the Work, including details necessary to make indicated or specified additions to existing work or to provide connections for future work. Design connections and parts of strength to withstand, without adverse deflection or stress, all loads or pressures to which they may be subjected and to develop the strength of the members or parts

connected. In no case shall the connections, parts, or details be inferior to those required by the Contract Documents.

- F. Related Work. The term "by others" is not acceptable for the description of related work shown in the shop drawings. Clearly note by name or description the Contractor, Subcontractor, or trade to provide such related Work; where such name or description is missing, it shall be understood and agreed that the Contractor is to furnish and install such related Work.
- G. Clearances. Do not proceed with any related Work that may be affected by piping, machinery, equipment, or other work therein until shop drawings and data showing all components, with acceptable clearances have been approved.
- H. Composite Shop Drawings with Installation Layouts. Prepare and submit drawings, wherever specified or required, to resolve tight or conflicting field conditions. Show dimensional plans and elevations of the materials or equipment of all trades in the involved area or space, and include complete information as to arrangements, locations, clearances, avoidance of interferences, access, sizes, supports, connections, services, assembly, disassembly, and installation. Composite shop drawings and layouts shall be coordinated in the field by the Contractor and his Subcontractors for proper relationship to the Work of all trades, based on field conditions, and shall be checked and approved by them before submittal. Contractor shall have competent technical personnel readily available for such coordinating and checking.

3.04 SAMPLES

- A. Identification. Label or tag each sample or set of samples identifying the manufacturer's name and address, brand name, catalog number, intended use and other data specified in Article 3.01.B herein.
- B. Colors, Patterns, and Textures. For items required to be of selected and approved colors, patterns, textures, or other finish, submit sufficient samples to show the range of shades, tones, values, patterns, textures, or other features corresponding to the instructions and requirements specified.
- C. Field-Applied Paint and Coatings. Submit samples of finishes at least 60 days prior to start of such finishing operations in conformance with requirements specified in Section 09 90 00, Painting and Coating.
- D. Factory Finish Colors. Colors of material specified to be furnished with a factory finish are subject to approval. Submit duplicate samples of factory finishes showing the full range of available colors for selection and approval when requested by the District.

3.05 MATERIALS LISTS AND EQUIPMENT DATA

Materials lists and equipment data shall be submitted for all items proposed to be incorporated into the Work. In determining acceptability, consideration will be given to the availability of maintenance and replacement parts and materials, the availability of manufacturer's technical representatives, other factors that relate to the maintenance and repair of installed items without excessive inconvenience to the District, guarantees and warranties, as well as determination of conformance with the Contract Documents.

- A. Material Lists. Submittal copies of Material Lists shall be provided where specified in other Sections, and the number of copies submitted shall be as stated in Paragraph 3.01.A herein.
- B. Equipment Data. Submittal copies of equipment data shall be provided in accordance with other Sections and the number of submittals shall be as stated in Paragraph 3.01.A herein. Submittals for equipment incorporating logic circuits shall include a draft of a detailed theory of operation. Data shall be submitted in sets covering complete systems or functioning units.

3.06 INSTRUCTION (OPERATIONS AND MAINTENANCE) MANUALS

Instruction Manuals shall comply with the requirements of other Sections, and the following

- A. The manufacturer's instruction, or O&M, manuals required by these Specifications shall be specific to this project and to the equipment being furnished.
- B. It is the intent that the instruction manuals be a complete document on the respective equipment item(s), independent of any separate shop drawing submittals, for the information and use by operation and maintenance personnel. As such, the manuals shall contain at a minimum, all approved shop drawing data necessary to describe the respective equipment and conform to the requirements of these Contract Documents, wiring diagrams and detailed circuit operation description; and performance curves and data.
- C. The index furnished for each manual shall address all of the content categories to facilitate their being located by the reader. Categories which are considered to be not applicable or not required shall be identified as such in the index.
- D. For each class of equipment or machinery identify the name, address and telephone number of the manufacturer, supplier and closest authorized service organization or company. Include this information at the beginning of each respective equipment manual.

3.07 INSTALLATION INSTRUCTIONS

- A. Submit two copies of manufacturers' installation instructions for material and equipment incorporated in the Work to the extent specified in other Sections and Divisions of the Specifications or requested by the District for its review. Installation instructions will be reviewed for general adequacy only. After review, the Contractor shall distribute copies to all those involved with the installation.
- B. Submit this information sufficiently in advance of the Work to ensure proper coordination of the respective equipment installation into the Work. In no case furnish this information later than delivery of the respective material or equipment. Payment for materials and equipment delivered will not be approved without submittal of the respective manufacturer's installation instructions.

3.08 EARTHQUAKE DESIGN AND RESTRAINT

- A. All manufactured equipment supplied under this Contract shall be designed, constructed and attached to resist stresses produced by seismic forces specified in this Section. Equipment that does not vibrate during normal operation shall be rigidly attached. Equipment that vibrates during normal operation shall be attached by means

of isolators with mechanical stops that limit movement in all directions unless it can be demonstrated by calculations that such stops are not required. Equipment or portions of equipment that move during normal operation shall be restrained with mechanical devices that prevent displacement unless it can be demonstrated by calculations that such restraints are not required.

- B. Work Included. The work included in this Paragraph includes, but is not limited to, the following: All machinery, mechanical and electrical equipment, instrumentation panels, electrical panels, lighting fixtures, and all other manufactured equipment.
- C. Minimum Earthquake Forces. Except as provided herein, the minimum earthquake forces shall be those prescribed for the latest edition of the California Building Code
- D. Contractor shall include seismic calculations with submittals of shop drawings, details and data specified in technical Sections of these Specifications.
- E. Seismic calculations shall be sealed and signed by a Professional Engineer (Civil and/or Structural) registered in the State of California.

3.09 OTHER SUBMITTALS

- A. Provide copies of other submittals such as calculations, manufacturer's certified reports, operational demonstration and system validation reports specified in other Sections and Divisions of the Specifications.

3.010 STORAGE INSTRUCTIONS

- A. For each equipment and material item furnished, provide for the District's records 2 copies of the manufacturer's recommended instructions for storage of the respective equipment or material. The instructions shall address conditions both before installation and (for mechanical, electrical and instrumentation equipment) after installation but before placing into continuous operation.
- B. Submit manufacturer's storage instructions either prior to delivery of the material/equipment or with the request for payment of materials delivered. Payment for materials delivered will not be approved without submittal of the manufacturer's storage instructions.

3.011 FORM OF APPROVAL

- A. Copies of submittals which are returned to the Contractor and which are subject to approval will be marked with notations noted below. These notations are defined as follows:
 - 1. NET. No Exceptions Taken: Conforms to intent of the design plans and specifications. Accepted subject to its compatibility with future submissions and additional partial submissions for portions of the work not covered in this submission. Does not constitute approval or deletion of specified or required items not shown in the partial submission.
 - 2. MCN. Make Corrections Noted (Resubmittal Not Required): Similar to NET, except that only minor corrections are noted, shall be made by the Contractor, but do not require re-submittal and re-review by Engineer.

3. A&R. Amend and Resubmit: Major inconsistencies or error which require to be addressed in a re-submittal, to be resolved or corrected by the Contractor prior to subsequent review by the Engineer.
 4. Rejected. (Resubmit): Submitted material does not conform to Drawings and Specifications in major respect, i.e., wrong size, model, capDistrict, or material, and an entirely new submittal prepared for review by Engineer.
 5. Received for Record Purposes Only: Applies to submittals which are required but not reviewed by Engineer, such as shoring submittals.
- B. Returned copies of drawings marked with either notation NET or MCN authorize the Contractor to proceed with the fabrication, installation or construction, or any combination thereof, covered by such returned drawings, provided, that such fabrication, installation or construction shall be subject to the comments, if any, shown on such returned copies and to the Contract requirements whether or not specifically referenced. Although fabrication may proceed on a notation MCN, Contractor shall incorporate the comments, resubmit, and obtain notation A before release for shipment can be granted. Failure to satisfactorily address the review comments, shall result in designation of the resulting as being defective.
- C. Returned copies of drawings marked with notation A&R, or Rejected shall be corrected as necessary and revised drawings shall be submitted in the same manner as before.

3.012 RECORD DRAWINGS AND SPECIFICATIONS

- A. Refer to Section 01 70 00, Execution and Closeout Requirements.

3.013 CERTIFICATES

- A. Each certificate required under the Contract or in any of the following Sections shall be signed by the individual, office, or agent lawfully authorized to execute the certificate, and such authority shall be cited in the certificate by title, description, or other acceptable evidence. All certificates shall be sworn as to the correctness and validity of the contents. Where specifically required in the respective Section of the Specifications, certificates shall be notarized and duplicate copies of required certificates shall be notarized to be true copies.

END OF SECTION

SECTION 01 35 00

SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Protection of improvements
 - 2. Protection of private and public property
 - 3. Utility potholing
 - 4. Existing utilities
 - 5. Protection of existing pavement
 - 6. Protection of existing hardscape
 - 7. Protection of existing trees
 - 8. Excavation notification.
 - 9. Construction Documentation/Photographs/Videos

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

- 3.1 Protect all existing utilities and improvements not designated for removal and restore damaged or temporarily relocated utilities and improvements, immediately, to a condition equal to or better than they were prior to such damage or temporary relocation, all in accordance with requirements of the contract documents.
- 3.2 Protect all private and public property from damage due to its activities. If any damage does occur to public or private property as a result of the Contractor's operations, the Contractor shall be responsible for the repair of the property, to pre-construction conditions or better.
- 3.3 POTHOLING/UTILITY LOCATION
 - A. The District will field locate existing utilities in the area of the Work. However, Contractor shall take all precautions necessary to confirm the specific location for excavation work is clear of utilities. See Paragraph on "Excavation Notification" in this Section.
- 3.4 EXISTING UTILITIES, WATER, SEWER AND DRAINAGE
 - A. General: The Contractor shall protect all above ground and underground utility, water, sewer and drainage improvements that may be impaired during construction operations.

- B. Contractor shall be responsible for coordination and communication with all utility agencies during construction.
- C. Locations shown: The known existing buried utilities and pipelines are shown on the Drawings in their approximate location, and also may be marked in the field by the utility representatives. The Contractor shall exercise reasonable care in avoiding damage to all utilities, and be held responsible for their repair if buried facilities so located are damaged.
- D. Work by Utilities: During the course of the Contract, work may be performed by the utility companies or by the District to inspect, operate, relocate, abandon or install facilities. The Contractor shall coordinate with the utility companies regarding such work. Such coordination shall be included within the Contract bid and there will be no separate payment therefore.
- E. Utilities to be moved: Should it become necessary to move the property of any public utility or franchise holder, the Contractor shall notify the Engineer a sufficient time in advance for the necessary measures to be taken to prevent interruption of service.
- F. Right of Access: The right is reserved to the District and to the owners of public utilities and franchises to enter at any time upon any public street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the work of this Contract.
- G. Approval of Repairs: All repairs to a damaged utility or improvement are subject to inspection and approval by an authorized representative of the utility or improvement owner before being concealed by backfill or other work.
- H. Maintaining Service: All pipelines, power, telephone, communication cable, gas, water, irrigation, sewer, and storm drain systems within the work area shall remain continuously in service during all the operations under the Contract, unless specifically shown otherwise in the Contract Documents, or unless other arrangements satisfactory to the Engineer are made (by the Contractor) with the owner of said system.

3.5 RESTORATION OF PAVEMENT

- A. General: All paved areas cut or damaged during construction shall be replaced with similar materials and of equal thickness to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents.
- B. Pavement repair shall be in accordance with the District Standard trench detail as shown on the Drawings..

3.6 EXISTING HARDSCAPE

- A. General: All surface concrete or other hardscape areas cut or damaged during construction shall be replaced with similar materials and of equal material and quality to match the existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in the Contract Documents. All such repairs and replacements shall conform to the requirements of the affected hardscape owner.
- B. Partial removal: All concrete and PCC pavement that is subject to partial removal shall be neatly saw cut in straight lines. The saw cut lines shall be extended to align with existing score lines or similar feature so as to provide a uniform appearance.

3.7 TREES WITHIN PROJECT LIMITS

- A. Contractor shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs in the Project Area. Only trees designated for removal, shall be removed. All other trees shall be protected in place.

3.8 EXCAVATION NOTIFICATION

- A. Notify Prior to Excavation: Prior to any excavation the Contractor shall notify the respective authorities representing the owners or agencies responsible for such facilities not less than 3 days nor more than 7 days prior to excavation so that a representative of said owners or agencies can be present during such work if they so desire.
- B. Call USA: The Contractor shall also notify Underground Service Alert (USA) at **811** at least 2 working days, but no more than 14 calendar days, prior to such excavation. If a utility owner is not equipped to locate its utility, the Contractor shall locate it.

3.9 CONSTRUCTION PHOTOGRAPHS

- A. Provide pre-construction, construction progress, and post-construction photographs as part of the Work. Photographs shall be taken with a minimum 5 megapixel digital camera, and all photos shall be provided to District on CDs or thumb drives. Photos shall be arranged in folders on the CDs or thumb drives by date taken and clearly identified by location of Work. Provide further cataloging of photographs as required to clearly identify subject matter, if not self-evident on the photograph (such as utility identification).
- B. Pre-Construction Photographs. Arrange a meeting time with District and Engineer, 2 working days prior to taking photographs, to allow District and Engineer the opportunity to accompany Contractor on the pre-construction photograph session. Provide pre-construction photographs during this walk-through of the existing project site conditions at locations directed by District and Engineer. Submit the CD or thumb drive of pre-construction photographs within 5 working

days following the date photographs are taken. Include at a minimum, the following:

- 1) photographs and documentation of condition of all existing improvements in the areas of Work.
 - 2) photographs and documentation of condition of vertical intake site, surface improvements and road conditions, driveways, other improvements in the immediate area of the Work on District lands and adjacent HROA property.
1. Post-Construction Photographs. Provide same coverage as required in the pre-construction photographs. Arrange a meeting time with District and Engineer, 2 working days prior to taking photographs, to allow District and Engineer the opportunity to accompany Contractor on the post-construction photograph session. Submit final photographs as part of close-out submittals specified in Section 01 70 00.
 2. Progress Photographs. Provide photographs of the progress of the Work, to be provided to the District throughout progress of the Work. Progress photographs shall be taken at a minimum, on a weekly basis. Photographs shall be taken at a minimum:
 - a. At utility appurtenant features, such as tie-in points, fittings, inlets, vaults, wellhead, new concrete and security fencing;
 - b. Existing facilities to remain, new facilities to be constructed.
 - c. Staging and construction haul routes.

END OF SECTION

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Provide temporary facilities as hereunder specified, plus other unspecified temporary facilities, including labor, materials, services, utilities, and equipment, as may be required for proper performance of Contract, except as otherwise provided. Temporary facilities shall be approved by the District and other authorities having legal jurisdiction. Locate facilities where and as directed, and maintain in safe and sanitary condition at all times until completion of Work.
- B. At completion of work, or sooner when no longer needed, remove all temporary facilities, except where certain facilities are specified to remain or to be relocated for use under future contracts.
- C. All Work required and specified in this Section shall be included in Contractor's price for mobilization, and therefore no separate or additional payment will be made therefore.

1.02 CONSTRUCTION EQUIPMENT

- A. Erect, equip, operate, and maintain construction equipment in strict accordance with applicable statutes, laws, ordinances, rules, and regulations of authorities having jurisdiction.

1.03 SAFETY PRECAUTIONS

- A. Provide and maintain barricades, fencing, shoring, pedestrian walkways including attached lights, other lights, and other safety precautions to properly guard against personal injury and property damage as prescribed by authority having jurisdiction.
- B. Maintain such items for duration of Work, and repair, replace, and relocate them as necessary for safe protection.
- C. Provide such additional safety precautions as may be prescribed by authorities having jurisdiction.
- D. Attention is directed to Safety Orders issued by State of California, Division of Industrial Safety. Contractor shall obtain copies of Safety Orders applicable to type of work to be performed, and shall be governed by requirements thereof in construction operations. Also see Supplementary General Conditions Article 6.13.
- E. Fully inform each subcontractor and material supplier as to requirements of applicable Safety Orders.

1.04 ROADS AND ACCESSWAYS

- A. Maintain access roads and parking areas in satisfactory condition during Contract time, and repair damages attributable to Work of this Project at intervals as needed. At completion of Contract, roads, parking areas and entrance ways shall be left in condition at least equal to that existing at start of Contract, except as may be otherwise required by Contract documents.
- B. Permanent Improvements: Where Contract calls for permanent sidewalk, road, and other ground improvements, and such permanent improvements are completed, or essentially completed within construction period, Contractor does not have vested right to use such improvements as temporary facilities.
- C. Retain responsibility of permanent improvements pursuant to General Conditions. Use of permanent improvements by Contractor shall be subject to approval by the District.

1.05 USE OF DISTRICT PROPERTY

- A. On-Site Storage and Work Areas: Work closely with Owner to identify suitable locations for staging and storage, equipment access. See Section 01 11 00, Summary of Work.
- B. District Property and Easements: Operations shall be confined to District property and property for which District has retained easements, to greatest possible extent, and shall not encroach on areas other than those designated or approved for such use by the District.
- C. Covering, moving, trimming, or altering which may become necessary shall be done only with consent of and in cooperation with District authorities having jurisdiction. Contractor shall pay costs that may be incurred.
- D. Make detailed examination of such District property at start of work and conditions shall be noted by Contractor and confirmed by District.
 - 1. District streets and other existing improvements therein adjacent to site, if damaged by this work, shall be repaired by Contractor at intervals as needed. At completion of project, all such items not included in Contract shall be left in condition at least equal to that at start of operations.
 - 2. Repair work shall conform to requirements of public authorities having jurisdiction.
- E. Protection of Trees and Shrubs: Existing trees and shrubs to remain shall not be injured during the course of this work.
 - 1. If any tree or shrub during the course of, or as a result of construction operations is injured to extent of causing its permanent disfigurement or death, Contractor shall pay cost of damages to the Owner for each tree or shrub so injured, amount to be agreed upon by the Owner and Contractor.
 - 2. If any tree or shrub during the course of, or as a result of construction operations is injured to extent of causing its permanent disfigurement or death within the one year guarantee period, it is agreed by the parties to this Contract that actual damage to the Owner will be impossible to determine, and in lieu

thereof, Contractor shall pay to Owner as fixed, agreed, and Liquidated Damages, for each tree and each shrub so injured.

- F. Protection of Existing Utilities: Protect from damage, existing utility lines not specified to be altered by Work of this Contract; any such features damaged shall be repaired or replaced to condition equal to that existing prior to commencing work of this Contract. Unless otherwise specified, maintain existing utility service at all times during construction. Utility service lines found entering site and not indicated to remain or to be incorporated in new Work, shall be plugged, capped, or otherwise abandoned by Contractor in manner satisfactory to Utility Companies whose services are involved, except as otherwise required.

1.06 CONTRACTOR'S STAGING AREA

- A. Contractor shall coordinate and provide suitable staging area for the Work.

1.07 CLEAN UP OF WORK AND DISPOSAL OF TRASH

- A. Attention of Contractor is directed to General Conditions, Article 5.02.B, and Specification Section 01 70 00. Keep work and storage areas clean and free of rubbish and perform protective and clean up work within one day of being so notified by District.
- B. Dispose of trash resulting from work. Recycle materials to the extent practicable. Remove and dispose of trash resulting from work in appropriate receptacles provided by Contractor, and dispose of at an approved facility. Do not use existing nearby trash containers for depositing trash and rubbish.

1.08 DUST ABATEMENT

- A. Use water wagons or spray from hoses to control dust created by outdoor work operations in areas on project property during entire period of this Contract as directed by District; also, satisfactorily control dust created by operations on property used, other than project property, to satisfaction of all concerned.

1.09 SANITARY FACILITIES

- A. Toilet Facilities: Provide sufficient suitably enclosed chemical toilets, conforming to ANSI Z4.3., with urinal for workmen.
- B. Drinking Water Facilities: Provide clean, sanitary and adequate drinking water.

1.010 TEMPORARY WATER

- A. Make arrangements for raw water required for construction purposes; furnish and install temporary piping or hose to carry raw water to the construction area, and any provisions for transport, storage or pressurization of such water. Such water will be provided at no charge to Contractor. Contractor shall endeavor to limit raw water use to only that necessary for construction purposes.

1.011 TEMPORARY ELECTRICITY

- A. Provide such temporary electrical facilities as necessary for the Work, and to supply temporary lighting for work operations and temporary power for portable power driven tools.
- B. Contractor-Installed Construction Power Facilities: Temporary electrical materials and equipment furnished and installed by Contractor for required facilities hereunder shall be removed after serving their purpose.
 - 1. If District should desire to retain portion of Contractor-Installed construction power system, it will be acquired as Change in Work per General Conditions, Article 11.

1.012 SECURITY

- A. Contractor shall be responsible for security of Work involved in this Project, during entire time of Contract. Make good all damages to work and loss of materials due to vandalism or theft, within this responsibility.

END OF SECTION

CONSTRUCTION SITE MANAGEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Construction site management shall consist of controlling potential sources of water pollution before they come in contact with storm water systems or watercourses. The Contractor shall control material pollution and manage waste and non-storm water existing at the construction site by implementing effective handling, storage, use, and disposal practices.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 GENERAL

- A. Train all employees and subcontractors regarding:
 - 1. Material pollution prevention and control;
 - 2. Waste management;
 - 3. Non-storm water management;
 - 4. Identifying and handling hazardous substances; and
 - 5. Potential dangers to humans and the environment from spills and leaks or exposure to toxic or hazardous substances.
- B. Training shall take place before starting work on this project. New employees shall receive the complete training before starting work on this project. Hold regular meetings to discuss and reinforce spill prevention and control; material delivery, storage, use, and disposal; waste management; and non-storm water management procedures.
- C. Instructions for material and waste handling, storage, and spill reporting and cleanup shall be posted at all times in an open, conspicuous, and accessible location at the construction site.
- D. Nonhazardous construction site waste and excess material shall be recycled when practical or properly disposed of in an offsite location.
- E. Vehicles and equipment at the construction site shall be inspected by the CM on a frequent, predetermined schedule, and by the operator each day of use. Leaks shall be repaired immediately, or the vehicle or equipment shall be removed from the construction site.

3.02 SPILL PREVENTION AND CONTROL

- A. Implement spill and leak prevention procedures when chemicals or hazardous substances are stored. Spills of petroleum products; substances listed under CFR Title 40, Parts 110, 117, and 302; and sanitary and septic waste shall be contained and cleaned up as soon as is safe.
- B. Minor spills involve small quantities of oil, gasoline, paint, or other material that can be controlled by the first responder upon discovery of the spill. Cleanup of minor spills includes:
 - 1. Containing the spread of the spill,
 - 2. Recovering the spilled material using absorption,
 - 3. Cleaning the contaminated area, and
 - 4. Disposing of contaminated material promptly and properly.
- C. Semi-significant spills are those that can be controlled by the first responder with the help of other personnel. Cleanup of semi-significant spills shall be immediate. Cleanup of semi-significant spills includes:
 - 1. Containing the spread of the spill;
 - 2. Recovering the spilled material using absorption if the spill occurs on paved or an impermeable surface;
 - 3. Containing the spill with an earthen dike and digging up contaminated soil for disposal if the spill occurs on dirt;
 - 4. Preventing contaminants from reaching storm drain inlets;
 - 5. Covering the spill with plastic or other material to prevent contaminating runoff if the spill occurs during precipitation; and
 - 6. Disposing of contaminated material promptly and properly.
- D. Significant or hazardous spills are those that cannot be controlled by construction personnel. Notifications of these spills shall be immediate. The following steps shall be taken:
 - 1. Construction personnel shall not attempt to cleanup the spill until qualified staff have arrived;
 - 2. Notify the Engineer and follow up with a written report;
 - 3. Obtain the services of a spills contractor or hazardous material team immediately;
 - 4. Notify the local emergency response team by dialing 911 and county officials at the emergency phone numbers kept on the construction site;
 - 5. Notify the Governor's Office of Emergency Services Warning Center at (805) 852-7550;
 - 6. Notify the National Response Center at (800) 424-8802 regarding spills of Federal reportable quantities in conformance with CFR Title 40, Parts 110, 119, and 302;
 - 7. Notify other agencies as appropriate, including:
 - a. Fire Department,
 - b. Heritage Ranch Community Services District
 - c. County Sheriff,
 - d. Department of Toxic Substances,
 - e. California Division of Oil and Gas,
 - f. Cal OSHA,
 - g. Regional Water Quality Control Board.

- E. The CM shall oversee and enforce proper spill prevention and control measures. Minor, semi-significant, and significant spills shall be reported to the Contractor's CM who shall notify the Engineer immediately.
- F. Prevent spills from entering storm water runoff before and during cleanup. Spills shall not be buried or washed with water.
- G. Keep material or waste storage areas clean, well organized, and equipped with enough cleanup supplies for the material being stored. Plastic shall be placed under paving equipment when not in use to catch drips.

3.03 MATERIAL MANAGEMENT

- A. Material shall be delivered, used, and stored for this contract in a manner that minimizes or prevents discharge of material into the air, storm drain systems, or watercourses.
- B. Implement the practices described in this section when taking delivery of, using, or storing the following materials:
 - 1. Hazardous chemicals including:
 - a. Acids,
 - b. Lime,
 - c. Glues,
 - d. Adhesives,
 - e. Paints,
 - f. Solvents, and
 - g. Curing compounds;
 - 2. Soil stabilizers and binders;
 - 3. Fertilizers;
 - 4. Detergents;
 - 5. Plaster;
 - 6. Petroleum products including:
 - a. Fuel,
 - b. Oil, and
 - c. Grease;
 - 7. Asphalt components and concrete components; and
 - 8. Pesticides and herbicides.
- C. When requested by Engineer or Owner, supply the Material Safety Data Sheets to the for material used or stored. Keep an accurate inventory of material delivered and stored at the construction site.
- D. Employees trained in emergency spill cleanup procedures shall be present when hazardous materials or chemicals are unloaded.
- E. Use recycled or less hazardous products when practical.
- F. Material Storage
 - 1. Store liquids, petroleum products, and substances listed in CFR Title 40, Parts 110, 117, and 302 in containers or drums approved by the United States Environmental Protection Agency, and place them in secondary containment facilities.

2. Secondary containment facilities shall be impervious to the materials stored there for a minimum contact time of 72 hours.
3. Throughout the rainy season secondary containment facilities shall be covered during non-working days and when precipitation is predicted. Secondary containment facilities shall be adequately ventilated.
4. Keep the secondary containment facility free of accumulated rainwater or spills. After precipitation, or in the event of spills or leaks, accumulated liquid shall be collected and placed into drums within 24 hours. These liquids shall be handled as hazardous waste in accordance with the provisions in "Hazardous Waste" of these special provisions, unless testing determines them to be nonhazardous.
5. Incompatible materials, such as chlorine and ammonia, shall not be stored in the same secondary containment facility.
6. Materials shall be stored in the original containers with the original product labels maintained in legible condition. Damaged or illegible labels shall be replaced immediately.
7. The secondary containment facility shall have the capacity to contain precipitation from a 24-hour-long, 25-year storm; and 10 percent of the aggregate volume of all containers, or all of the volume of the largest container within the facility, whichever is greater.
8. Store bagged or boxed material on pallets. Throughout the rainy season, bagged or boxed material shall be protected from wind and rain during non-working days and when precipitation is predicted.
9. Provide sufficient separation between stored containers to allow for spill cleanup or emergency response access. Storage areas shall be kept clean, well organized, and equipped with cleanup supplies appropriate for the materials being stored.
10. Repair or replace perimeter controls, containment structures, covers, and liners as needed. Storage areas shall be inspected before and after precipitation, and at least weekly during other times.

G. Stockpile Management

1. Reduce or eliminate potential air and water pollution from stockpiled material including soil, paving material, or pressure treated wood. Stockpiles shall be located out of floodplains when possible, and at least 50 feet from concentrated flows of storm water, drainage courses, or inlets unless written approval is obtained from the Engineer.
2. Stockpiles shall still be considered active for up to 21 days after discontinuing, adding or removing materials to stockpile.
3. Protect active stockpiles with plastic or geotextile cover, soil stabilization measures, or with linear sediment barrier when precipitation is predicted. Active stockpiles of cold mix asphalt concrete shall be placed on an impervious surface and covered with plastic when precipitation is predicted.
4. Protect inactive soil stockpiles with a plastic or geotextile cover, or with soil stabilization measures at all times during the rainy season. A linear sediment barrier around the perimeter of the stockpile shall also be used. During the non-rainy season soil stockpiles shall be covered and protected with a linear sediment barrier when precipitation is predicted. The Contractor shall control wind erosion during dry weather as provided in Section 10, "Dust Control," of the Standard Specifications.
5. Stockpiles of Portland cement concrete rubble, asphalt concrete (AC), hot mix asphalt (HMA), AC and HMA rubble, aggregate base, or aggregate subbase shall be covered with plastic or geotextile, or protected with a linear sediment

- barrier at all times during the rainy season, and when precipitation is predicted during the non-rainy season.
6. Stockpiles of cold mix asphalt concrete shall be placed on and covered with impermeable material at all times during the rainy season, and when precipitation is predicted during the non-rainy season.
 7. Stockpiles of pressure treated wood shall be covered with impermeable material and placed on pallets at all times during the rainy season, and when precipitation is predicted during the non-rainy season.
 8. Repair or replace linear sediment barriers and covers as needed or as directed by the Engineer to keep them functioning properly. Sediment shall be removed when it accumulates to 1/3 of the linear sediment barrier height.

3.04 WASTE MANAGEMENT

A. Solid Waste

1. Do not allow litter or debris to accumulate anywhere on the construction site, including storm drain grates, trash racks, and ditch lines. Pick up and remove trash and debris from the construction site at least once a week. The CM will monitor solid waste storage and disposal procedures on the construction site. Provide dumpsters of sufficient size to contain the solid waste generated by the project. Dumpsters shall be emptied when refuse reaches the fill line. Dumpsters shall be watertight. Do not wash out dumpsters on the construction site. Provide additional containers and more frequent pickup during the demolition phase of construction.

B. Solid waste includes:

1. Brick,
2. Mortar,
3. Timber,
4. Metal scraps,
5. Sawdust,
6. Pipe,
7. Electrical cuttings,
8. Non-hazardous equipment parts,
9. Styrofoam and other packaging materials,
10. Vegetative material and plant containers from highway planting, and
11. Litter and smoking material, including litter generated randomly by the public.

C. Trash receptacles shall be provided and used in the Contractor's yard, field trailers, and locations where workers gather for lunch and breaks.

D. Hazardous Waste

1. Implement hazardous waste management practices when waste is generated on the construction site from the following substances:
 - a. Petroleum products,
 - b. Asphalt products,
 - c. Concrete curing compound,
 - d. Pesticides,
 - e. Acids,
 - f. Paints,
 - g. Stains,
 - h. Solvents,
 - i. Wood preservatives,

- j. Roofing tar, and
 - k. Materials classified as hazardous by California Code of Regulations, Title 22, Division 4.5; or listed in CFR Title 40, Parts 110, 117, 261, or 302.
2. Nothing in these special provisions shall relieve the Contractor of the responsibility for compliance with Federal, State, and local laws regarding storage, handling, transportation, and disposal of hazardous wastes.
 3. The CM will oversee and enforce hazardous waste management practices. Production of hazardous materials and hazardous waste on the construction site shall be kept to a minimum. Perimeter controls, containment structures, covers, and liners shall be repaired or replaced when damaged.
 4. Provide a laboratory certified by the California Department of Public Health (CDPH) to sample and test waste when hazardous material levels are unknown to determine safe methods for storage and disposal.
 5. Segregate potentially hazardous waste from nonhazardous waste at the construction site. Hazardous waste shall be handled, stored, and disposed of as required in California Code of Regulations, Title 22, Division 4.5, Section 66262.34; and in CFR Title 49, Parts 261, 262, and 263.
 6. Store hazardous waste in sealed containers constructed and labeled with the contents and date accumulated as required in California Code of Regulations, Title 22, Division 4.5; and in CFR Title 49, Parts 172, 173, 178, and 179. Hazardous waste containers shall be kept in temporary containment facilities conforming to the provisions in "Material Storage" of these special provisions.
 7. There shall be adequate storage volume and containers shall be conveniently located for hazardous waste collection. Containers of hazardous waste shall not be overfilled and hazardous wastes shall not be mixed. Containers of dry waste that are not watertight shall be stored on pallets. Do not allow potentially hazardous waste to accumulate on the ground. Hazardous waste shall be stored away from storm drains, watercourses, moving vehicles, and equipment.
 8. Clean water based or oil based paint from brushes or equipment within a contained area and shall not contaminate soil, watercourses, or storm drain systems. Paints, thinners, solvents, residues, and sludges that cannot be recycled or reused shall be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths shall be disposed of as solid waste.
 9. Dispose of hazardous waste within 90 days of being generated. Hazardous waste shall be disposed of by a licensed hazardous waste transporter using uniform hazardous waste manifest forms and taken to a Class I Disposal Site. A copy of the manifest shall be provided to the Engineer.

E. Contaminated Soil

1. Identify contaminated soil from spills or leaks by noticing discoloration, odors, or differences in soil properties. Soil with evidence of contamination shall be sampled and tested by a laboratory certified by CDPH. If levels of contamination are found to be hazardous, the soil shall be handled and disposed of as hazardous waste.
2. Prevent the flow of water, including ground water, from mixing with contaminated soil by using one or a combination of the following measures:
 - a. Berms,
 - b. Cofferdams,
 - c. Grout curtains,
 - d. Freeze walls, or
 - e. Concrete seal course.

3. If water mixes with contaminated soil and becomes contaminated, the water shall be sampled and tested by a laboratory certified by the CDPH. If levels of contamination are found to be hazardous, the water shall be handled and disposed of as hazardous waste.
- F. Concrete Waste
1. Implement practices to prevent the discharge of portland cement concrete, AC, or HMA waste into storm drain systems or watercourses.
 2. Portland cement concrete, AC, or HMA waste shall be collected at the following locations and disposed of:
 - a. Where concrete material, including grout, is used;
 - b. Where concrete dust and debris result from demolition;
 - c. Where sawcutting, coring, grinding, grooving, or hydro-concrete demolition of portland cement concrete, AC, or HMA creates a residue or slurry; or
 - d. Where concrete trucks or other concrete-coated equipment is cleaned at the construction site.
- G. Sanitary and Septic Waste
1. Wastewater from sanitary facilities shall not be discharged within the Owner right of way. The CM will inspect sanitary waste storage and monitor disposal procedures at least weekly.
- H. Liquid Waste
1. Do not allow construction site liquid waste, including the following, to enter storm drain systems or watercourses:
 - a. Drilling slurries or fluids,
 - b. Grease-free or oil-free wastewater or rinse water,
 - c. Dredgings,
 - d. Liquid waste running off a surface including wash or rinse water, or
 - e. Other non-storm water liquids not covered by separate permits.
 2. Hold liquid waste in structurally sound, leak proof containers such as:
 - a. Sediment traps,
 - b. Roll-off bins, or
 - c. Portable tanks.
 3. Liquid waste containers shall be of sufficient quantity and volume to prevent spills and leaks. The containers shall be stored at least 50 feet from storm drains, watercourses, moving vehicles, and equipment.
 4. Remove and dispose of deposited solids from sediment traps as provided in "Solid Waste" of these special provisions, unless determined infeasible by the Engineer.
 5. Liquid waste may require testing to determine hazardous material content before disposal.
 6. Drilling fluids and residue shall be disposed of outside the highway right of way. If the Engineer determines that an appropriate location is available, fluids and residue exempt under California Code of Regulations, Title 23, Section 2511(g) may be dried by infiltration and evaporation in a leak proof container. The remaining solid waste may be disposed of as provided in "Solid Waste" of these special provisions.

3.05 NON-STORM WATER MANAGEMENT

A. Water Control and Conservation

1. Prevent erosion or the discharge of pollutants into storm drain systems or watercourses by managing the water used for construction operations. Obtain the Engineer's approval before washing anything on the construction site with water that could discharge into a storm drain system or watercourse. Discharges shall be reported to the Engineer immediately.
 2. Implement water conservation practices when water is used on the construction site. Irrigation areas shall be inspected and watering schedules shall be adjusted to prevent erosion, excess watering, or runoff. The Contractor shall shut off the water source to broken lines, sprinklers, or valves, and they shall be repaired as soon as possible. When possible, water from waterline flushing shall be reused for landscape irrigation. Paved areas shall be swept and vacuumed, not washed with water.
 3. Construction water runoff, including water from water line repair, shall be directed to areas to infiltrate into the ground and shall not be allowed to enter storm drain systems or watercourses. Spilled water shall not be allowed to escape water truck filling areas. When possible, the Contractor shall direct water from off-site sources around the construction site, or shall minimize contact with the construction site.
- B. **Illegal Connection and Discharge Detection and Reporting**
1. Inspect the construction site and the site perimeter before beginning work for evidence of illegal connections, discharges, or dumping. Subsequently, the construction site and perimeter shall be inspected on a frequent, predetermined schedule.
 2. Immediately notify the Engineer when illegal connections, discharges, or dumping are discovered. Do not take further action unless directed by the Engineer. Unlabeled or unidentifiable material shall be assumed to be hazardous.
 3. Observe the site for the following evidence of illegal connections, discharges, or dumping:
 - a. Debris or trash piles,
 - b. Staining or discoloration on pavement or soils,
 - c. Pungent odors coming from drainage systems,
 - d. Discoloration or oily sheen on water,
 - e. Stains or residue in ditches, channels or drain boxes,
 - f. Abnormal water flow during dry weather,
 - g. Excessive sediment deposits,
 - h. Nonstandard drainage junction structures, or
 - i. Broken concrete or other disturbances near junction structures.
- C. **Vehicle and Equipment Cleaning**
1. Limit vehicle and equipment cleaning or washing on the construction site to that necessary to control vehicle tracking or hazardous waste. Vehicles and equipment shall not be cleaned on the construction site with soap, solvents, or steam until the Engineer has been notified. The resulting waste shall be contained and recycled, or disposed of as provided in "Liquid Waste" or "Hazardous Waste" of these special provisions, whichever is applicable. Do not use diesel to clean vehicles or equipment, and minimize the use of solvents.
 2. Clean or wash vehicles and equipment in a structure equipped with disposal facilities. If using a structure is not possible, vehicles and equipment shall be cleaned or washed in an outside area with the following characteristics:
 - a. Located at least 50 feet from storm drainage systems or watercourses,
 - b. Paved with AC, HMA, or portland cement concrete,

- c. Surrounded by a containment berm, and
 - d. Equipped with a sump to collect and dispose of wash water.
 - 3. When washing vehicles or equipment with water, use as little water as possible. Hoses shall be equipped with a positive shutoff valve.
 - 4. Wash racks shall discharge to a recycle system or to another system approved by the Engineer. Sumps shall be inspected regularly, and liquids and sediments shall be removed as needed.
- D. Vehicle and Equipment Fueling and Maintenance
 - 1. Fuel or perform maintenance on vehicles and equipment off the construction site whenever practical. When fueling or maintenance must be done at the construction site, designate a site, or sites, and obtain approval from the Engineer before using. The fueling or maintenance site shall be protected from storm water, shall be on level ground, and shall be located at least 50 feet from drainage inlets or watercourses. The WPCM shall inspect the fueling or maintenance site regularly. Mobile fueling or maintenance shall be kept to a minimum.
 - 2. Use containment berms or dikes around the fueling and maintenance area. Adequate amounts of absorbent spill cleanup material and spill kits shall be kept in the fueling and maintenance area and on fueling trucks. Spill cleanup material and kits shall be disposed of immediately after use. Drip pans or absorbent pads shall be used during fueling or maintenance unless performed over an impermeable surface.
 - 3. Fueling or maintenance operations shall not be left unattended. Fueling nozzles shall be equipped with an automatic shutoff control. Vapor recovery fueling nozzles shall be used where required by the Air Quality Management District. Nozzles shall be secured upright when not in use. Fuel tanks shall not be topped-off.
 - 4. Recycle or properly dispose of used batteries and tires.
- E. Paving, Sealing, Sawcutting, and Grinding Operations
 - 1. Prevent the following material from entering storm drain systems or water courses:
 - a. Cementitious material,
 - b. Asphaltic material,
 - c. Aggregate or screenings,
 - d. Grinding or sawcutting residue,
 - e. Pavement chunks,
 - f. Shoulder backing.
 - 2. Cover drainage inlets and use linear sediment barriers to protect downhill watercourses until paving, sealing, sawcutting, or grinding operations are completed and excess material has been removed. Drainage inlets and manholes shall be covered during the application of seal coat, tack coat, slurry seal, or fog seal.
 - 3. During the rainy season or when precipitation is predicted, paving, sawcutting, and grinding operations shall be limited to places where runoff can be captured. Seal coat, tack coat, slurry seal, or fog seal operations shall not begin if precipitation is predicted for the application or the curing period. The Contractor shall not excavate material from existing roadways during precipitation.
 - 4. Vacuum up slurry from sawcutting operations immediately after the slurry is produced. Slurry shall not be allowed to run onto lanes open to public traffic or off the pavement.

5. Collect residue from portland cement concrete grinding operations with a vacuum attachment on the grinding machine. The residue shall not be left on the pavement or allowed to flow across the pavement.
 6. Material excavated from existing roadways may be stockpiled as provided in "Stockpile Management" of these special provisions if approved by the Engineer. AC or HMA chunks used in embankment shall be placed above the water table and covered by at least one foot of material.
 7. Substances used to coat asphalt trucks and equipment shall not contain soap, foaming agents, or toxic chemicals.
- F. Thermoplastic Striping and Pavement Markers
1. Thermoplastic striping and preheating equipment shutoff valves shall work properly at all times when on the construction site. Do not preheat, transfer, or load thermoplastic within 50 feet of drainage inlets or watercourses. Do not fill the preheating container to more than 6 inches from the top. Truck beds shall be cleaned daily of scraps or melted thermoplastic.
 2. Do not unload, transfer, or load bituminous material for pavement markers within 50 feet of drainage inlets or watercourses. All pressure shall be released from melting tanks before removing the lid to fill or service. Melting tanks shall not be filled to more than 6 inches from the top.
 3. Collect bituminous material from the roadway after marker removal.
- G. Concrete Curing
1. Do not overspray chemical curing compound. Drift shall be minimized by spraying as close to the concrete as possible. Drainage inlets shall be covered before applying curing compound.
 2. Minimize the use and discharge of water by using wet blankets or similar methods to maintain moisture when curing concrete.
- H. Concrete Finishing
1. Collect and dispose of water and solid waste from high-pressure water blasting. Drainage inlets within 50 feet shall be covered before sandblasting. The nozzle shall be kept as close to the surface of the concrete as possible to minimize drift of dust and blast material. Blast residue may contain hazardous material.
 2. Containment structures for concrete finishing operations shall be inspected for damage before each day of use and before predicted precipitation. Liquid and solid waste shall be removed from the containment structure after each work shift.

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. This section provides the requirements for product substitution. The procedure for requesting substitution approval applies to products defined in the Contract Documents by reference to one or more of the following:
1. Name of manufacturer
 2. Name of vendor
 3. Trade name
 4. Catalog number
- B. Requests for Substitution - General:
1. Base all bids on materials, equipment, and procedures specified, and as approved by addendum. Refer to Article 7.06 of the General Conditions.
 2. Certain types of equipment and kinds of material are described in specifications by means of references to names of manufacturers and vendors, trade names, or catalog numbers. When this method of specifying is used, it is not intended to exclude from consideration other products bearing other manufacturer's or vendor's names, trade names, or catalog numbers, provided said products are capable of accomplishing the same tasks as the products specifically indicated.
 3. Other types of equipment and kinds of material may be acceptable.

1.02 QUALITY ASSURANCE

- A. In making request for substitution or in using an approved product, Contractor represents:
1. Contractor has investigated proposed product, and has determined that it is equal or superior in all respects to that specified, and that it will perform function for which it is intended.
 2. Contractor will provide same guarantee for substitute item as for product specified.
 3. Contractor will coordinate installation of accepted substitution into work, to include building modifications if necessary, making such changes as may be required for work to be complete in all respects.
 4. Contractor waives all claims for additional costs related to substitution which subsequently arise.

1.03 DEFINITIONS

- A. Product: Manufactured material or equipment.

1.04 PROCEDURE FOR REQUESTING SUBSTITUTION

- A. Considered after award of Contract, or by addenda during bidding. See Paragraph 1.01.B of this Section.
- B. Written requests may be made by the Contractor only.
- C. Transmittal Mechanics:
 - 1. Follow the transmittal mechanics prescribed for shop drawings in Section 01 33 00, Submittal Procedures. Describe the deviation and justifications on the transmittal form. Include in the transmittal letter, either directly or as a clearly marked attachment, the items listed in paragraph D below.
- D. Transmittal Contents:
 - 1. Product identification:
 - a. Manufacturer's name.
 - b. Telephone number and representative contact name.
 - c. Specification section or drawing reference of originally specified product, including discrete name or tag number assigned to original product in the Contract Documents.
 - 2. Manufacturer's literature clearly marked to show compliance of proposed product with Contract Documents.
 - 3. Itemized comparison of original and proposed product addressing product characteristics including but not necessarily limited to:
 - a. Size.
 - b. Composition or materials of construction.
 - c. Weight.
 - d. Electrical or mechanical requirements.
 - 4. Product experience:
 - a. Location of past projects utilizing product.
 - b. Name and telephone number of persons associated with referenced projects knowledgeable concerning proposed product.
 - c. Available field data and reports associated with proposed product.
 - 5. Data relating to changes in construction schedule.
 - 6. Data relating to changes in cost.
 - 7. Samples:
 - a. At request of Engineer.
 - b. Full size if requested by Engineer.
 - c. Held until substantial completion.
 - d. Engineer not responsible for loss or damage to samples.

1.05 APPROVAL OR REJECTION

- A. Written approval or rejection of substitution given by the Engineer.
- B. Engineer reserves the right to require proposed product to comply with color and pattern of specified product if necessary to secure design intent.
- C. In event substitution results in a change of Contract price or time, provisions in Special Provisions-General Conditions will be applied for adjustment.
- D. Substitutions will be rejected if:
 - 1. Submittal is not through the Contractor with Contractor's approval.
 - 2. Requests are not made in accordance with this Section.
 - 3. In the Engineer's opinion, acceptance will require substantial revision of the original design.
 - 4. In the Engineer's opinion, substitution is not equal to original product specified or will not perform adequately the function for which it was intended.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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SECTION 01 70 00

EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Closeout Procedures.
- B. Project Record Documents.
- C. Operation and Maintenance Data.
- D. Guaranties, Warranties and Bonds.
- E. Spare Parts and Maintenance Materials.

1.02 CLOSEOUT PROCEDURES

- A. Comply with procedures in this Section, and the General Conditions for inspection and acceptance of the Work, payment and retention procedures.
- B. When Contractor considers Work has reached substantial completion, submit written certification that Work is ready for inspection.

1.03 INSPECTION PROCEDURES

When the Work is in the opinion of the Contractor, substantially complete, the Contractor shall call for a punch list inspection.

- A. Inspection Procedures: On receipt of a written request for inspection, the District Representative will schedule the inspection. If in the judgment of the District's Representatives the project is not substantially complete, the District Representative will so advise the Contractor and discontinue the inspection.
 - 1. The District's Representative will repeat inspection when requested and assured that the Work has been completed.
 - 2. Results of the completed inspection will form the basis of requirements for final acceptance of the Work.
- B. Final cleaning shall be completed prior to District's inspection and acceptance.

1.04 PROJECT RECORD DOCUMENTS ("AS-BUILTS")

- A. Maintain, on current basis, record drawings showing "as-built" conditions of project; subject to monthly review by District Representative. Monthly pay estimates will not be processed without review and approval of record drawings by the District. Written confirmation that the as-builts have been properly updated shall be submitted with each pay application request. Final Acceptance of Work will not take place until record drawings are turned over to the District's Representative.

- B. Store Project record documents separate from those used for construction. Protect from deterioration and loss in a secure, fire-resistive location; provide access to the District's Representatives during normal working hours. In the event of loss of recorded data, use means necessary to again secure the data to the District's acceptance; such means shall include, if necessary, in the opinion of the District, removal and replacement of concealing materials and in such case, replacements shall be to the standards originally specified.
- C. Before commencing backfilling of utilities or any other underground pipes, ducts, conduits, or structures, take photographs showing relationship of below ground utilities to structure(s) or other physical reference point. Photos are to be in compliance with Section 01 35 00, Special Project Procedures, categorized by locations and indicating utilities and progress of Work, as specified. Provide photo(s) of all connections, crossings, stubs, or other critical points. If the Contractor neglects to take such photographs, Contractor shall uncover, at the Contractor's expense, the area(s) so neglected in order to provide the requisite photos.
- D. Record Drawings: Maintain a clean, undamaged bond set of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately. At time of installation, installed locations of work relating to aboveground and underground utilities, structural, ventilation, plumbing, electrical, and other scopes of work as may be required, shall be recorded on sepia mylar prints by Contractor, and reviewed with District's Representative. Timing of entries shall be within 24 hours after receipt of information. Do not conceal work until required information is recorded.
1. Information entered on prints shall be neat, legible, and emphasized by drawing "clouds" around changed items. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the work. Date entries.
 2. Mark new information that is important to the District, but was not shown on Contract Drawings or Shop Drawings.
 3. At a minimum, the following information shall be inserted and dimensioned on record documents where applicable:
 - a. The exact horizontal and vertical location of all installations in their finished condition, including all electrical, plumbing and mechanical installations;
 - b. All changes in construction, materials and installed equipment;
 - c. Adequate dimensional data, both horizontal and vertical, to allow location of covered installations;
 - d. The identification of changes authorized by Change Order and the number of that Change Order;
 - e. All Requests for information and the number of that Request for Information;
 - f. All Field Clarifications and the number of that Field Clarification;
 - g. All the Engineer's field change directives and the number of such directive where applicable.
 4. Symbols and designations used in preparing record drawings shall match those used in Contract Drawings.
 5. Locate and dimension work, including stubs for future connections, with reference to permanent landmarks or buildings and indicate approximate depth below finish grade.

6. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
- E. Prior to final Acceptance of Work, submit Project record documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents and signature of Contractor.

1.05 OPERATION AND MAINTENANCE DATA

- A. Provide data for Sections as required by the Contract Documents.
- B. Preparation of data shall be by personnel:
 1. Trained and experienced in maintenance and operation of described products.
 2. Familiar with requirements of this Section.
 3. Skilled as technical writer to the extent required to communicate essential data.
 4. Skilled as draftsman competent to prepare required drawings.
- C. Submit 4 hard copies and 1 electronic copy of operating/maintenance manuals prior to Final Acceptance of Work, bound in 8-1/2" x 11", three ring side binders with durable plastic covers; with identification on, or readable through, front cover stating general nature of manual. Final Acceptance of the Work will not take place until operation/maintenance manuals are approved by Engineer and District.
- D. Operation and Maintenance (O&M) Manual shall contain:
 1. Part 1: Directory, listing names, addresses and telephone numbers of Engineer, District Inspector and Contractor; and index furnishing complete information as to location in manual of emergency data regarding installation.
 2. Part 2: Operation and maintenance instructions, arranged by system. For each system, give names, addresses and telephone numbers of subcontractors and suppliers; and include the following:
 - a. Appropriate design criteria.
 - b. List of equipment.
 - c. Parts list; including complete nomenclature, current costs, and names and address of nearest vendor of parts.
 - d. Detailed operating instructions in a logical sequence for each procedure. Include proper procedures in event of failure.
 - e. Maintenance instructions, equipment, including routine maintenance cards with time frequency of routine maintenance noted.
 - f. Maintenance instructions, finishes. Provide manufacturer's recommendation for types of cleaning agents and methods, cautions against agents and methods that are detrimental to the product and a recommended schedule for cleaning and maintenance.
 - g. Copy of each Material Safety Data Sheet (MSDS) received with products or materials delivered to the site for incorporation into the Project, for District future reference.
 - h. Shop drawings and product data, including changes made during construction. Illustrate relations of component parts of equipment and systems and control and flow diagrams.
 - i. Copies of Guaranties/Warranties. Note instances that might affect validity of warranties or bonds.

- E. Extraneous Data: Where contents of manuals include manufacturers' catalog pages, clearly indicate precise items included in this installation and delete, or otherwise clearly indicate, manufacturer's data with which this installation is not concerned. Include catalog number, size and composition, color and texture designations and information required for re-ordering special manufactured products.
- F. Review contents of manual with District representative in full detail to explain all aspects of operations and maintenance in addition to requirements per Section 01 75 00 Starting and Adjusting.

1.06 GUARANTIES, WARRANTIES AND BONDS

- A. Standard Guaranty: Guarantee Work executed under this Contract to be free of defects of workmanship and materials for a period of one year after completion and acceptance by the District. Refer to Article 7, General Conditions of the Contract Documents. Submittal not required for standard one year guaranty for Work of this project.
- B. Additional Guaranties/Warranties: Provide additional guarantees/warranties (in excess of one year) where specifically required by pertinent Specification Sections.
 - 1. Provide duplicate copies. Execute Contractor's submittals and assemble documents executed by subcontractors, suppliers and manufacturers. Provide table of contents and assemble in binder with durable plastic cover.
- C. Submit guaranties/warranties prior to final payment.
 - 1. For equipment put into use with District's permission during construction, submit guaranties/warranties within 10 days after first operation.
 - 2. For items of work delayed beyond date of substantial completion, provide updated guaranty/warranty submittal within 10 days after acceptance, listing date of acceptance as start of guaranty/warranty period.

1.07 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, and maintenance materials in quantities specified in each Section, in addition to that used for construction of work. Coordinate with District's Representative and deliver to Project site. Provide with a detailed transmittal and obtain receipt prior to Final Acceptance of Work.

1.08 DISPOSAL REPORT – NOT USED

1.09 FINAL ACCEPTANCE

- A. Preliminary Procedures: Before requesting certification of final Acceptance of the Work, complete the following:
 - 1. Submit a certified copy of the District Representative's list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance for final inspection.
- B. Final Inspection: The District's Representative will re-inspect the work upon receipt of notice that the work, including inspection list items from earlier inspections, "(punch-list)", has been completed, except items whose completion has been delayed because of circumstances acceptable to the District.

1. Upon completion of final inspection, the District's Representative will prepare and submit to the District, a certificate of final acceptance, or advise the Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If after the inspection, the District determines that the Work is complete, the District will accept the Work per Article 15, General Conditions of the Contract Documents.

PART 2 PRODUCTS – (NOT USED)

PART 3 EXECUTION – (NOT USED)

END OF SECTION

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SECTION 01 75 00

STARTING AND ADJUSTING

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.

B. DEFINITIONS

1. Demonstration Period: The period of time, of unspecified duration after initial construction and installation activities during which the Contractor performs in the following sequence;
 - 1) Reviews and approves installation of the Work to ensure the Project has reached a state of Substantial Completion.
 - 2) Equipment and controls startup to demonstrate functional integrity.
 - 3) Personnel training.
2. Substantial Completion: The time at which the Work has progressed to the point where it is sufficiently complete and operational for the purposes intended, in accordance with the Contract Documents as evidenced by the Notice of Completion. At this stage, Owner will approve of the operational aspects of the Project, and Owner will deem the Project as substantially complete.

C. SUBMITTALS

1. Submit in the chronological order listed below:
 - a. Operational Demonstration and System Validation Tests as follows:
 - 1) At least 21 calendar days before operational demonstration and system validation testing is to be performed, submit a detailed and comprehensive procedure plan for performance of the operational demonstration and system validation tests required. Identical equipment items may be covered under one plan. Include an estimated date and duration for the procedure, the personnel required, and how test water will be obtained for the startup and testing procedure.
 - 2) System Validation Test. The procedure plan shall describe and itemize the system including associated electrical equipment and instrumentation and control systems, and shall include evidence of an organized step-by-step procedure properly coordinating the efforts of the various trades and manufacturers' representatives involved and of the operations of the facilities. Procedures shall include an estimated duration and date for the procedures and the personnel required. The sequence and duration of testing shall be delineated, and the tests shall demonstrate all aspects of hydraulic controls stipulated in Section 33 09 40, Instrumentation and Controls.

- 3) Procedure Plan Information. In addition to the information specified above, each procedure plan shall include the following information, as applicable.
 - a) Description of temporary procedure facilities, including drawings and sketches as required to fully illustrate the facilities.
 - b) List of test materials and estimated quantities (test water), proposed source of such test water.
 - c) List of instruments, measuring and recording devices, and other test equipment, whether a part of the system or furnished separately for temporary use.
 - d) Names of supervising and inspecting manufacturer representatives, if applicable.
 - e) Complete listing of all functional parameters to be observed and recorded.
 - f) Recording intervals.
 - 4) Records Materials. Submit samples of the forms, charts, and other materials to be used in recording demonstration and validation test results.
 - 5) Results. Within 7 calendar days after completion of each procedure plan submit 1 PDF of all recordings and results of all operational demonstrations and system validation tests.
2. Submit operation and maintenance training schedule, for approval by the District:
- a. Submit 14 calendar days (minimum) prior to first training session for District personnel.
 - b. Schedule to include:
 - 1) Target date and time for witnessing of the system initial startup, for the various components including vertical intake pump, flow meters, transducer, integration with SCADA and controls at and other parameters described in Section 33 01 30.
 - 2) Target date and time for Operation and Maintenance training.
 - 3) Target date for initiation of Demonstration Period.
 - c. Include holidays observed by District the District.
 - d. Schedule to be resubmitted until approved.
3. Substantial Completion Submittal:
- a. File Contractor's Notice of Substantial Completion and Request for Inspection.
 - b. Approved Operation and Maintenance manual received by Engineer minimum 1 week prior to scheduled training.
 - c. Written request for District to witness startup. Request to be received by District minimum 1 week before scheduled training of District's personnel on that system.
 - d. Equipment installation and startup certifications.
 - e. Letter or email verifying completion of all startup activities including receipt of all specified items from manufacturers or suppliers as final item prior to initiation of Substantial Completion.

D. COST OF STARTUP

1. Contractor to pay all costs associated with Facility startup, including cost of testing water.

PART 2 PRODUCTS – (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. Facility Startup:

1. Demonstration Period including:
 - a. Completion of construction work to bring Project to a state of Substantial Completion.
 - b. Startup of Equipment, demonstration of functional integrity of facilities.
 - c. Training of Personnel.
 - d. Completion of the filing of all required submittals.
 - e. Filing of Contractor's Notice of Substantial Completion and Request for Inspection.

B. DEMONSTRATION PERIOD

1. Completion of Construction Work:
 - a. Complete the Work to bring the Project to a state of substantial completion.
2. Equipment Startup:
 - a. Requirements for individual items of equipment are included in Contractor's O&M Manual, and equipment suppliers' O&M instructions/manuals.
 - b. Prepare the equipment so it will operate properly and safely and be ready to demonstrate functional integrity of the system.
 - c.
 - d. Demonstrate that all valves, flow meters, transducers, check valves and other flow control features work as intended. Demonstrate all control conditions specified in Section.
 - e. Calibrate all measuring/metering equipment, and confirm SCADA programming interfaces as intended.
 - f. Documentation:
 - 1) Prepare a log showing each equipment item subject to this paragraph and listing what is to be accomplished during Equipment Startup. Provide a place for the Contractor to record date and person accomplishing required work. Submit completed document before requesting inspection for Substantial Completion certification.
3. Field and personnel training requirements:
 - a. Conduct all personnel training after completion of Equipment Startup for the equipment for which training is being conducted.
 - b. Hold training on-site. Coordinate with District for training locations and times.
 - c. Provide sufficient instruction materials, samples, and handouts for those in attendance.
 - d. Instructors to have a typed agenda and well prepared instructional material. Deliver agendas to the District a minimum of 7 days prior to the classroom training. Provide equipment required for presentation of films, slides, and other visual aids.
 - 1) In the on-site training sessions, cover the information required in the Operation and Maintenance manuals and as follows:

- a) Operation of equipment.
 - b) Maintenance, lubrication and repair of equipment.
 - c) Troubleshooting of equipment.
 - d) Preventive maintenance procedures.
 - e) Adjustments to equipment.
 - f) Inventory of spare parts.
 - g) Optimizing equipment performance.
 - h) Capabilities.
 - i) Operational safety.
 - j) Emergency situation response.
 - k) Takedown procedures (disassembly and assembly).
- e. Maintain a log of training provided including: Instructors, topics, dates, time, and attendance.
4. Complete the filing of all required submittals:
- a. Shop drawings.
 - b. Operation and Maintenance Manuals.
 - c. Training material.
5. Filing of Contractor's Notice of Substantial Completion and Request for Inspection of Project:
- a. File the notice when the following have been completed:
 - b. Construction work (brought to state of Substantial Completion).
 - c. Equipment Startup.
 - d. Personnel Training.
 - e. Submittal of required documents.
6. Engineer, District 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.
7. 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: Reinspect work within 5 days of Contractor's notice of correction of deficiencies.
 - 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.
 - 3) Issued subject to completion or correction of items cited in the certificate (punch list).
 - 4) Issued with responsibilities of Owner 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 the successful Demonstration Period of functional integrity as the effective date of Substantial Completion.

END OF SECTION

SECTION 08 31 13

ACCESS DOORS AND FRAMES

PART 1 GENERAL

1.01 DESCRIPTION

The work shall include providing all materials and labor and equipment to construct access doors and frames to precast vault and underground stormwater structures, complete as a functional unit.

A. SUBMITTALS

1. Manufacturer specification (cut sheet) for all access lids, frames and hardware, indicating wetwell lids meet specified loading. Show all dimensions on the drawings, for approval by the Engineer.
2. Structural calculations stamped by a California registered structural or civil engineer.
3. Manufacturer guarantee/warranty information, minimum 12 month warranty from date of installation.

1.02 QUALITY ASSURANCE

- A. Manufacturer: A minimum of 5 years experience manufacturing similar products.
- B. Installer: A minimum of 2 years experience installing similar products.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in manufacturer's original packaging. Store materials in a dry, protected, well-vented area. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier's freight bill of lading.

1.04 WARRANTY

- A. Manufacturer's Warranty: Provide manufacturer's standard warranty. Materials shall be free of defects in material and workmanship for a period of twenty-five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge to the Owner.

PART 2 PRODUCTS

2.01 GENERAL

- A. Vault lids shall be aluminum, angle iron frame, and rated for "occasional" H-20 traffic loading, **suitable for use in off-street locations where not subjected to high density traffic.** Manufacturers shall be Bilco JD-AL (double leaf as

specified on the drawings) Channel Frame H-20 Loading type, or approved equal.

- B. Lids shall be of the general size shown on the drawings, and as specified herein. Contractor shall be responsible for confirming lid and frame are of suitable size and dimension for the vault. Contractor shall submit shop drawings for review and approval by the Engineer.
- C. Access hatches shall be “noise-free”, and shall not rattle or otherwise make noise when subject to routine vehicular traffic.
- D. Access hatches shall be designed to properly operate within the temperature ranges expected at the Project Site, Heritage Ranch, California.

2.02 HINGED ACCESS DOOR FEATURES

- A. Dimensions: As shown on the drawings
- B. Double-leaf as indicated on the drawings.
- C. Load rating, H-20 traffic loading as described in Paragraph 2.01.A of this Section, and with a maximum deflection of 1/150th of the span.
- D. Locking System: Type 316 SS slam lock with removable key.
- E. Cover equipped with the following stainless steel features: spring assists, T-316 heavy duty hinges, T-316 tamper proof attaching hardware, automatic T-316 hold open arm with aluminum latch.
- F. Frames and lids for precast vaults shall be provided with non-skid diamond check, spring assist, and locking hasp and eye.
- G. Frames and lids shall be of the make and model shown on the plans, or approved equal. Lids and vault doors shall be oriented and open as shown on the plans or as directed by the engineer.
- H. Doors shall open to 90 degrees and automatically lock open. Doors shall be of non-skid exterior surface, equipped with safety chain and ladder-up safety post. All hardware including lifting handles and hinges shall be 316 stainless steel. Covers shall have channel type frame construction permitting removal of water that settles around cover.
 - 1. Drain Coupling: Provide a 1-1/2” (38mm) drain coupling located in the right or left front corner of the channel frame.
- I. Slam lock with removable key, 316SS.
- J. Recessed lifting handle.
- K. Protective Safety Grating. Lockable panel, factory installed, powder coated in safety orange, T-316 SS positive latch with release handle securing grating panel in open position, 300 pound load rating for load rated doors.

PART 3 EXECUTION

3.01 GENERAL

- A. Install in accordance with manufacturer's recommendations.

3.02 EXAMINATION

- A. Examine substrates and openings for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 INSTALLATION

- A. Install products in strict accordance with manufacturer's instructions and approved submittals. Locate units level, plumb, and in proper alignment with adjacent work. Locate double-leaf doors in the orientation shown on the drawings.
- B. Test units for proper function and adjust until proper operation is achieved.
- C. Repair finishes damaged during installation.
- D. Restore finishes so no evidence remains of corrective work.

3.04 ADJUSTING AND CLEANING

- A. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.

END OF SECTION

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SECTION 09 90 00
PAINTING AND COATING

PART 1 GENERAL

1.1 DESCRIPTION

This Section describes materials and application of painting and coating systems for submerged metal surfaces, exposed metal surfaces, buried metal surfaces, and metal surfaces in contact with concrete.

1.2 SUBMITTALS

- A. Submit shop drawings in accordance with Section 01 33 00, and the following.
- B. Submit manufacturer's data sheets showing the following information:
 - 1. Recommended surface preparation.
 - 2. Minimum recommended dry-film thicknesses per coat for prime, intermediate, and finish coats.
 - 3. Percent solids by volume.
 - 4. Recommended thinners.
 - 5. Statement that the selected prime coat is recommended by the manufacturer for use with the selected intermediate and finish coats.
 - 6. Application instructions including recommended application, equipment, humidity, and temperature limitations.
- C. Submit certification that all coatings conform to local San Luis Obispo County Air Quality Management District Rules and Regulations for products and application.

1.3 QUALITY ASSURANCE

- A. **Compatibility:** Each complete coating system used for a specific task shall be of one manufacture.
- B. **Monitoring equipment:** The Contractor shall have available onsite all such gages, meters, and other devices necessary to verify that the coatings comply with the manufacturer's recommendations and these specifications. These testing devices shall be made available for the Engineer's use upon request, however this shall not relieve the Contractor his responsibility to perform his own monitoring of all conditions and applications to maintain compliance with requirements.
- C. **Weather Conditions:** Weather conditions shall be in the range specified by the manufacturer for optimal application of the coating.

- D. Containers: All materials shall be delivered to the jobsite in their original sealed and labeled containers of the manufacturer.

PART 2 MATERIALS

2.1 COLOR SYSTEM FOR COATINGS

Unless noted otherwise, colors for surfaces that are to be coated shall be defined as follows:

COLOR	PANTONE ID No. (closest match in sunlight)	AMERSHIELD DESIGNATION
Light Blue	2925C	1159 Light Blue
Dark Blue	2766C	Newport Coast #33
Purple	512C	PMS 512C
Safety Green	384U	1135 Safety Green
Safety Red	485 C 2X	RO-1 Bright Red
Safety Orange	021 C	OR-2 Safety Orange
Safety Yellow	U2X	Safety Yellow
Olive-lite	451C	PMS 451 C
Factory Finish	N/A	No color coating
Beige	N/A	MWRP Light Beige

2.2 SUBMERGED METAL COATING SYSTEMS

A. System No. B-1—Submerged Metal

Type: Self-priming high solids epoxy

Ameron	395 High Solids Epoxy
3-M Company	Scotchkote 306 Epoxy
Tnemec	104 Hi Build Pota-Pox Epoxy
Sherwin-Williams	Hi-Solids Catalyzed Epoxy, B62W201

Materials shall be applied in multiple coats to produce a minimum DFT of 30 mils.

2.3 EXPOSED METAL COATING SYSTEMS

A. System No. C-1--Exposed Metal, Severely Corrosive Environment and Inside Vaults

Type: Inorganic zinc prime coat with polyamide cured epoxy paint finish coat.

Service Conditions: Use on metal structures, piping, fittings, and appurtenances subjected to continuous water condensation, or occasional immersion or splashing.

Surface Preparation: SSPC SP-10.

Prime Coat: Apply to a dry-film thickness of 3 mils

Carbozinc 11HS;
Dimecote 9 HS;
Tnemec Zinc 90-96;
or approved equal.

Intermediate Coats: Apply to a dry-film thickness of 3 mils:

Ameron Amerlock 400 Epoxy;
Tnemec 69 Hi-build Epoxoline II;
Carboline super Hi-gard 891;
or approved equal.

Finish Coat: Two coats of 2 mil dry-film thickness for each coat:

Tnemec 71 polyurethane;
Carboline 134 H9 polyurethane;
International Interseal 670 HS;
or approved equal.

B. System No. C-2--Exposed Metal, Atmospheric Weathering Environment

Type: Aliphatic Polyurethane having a minimum volume solids content of 73% with amido-amine epoxy primer.

Service Conditions: Use on exterior steel and piping, fittings, and appurtenances subject to sunlight and weathering.

Surface Preparation: SSPC SP-6.

Prime Coat: Apply to a dry-film thickness of 5 mils:

Ameron Amerlock 400 Epoxy;
Tnemec Series 135 Chembuild;
International Interseal 670 HS;
or approved equal.

Minimum volume solids shall be 75%.

Finish Coats: One coat of 5 mil dry-film thickness:

Ameron Amershield;
Tnemec Series 75 Endura-shield;
International Interthane 870;
or approved equal,
for a total dry film thickness of system equal to 10 mils.

C. System No. C-3--Exposed Non-ferrous Metal and Galvanized Steel

Type: High solids epoxy coating having a minimum volume solids of 83%, with aliphatic polyurethane finish coat having a minimum volume solids of 73%.

Service Conditions: Use to coat non-ferrous and galvanized steel pipe, fittings, and appurtenances.

Surface Preparation: SSPC SP-1. "Brush blast" or etch with acid aluminum and galvanized surfaces to provide an etched surface prior to application of prime coat.

Prime Coat: Apply to a dry-film thickness of 5 mils:
Tnemec Series 135 ChemBuild;
Ameron Amerlock 400 Epoxy;
International – Interseal 670HS;
or approved equal.

Finish Coat: Apply to a dry-film thickness of 5 mils:
Tnemec Series 75 Endura-Shield;
Ameron Amershield;
International Interthane 870;
or approved equal.

2.4 BURIED METAL COATING SYSTEMS

A. System No. D-1 -- Buried Metal, Corrosive Groundwater Exposure

Type: coal-tar epoxy having a minimum volume solids of 78% and complying with AWWA C-210.

Service Conditions: Use to coat buried metal (flanges, bolts and nuts, fittings, flexible pipe couplings, structural steel etc.) especially subject to corrosive groundwater (low pH, high sulfate and chloride concentrations.)

Surface Preparation: SSPC SP-10.

Prime Coat: Apply to a dry-film thickness of 8 mils:
Kop-coat 300-M;
Ameron Amercoat 78 HB;
Tnemec 46H-413 Tnemec-Tar;
International Intertuf 132;
or approved equal.

Finish Coats: Two coats of 8 mils dry-film thickness for each coat:
Kop-coat 300-M;
Ameron Amercoat 78 HB;
Tnemec 46H-413 Tnemec-Tar;
International Intertuf 132;
or approved equal.

2.5 SHOP PAINTING OF VALVES, METERS, PUMPS AND OTHER FACTORY PAINTED EQUIPMENT

- A. Unless otherwise specified, interior ferrous metal surfaces of all valves, meters, pumps, and other factory painted equipment shall be shop painted as follows:
Surface preparation and cleaning shall be as specified for painting these

surfaces with not less than 30 mils of high solids epoxy as specified in coating system B-1.

2.6 COATING SYSTEM FOR METAL IN CONTACT WITH CONCRETE

A. System No. E-1--Aluminum and Concrete Insulation

Type: Bituminous paint having a minimum volume solids of 68% coal-tar pitch based.

Service Conditions: Use to coat areas of aluminum grating, gates, stairs, or structural members in contact with concrete.

Surface Preparation: SSPC SP-1.

Prime Coat: Apply synthetic resin wash primer (phosphoric acid or vinyl butyral acid) to surface as prime coat. Products:

Kop-coat 40 Passivator;
Tnemec 32-1210;
International - no primer required;
or approved equal.

Finish Coats: Two coats of 12 mil dry-film thickness each coat:

Kop-coat Bitumastic Super Service Black;
Tnemec 46-465 Tnemecol;
or approved equal.

2.7 LINING AND COATING SYSTEM FOR DUCTILE IRON PIPE AND FITTINGS

A. Lining: cement mortar lining per AWWA C104.

B. Coating:

1. Buried: standard asphaltic coating, plus polywrap per AWWA C105.
2. Exposed: System No. C-2,
 - a. Color: Match existing exposed piping at PS1. Submit color sample for approval by District.

2.8 SANDBLASTING FOR SURFACE PREPARATION

A. Unless otherwise specified, all sandblasting material shall be "black beauty" Harsco Minerals Fine 50 Pound, or approved equal, low free silica, coal slag, low dusting material.

2.9 AIR QUALITY REQUIREMENTS

A. Materials shall comply with San Luis Obispo County Air Quality Management Requirements.

PART 3 EXECUTION

3.1 SURFACE PREPARATION

- A. General: Sandblast or prepare only as much surface area as can be coated in one day. Remove all sharp edges, burrs, and weld spatter. Epoxy-coated pipe that has been factory coated shall not be sandblasted.
- B. SSPC Specifications: Wherever the words "solvent cleaning," "hand tool cleaning," "wire brushing," or "blast cleaning" or similar words are used in these specifications or in paint manufacturer's specifications, they shall be understood to refer to the applicable SSPC (The Society for Protective Coatings, Surfaces Preparation Specifications, ANSI A159.1) specifications listed below:
- SP-1 Solvent Cleaning
 - SP-2 Hand Tool Cleaning
 - SP-3 Power Tool Cleaning
 - SP-5 White Metal Blast Cleaning
 - SP-6 Commercial Blast Cleaning
 - SP-7 Brush-Off Blast Cleaning
 - SP-8 Pickling
 - SP-10 Near White Blast Cleaning
- C. Sandblasting: Provide suitable enclosure, exhaust system, and bag house for sandblasting operations to prevent violations of applicable air quality requirements. See Para. 2.6 of this Section for sandblasting materials.

3.2 PAINTING SYSTEMS

Deliver all paints to the site in the original, unopened containers. All materials of a specified painting system, including primer, intermediate, and finish coats, shall be produced by the same manufacturer. Thinners, cleaners, driers, and other additives shall be as recommended by the paint manufacturer for the particular coating system.

3.3 PAINT MIXING

Prepare multiple-component coatings using all the contents of each component container as packaged by the paint manufacturer. Do not use partial batches. Do not use multiple-component coatings that have been mixed beyond their pot life. Provide small quantity kits for touch-up painting and for painting other small areas. Mix only the components specified and furnished by the paint manufacturer. For reasons of color or otherwise, do not intermix additional components, even within the same generic type of coating.

3.4 SURFACES NOT TO BE PAINTED

Unless noted otherwise, do not paint the following surfaces and fully protect them when adjacent areas are painted:

- A. Mortar-coated pipe and fittings

- B. Stainless Steel
- C. Metal letters
- D. Nameplates and grease fittings
- E. Aluminum grating
- F. Brass and copper tubing, submerged
- G. Buried pipe, unless specifically required in the piping specifications

3.5 PROTECTION OF SURFACES NOT TO BE PAINTED

Remove, mask, or otherwise protect hardware, lighting fixtures, switch plates, aluminum surfaces, machined surfaces, couplings, shafts, bearings, nameplates on machinery, and other surfaces not intended to be painted. Provide drop cloths to prevent paint materials from falling on or marring adjacent surfaces. Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process. Safely mask openings in motors shall be to prevent paint and other materials from entering the motors. Completely remove all masking materials and clean surfaces at completion of painting operations.

3.6 SURFACES TO BE COATED

Coat surfaces as described below:

- A. Above Ground and Exposed Piping: Coat above ground and exposed piping or piping in vaults and structures as described in the various piping specifications and as specified herein. Color shall be as specified herein or as required by the Engineer.
- B. Valves: Coat valves as described in the various valve specifications. Above ground valves, or valves in vaults and structures, shall match the color of the connecting piping.
- C. Valve Can Lids: Coat valve can lids per System No. C-1.
- D. Buried Items: Coat buried flanges, nuts and bolts, valves, flexible pipe couplings, exposed rebar from thrust blocks, and valve boxes per System No. D-1 unless otherwise specified in the particular specifications for these items.
- E. Above Ground Structural Steel and Structural Steel in Vaults: Coat above ground structural steel or structural steel located in vaults and structures as described in the exposed metal coating system section, System No. C-2.
- F. Pipe Supports: Coat pipe supports in vaults coated the same as the adjacent piping. If pipe is PVC, coat pipe supports per System No. C-1.

- G. Exposed Indoor Galvanized Electrical Conduit: Coat exposed indoor galvanized electrical conduit per System No. C-3. Color of finish coat shall be OSHA Safety Orange.
- H. Aluminum in Contact with Concrete: Coat aluminum surfaces in contact with concrete shall be coated per System No. E-1.

3.7 COLOR SCHEDULE

- A. Color Guidelines: Unless noted otherwise, coat surfaces to match the colors listed below.

- B. Definitions:

At Grade: Facilities that are flush with streets, sidewalks, parking lots, green belts or graded areas.

Above Grade/Exposed: Pipelines and other facilities that are protruding through and are located above finished grade, out of doors and not enclosed by a shelter, cover, vault or housing.

Enclosed: Pipeline and other facilities that are located above or below grade and are enclosed within a shelter, covers, or vaults.

N/A: Not Applicable:

I.D. Mark: System identification marker as described herein. The I.D. Mark shall identify the system, of which the facility is a part.

- C. Vertical Intake, Piping, and Valve Vault

FACILITY	ENCLOSED	ABOVE GRADE/EXPOSED	AT GRADE
Electric Enclosures	Factory Finish	Olive-lite or Factory Finish*	N/A
Indoor Electrical Conduits, Exposed	N/A	OSHA Safety Orange	N/A
Raw Water Piping	N/A	Dark Blue with I.D. Mark (match existing color of PS1 piping)	N/A
Valves (all types) in Vault	Dark Blue with I.D. Mark (match existing color of PS1 piping)	Dark Blue with I.D. Mark (match existing color of PS1 piping)	N/A
Valve Can Lids	N/A	N/A	N/A
Vault Hatch Lids	N/A	N/A	Factory Finish w/I.D. Mark
Potable Water Valve Can Lids	N/A	N/A	N/A

- Color samples shall be submitted to the District. Final color selection shall be approved by the District.

D. Identification (I.D.) Mark:

Certain facilities listed above to be coated shall have an identification system applied by the Contractor at the District's direction.

Sewer valve lids shall be marked "SEWER". Water valves, including hydrant isolation valve lids shall be marked "WATER". Raw water piping shall be marked "RAW WATER".

3.8 FIELD TOUCH UP OF SHOP-APPLIED PRIME COATS

- A. Organic Zinc Primer: Surfaces that are shop primed with inorganic zinc primers shall receive a field touchup of organic zinc primer to cover all scratches or abraded areas. Organic zinc coating system shall have a minimum volume solids of 54% and a minimum zinc content of 14 pounds per gallon. Coating shall be of the converted epoxy, epoxy phenolic, or urethane type and shall be Tnemec 90-97, 3 mils; International Zinc Lock Epoxy 308, 3 mils; or approved equal. Organic zinc primer shall be manufactured by the prime coat and finish coat manufacturer.
- B. Other Surfaces: Other surfaces that are shop primed shall receive a field touchup of the same primer used in the original prime coat.

3.9 DRY-FILM THICKNESS TESTING

- A. Coating Thickness Testing: Measure coating thickness specified for steel surfaces with a magnetic-type dry-film thickness gage. Provide dry-film thickness gauge as manufactured by Mikrotest, Elcometer, or approval equal. Each coat shall be checked for the correct dry-film thickness. Measurement shall not be made until a minimum of eight hours after application of the coating. Check non-magnetic surfaces for coating thickness by micrometer measurement of cut and removed coupons. Repair coating at all locations where coupons are removed.
- B. Holiday Testing: Test the finish coat (except zinc primer and galvanizing) for holidays and discontinuities with an electrical holiday detector of the low-voltage, wet-sponge type. Detector shall be manufactured by Tinker and Razor or K-D Bird Dog.
- C. Repair: If the item has an improper finish color, insufficient film thickness, or holidays, clean the surface and top-coat it with the specified paint material to obtain the specified color and coverage. Sand by hand or power visible areas of chipped, peeled, or abraded paint, feather the edges. Prime the areas and finish coat in accordance with the Specifications. Work shall be free of runs, bridges, shiners, laps, or other imperfections.

END OF SECTION

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SECTION 26 05 00

COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section Includes:

1. Materials and equipment shall be furnished and installed in support of electrical work described in these plans and specifications including but not limited to, raceways, boxes, enclosures, feeders, branch circuiting, supports, terminal cabinets, sleeves, gutters, panels, transformers, switchgear, controls, relays, contactors, in order to complete and make fully functional the systems described.
2. Duct banks and raceways for all power and communications systems as shown and/or required. Duct banks shall include all trenching, racking, conduit, concrete, backfill, boxes, pads, substructures required for a fully developed and useable pathway for cables, conductors, as shown on site, etc.
3. Plumbing Electrical: Conduit, conductors and terminations for plumbing equipment with power requirements including necessary fusible and/or non-fusible safety disconnect devices. Provide motor starters where required unless provided by mechanical specification.
4. Power Distribution: Furnish and install power distribution systems including but not limited to panels, feeders, transformers, branch circuits, devices, fixtures, disconnect switches, contactors, controls, etc. for a complete working system.
5. Data systems infrastructure including all boxes, raceways, dedicated branch circuits, sleeves and penetrations, etc. as described and as shown in plans, risers, specifications, EIA/TIA standards and/or required for a complete and operating system.
6. Allocation of time to adequately train the Owner on the use and operation of all systems installed within the facility or on the property. Minimum two week advance notice shall be coordinated with the Owner and his representatives. Training shall be as outlined in individual system specifications identified to follow.

- B. Related Sections Under Other Divisions:

1. Painting of electrical equipment where exposed and required by the Engineer to be painted as described elsewhere in the specification.

1.03 SYSTEM DESCRIPTION

- A. The electrical plans indicate the general layout and arrangement; the engineering drawings and field conditions shall determine exact locations. Field verify all conditions and modify as required to satisfy design requirements as well as code minimums. Maintain all required working clearances as described in CEC Article 110 as well as other applicable articles.
- B. Discrepancies shall be brought immediately to the attention of the Engineer for clarification. The Engineer shall approve any changes. Prior to rough-in, refer to engineer of record plans that shall take precedence over electrical plans with respect to locations.

1.04 SUBMITTALS AND SHOP DRAWINGS

- A. Before construction, submit in (accordance with the General Conditions of this Specification) a complete list of all materials proposed to be furnished and installed under this section. Any material procured without review and approval of the engineer and/or owner's representative, will solely be at the contractor's risk.
- B. Manufacturers' specifications, catalog cuts and shop drawings as required to demonstrate compliance with the specifications. Identify specific intended use for each component where submittal may be ambiguous. Submit entire bound submittal at one time; partial submittals will not be accepted. At a minimum, submittals will be required for the following:
 - 1. Distribution equipment including main switchboards, distribution switchgear, transformers, distribution panels and breakers, motor controls, distribution and branch circuit panels, grounding, transient voltage surge suppressors, etc.
 - 2. Electrical equipment including disconnects, fuses, raceways, straps and racks, fittings, conductors, boxes, gutters, devices, plates, etc.
 - 3. Conduit including all fittings, etc.
 - 4. Wiring and cable, terminations, etc.
- C. The intent of these specifications is to establish a standard of quality for materials and equipment. Therefore, some items are identified by manufacturer or trade name designation. Substitutions shall be subject to the Engineer's approval. Samples of the proposed and substitute materials may be required for inspection prior to approval. Costs, if any, for evaluation of substitutions shall be the Contractor's responsibility. The decision of the Engineer shall be final. Where the substitution will affect other trades, coordinate all changes with those trades concerned and pay any additional costs incurred by them as a result of this substitution. Approval of substitutions shall not relieve the Contractor from providing an operational system in accordance with all applicable codes and ordinances.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Storage of equipment for the job is the responsibility of the Electrical Contractor and shall be scheduled for delivery to the site, as the equipment is required. Damage to the equipment delivered to the site or in transport to the job shall be the responsibility of the Electrical Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Materials shall be new and bear the label of or be listed by a nationally recognized testing laboratory. The quality and suitability of all materials shall conform to the standards and practices of this trade.
- B. Supplied materials shall be of a current manufactured product line. Discontinued products are not acceptable. Where products are identified on the contract documents by part number, supply the current product model or series which meets the specification and intended use of the specified component.

2.02 SUPPORTING DEVICES

- A. Concrete Inserts: Kindorf D-255, cast in concrete for support fasteners for loads up to 800 lbs.
- B. Pipe Straps: Two-hole galvanized or malleable iron.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Professionalism and appearance of installations shall be in accordance with accepted practices of this trade. Installation methods shall conform to manufacturers' specifications and recommendations. The Contractor shall man the job with qualified journeymen and helpers in this trade for the duration of the job. It is the Contractor's responsibility to communicate with and keep the job superintendent apprised of changes or clarifications, etc.
- B. Employment of any person on any job in the capacity of an electrician is not permitted unless such person has qualified for and holds a valid Journeyman Electrician Pocket Card or General Journeyman Electrician Certificate issued by the State of California Division of Apprenticeship Standards except, Contractor may employ electrical helpers or apprentices on any job of electrical construction, new or existing, when the work of such helpers or apprentices is performed under the direct and constant personal supervision of a journeyman electrician holding a valid Pocket Card accepted by the State of California Division of Apprenticeship Standards.
 - 1. Each Pocket Card carrying journeyman electrician will be permitted to be responsible for the quality of workmanship for a maximum of one helper or apprentice during any same time period, provided the nature of work is such that good supervision can be maintained and the quality of workmanship is the best, as expected by Owner and implied by the latest edition of the National Electrical Code.
 - 2. Before each journeyman electrician commences work, deliver to Owner at the project site, a photocopy of the journeyman's valid Pocket Card.

- C. Materials shall be installed in accordance with the manufacturers' specification and recommendations. They must conform to the approval AHJ adopted codes and standards, but not less than the 2019 CEC and all applicable codes and standards, including but not necessarily limited to California Code of Regulations Title 24, NFPA, National Electrical Manufacturers Association, ANSI, CBC, and any other adopted ordinances of applicable agencies having jurisdiction. Refer to general conditions of specifications.
- D. Electrical Contractor shall lay work out in advance in order to avoid unnecessary cutting, chasing, and drilling of floors, walls, ceilings and other surfaces. Work of this nature shall be carefully done so as not to damage work already performed by other trades. Any damage which results must be properly repaired at no extra cost to the Owner. Such alterations shall not depreciate the integrity of the structure. Approval for cuts or penetrations in structural members shall be by the Engineer.
- E. Supporting Devices:
1. Verify mounting height of all luminaires or items prior to installation when heights are not detailed.
 2. Install vertical support members for equipment and luminaires, straight and parallel to building walls. Provide independent supports to structural member for electrical luminaires, materials, or equipment installed in or on ceiling, walls or in void spaces or over furred or suspended ceilings.
 3. Do not use other trade's fastening devices as supporting means for electrical equipment, materials or luminaires. Do not use supports or fastening devices to support other than one particular item.
 4. Support conduits within 18" of outlets, boxes, panels, cabinets and deflections. Maximum distance between supports not to exceed 8' spacing.
 5. Securely suspend all junction boxes, pull boxes or other conduit terminating housings located above suspended ceiling from the floor above or roof structure to prevent sagging and swaying.
 6. Provide seismic bracing per UBC requirements for this building location.
 7. Supporting Devices: Safety factor of 4 required for every fastening device or support for electrical equipment installed. Support to withstand four times weight of equipment it supports. Bracing to comply with seismic design category "SDC" per Structural Engineer.
- F. Coordinate work with other trades as required to eliminate any delays during construction. Coordinate changes with other prime contractors to avoid construction conflicts.
- G. Engineer's Field Observation: Site visits during construction for field observations and reports will be conducted by electrical engineer when directed by the Engineer. A list of items that need to be addressed will be submitted to the Engineer for forwarding to the Contractor. A written response to all items shall be submitted for Owner's review once complete. When Electrical Engineering representative performs a field observation, the Electrical Contractor shall be present and available to remove equipment covers as needed.
- H. Drawings of Record: Provide a full and accurate set of field record drawings marked up in a neat and understandable manner submitted to the Owner Representative, Construction Manager, or Engineer upon completion of the work and prior to issuance of a certificate of completion. The drawings shall dimension all electrical facilities

including but not limited to underground conduit, vaults, boxes as well as conduit routing scaled to within 12" of actual field conditions and shall be kept up to date on a daily basis reflecting changes or deviations. Electrical facilities shall be accurately drawn on the plan to scale. Refer to the general conditions of these specifications for additional requirements. Record drawings shall be required to identify both horizontal and vertical dimensions to visible and fixed points such as concrete, asphalt, buildings, sidewalks, etc.

- I. Identification: Provide engraved laminated plastic nameplates for all switchboards, panelboards, fire alarm terminal cabinets, telephone and cable television backboards, main devices, control panels, time clocks, contactors and safety disconnect switches accurately identifying each device. Labels shall be attached to the equipment by means of screws or rivets. Self-adhering labels will not be acceptable. Refer to Section 26 05 53, IDENTIFICATION OF ELECTRICAL SYSTEMS.
- J. Safety: The Electrical Contractor is responsible to maintain equipment in a safe and responsible manner. Keep dead front equipment in place while equipment is energized. Conduct construction operations in a safe manner for employees as well as other work persons or anyone visiting the job site. Provide barriers, trench plates, flags, tape, etc. The Contractor shall hold all parties harmless of negligent safety practices that may cause injury to others on or near the job site.
- K. Guarantees: Equipment and labor shall be guaranteed and warranted free of defects, unless otherwise stated to be more restrictive, for a period of one year from the date of final acceptance by the Owner. A written warranty shall be presented to the Engineer at the time of completion prior to final acceptance. Equipment deemed to be damaged, broken or failed should be repaired or replaced at no additional cost to the Owner. Materials or system requiring longer than a one-year warranty as described herein shall be separately warranted in separate letters of guarantee stating the duration of warranty.
- L. Operating and Installation Manuals: Provide two copies each of manuals, operating and installation instructions for equipment indicated in submittal packages. Instruct the Owner's representative as to the operation and location of equipment necessary to allow them to operate the facility upon final acceptance. This instruction period shall be prearranged with the Owner's representative prior to occupancy of the facility and the weeks prior to training scheduled.

END OF SECTION

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SECTION 26 05 01

SELECTIVE ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section Includes:
 - 1. Electrical demolition.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work shall be as specified in individual sections.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Contractor to walk job to observe existing conditions and account for variance as needed.
- B. Verify field measurements and circuiting arrangements as shown on drawings.
- C. Verify that abandoned wiring and equipment serve only abandoned facilities.
- D. Demolition Drawings are based on limited field observation and existing record documents. Report discrepancies to Owner/Engineer before disturbing existing installation.

3.02 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.
- B. Coordinate utility service outages with utility company.

- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, observe provisions of NFPA 70E and CALOSHA, use personnel experienced in such operations.
- D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Obtain permission from Owner at least 48 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area as required.

3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Demolish and extend existing electrical work under provisions of this section.
- B. Remove, relocate, and extend existing installations to accommodate new construction.
- C. Allow the owner first right to retain ownership of salvaged materials, otherwise the Electrical Contractor is responsible for its removal from the site and proper disposal or recycling.
- D. Remove abandoned wiring to source of supply.
- E. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- F. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.
- G. Disconnect and remove abandoned panelboards and distribution equipment.
- H. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- I. Discarded electrical components and lamps containing hazardous waste (i.e., mercury in fluorescent lamps) shall be disposed of as required by the State Laws and Local Ordinances regarding hazardous materials.
- J. Repair adjacent construction and finishes damaged during demolition and extension work.
- K. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.
- L. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

3.04 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment which remain or are to be reused.

- B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

3.05 INSTALLATION

- A. Install relocated materials and equipment as shown and/or as required.

END OF SECTION

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SECTION 26 05 19

LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Wires and cables.
 - 2. Connectors.
 - 3. Lugs and pads.

1.03 SYSTEM DESCRIPTION

- A. Provide wires, cables, connectors, lugs, strain reliefs, racking insulators for a complete and operational electrical system.

1.04 SUBMITTALS

- A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
- B. Provide product data for the following equipment:
 - 1. Wires.
 - 2. Cables.
 - 3. Connectors.
 - 4. Lugs.
 - 5. Splice Kits.
 - 6. Strain Relief Fittings.
 - 7. Cable Racking and Insulators.
- C. Provide the insulation cable testing report in the project closeout documentation, refer to Closeout Requirements in the General Conditions portion of this specification.

1.05 REGULATORY REQUIREMENTS

- A. Conform to requirements of the CEC, latest adopted version with amendments by local Authority Having Jurisdiction (AHJ).

- B. Furnish products listed by UL or other testing firm acceptable to AHJ.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Wires and Cables: General Cable, Okonite, Southwire, or approved equal.
- B. Connectors: Burndy, IlSCO, Thomas & Betts, or approved equal.
- C. Wire connectors shall be minimum 75 degree centigrade rated and properly sized for the number of conductors being connected, terminated, spliced etc. All above grade connectors shall be solderless lug or plastic wire nut type, screw on, pressure cable type (wire nut or spring nut type), 600 volt, 105 degree C, with skirt to cover all portions of stripped wires. Connector shall be U.L. rated for number and size of conductors being joined together as a splice.
- D. Splices:
 1. Branch Circuit Splices: Ideal, Scotch-Lock, 3M, or approved.
 2. Feeder Splices: Compression barrel splice with two layers Scotch 23 and four layers of Scotch 33+ as vapor barrier.
 3. Screw Terminal Lugs.
 4. Kearney Split Bolt.
- E. MC and HFC Cable: Alfex, AFC, or approved and shall meet all CEC Article 334 provisions.

2.02 WIRES AND CABLES FOR LINE VOLTAGE SYSTEM AND CONTROLS. WIRE AND CABLE SHALL BE:

- A. Copper, 600 volt rated throughout. Conductors 14AWG to 10AWG, solid or stranded. Conductors 8AWG and larger, stranded.
- B. Phase color to be consistent at all feeder terminations; A-B-C, top to bottom, left to right, front to back. Phasing tape shall be permitted on sizes #6 and larger.
- C. Color Code Conductors as Follows:

PHASE	208 VOLT	240 VOLT DELTA	480 VOLT
A	Black	Black	Brown
B.	Red	Orange (High Leg)	Orange
C.	Blue	Blue	Yellow
Neutral	White	White	White w/ colored strip
Ground	Green	Green	Green
Isolated Ground	Green w/yellow trace	Green w/yellow trace	N/A
- D. All conductors shall be copper unless otherwise noted. Minimum size for individual conductors shall be #12 AWG unless otherwise noted. Sizes #8 AWG and larger shall be stranded conductor. Individual conductors shall be insulated with type, XHHW, THW, THHN/THWN 600-volt insulation unless otherwise noted. Control, signal, communication conductors shall be as dictated by the vendor of that equipment or as

specified here-in. Proper insulation type shall be used for the proper environmental application (i.e., waterproof, wet location, plenum, temperature rated). If a condition exists where the application is uncertain, contact the Engineer for direction. Contractor is responsible to follow specific cabling requirements described in other sections of this specification relative to various communications and controls systems as well as the respective riser diagrams shown on plans. If a discrepancy occurs, communicate such discrepancy to the Engineer of record and Engineer immediately for resolution.

- E. Insulation types THWN, THHN or XHHW. Minimum insulation rating of 90C for branch circuits.
- F. Refer to signal and communications specification sections for cable requirements.

2.03 CONNECTORS

- A. Copper Pads: Drilled and tapped for multiple conductor terminals.
- B. Lugs: Indent/compression type for use with stranded branch circuit or control conductors.
- C. Solid Conductor Branch Circuits: Spring connectors, wire nuts, for conductors 18 through 8AWG.

2.04 LUGS AND PADS

- A. Ampacity: Cross-sectional area of pad for multiple conductor terminations to match ampere rating of panelboard bus or equipment line terminals.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Installation: Conductors shall not be installed until after conduit systems are permanently in place. Use an approved non hardening type wire pulling lubricant if lubricant is to be used. Maintain all conduits and wire pulls free from foreign material. If due to field conditions, more than a total of 300 degrees of bend are required; a pull box shall be furnished and installed for ease of installation. Said pull boxes must be sized and rated for the appropriate application and must remain easily accessible upon completion of the project (approval of the location shall be obtained from the Engineer prior to installation). Show these pullboxes on the field record drawings. Conductors installed in underground raceways on site shall be duct sealed and taped where they exit the raceway to prevent the entrance of foreign material and moisture after the conductors are installed. Proper drainage shall be provided for underground pull and splice boxes.
- B. Insulation: Use proper insulation types where temperature and environment are a factor.

- C. Splices at or below grade level shall be made with wet location rated and approved mechanical connectors and shall be encapsulated in epoxy or plastic molded poured kits. The connections must be assured to be watertight. Splices at or below grade shall always be avoided and minimized. Prior approval is required for feeder splices below grade. Submit proposed materials and exhibit showing location of intended splices for Engineer's review and approval prior to commencing with the work.
- D. Labeling: All conductors in panels, switchboards, terminal cabinets, vaults, pull boxes, and junction boxes shall be labeled with tape number markers indicating circuit number and identifying system. All labeling shall be permanent. In manholes and vaults, provide embossed brass tags identifying system serviced and function. See Section 26 05 53 IDENTIFICATION OF ELECTRICAL SYSTEMS.
- E. All conductors, wiring, cable where installed below floor, slab or underground shall be considered wet locations, and shall be rated accordingly. Non waterproof cabling is not allowed in any below grade or wet application.
- F. Cables routed together in cable tray shall be stacked, organized and tie wrapped together in a neat and workman like manner. Random cable routing is not acceptable.
- G. Cable and conductors routed through pull boxes and vaults shall be properly supported on porcelain or equal insulators mounted on steel rack inserts. Bend radius of cable or conductor shall not be less than six times the overall cable diameter.
- H. Wires and Cables:
 - 1. Conductor Installation:
 - a. Install conductors in raceways having adequate, code size cross-sectional area for wires indicated.
 - b. Install conductors with care to avoid damage to insulation.
 - c. Do not apply greater tension on conductors than recommended by manufacturer during installation.
 - d. Use of pulling compounds is permitted. Clean residue from exposed conductors and raceway entrances after conductor installation.
 - 2. Conductor Size and Quantity:
 - a. Install no conductors smaller than 12AWG unless otherwise shown.
 - b. Provide all required conductors for a fully operable system.
 - 3. Provide dedicated neutrals (one neutral conductor for each phase conductor) in the following single phase circuits:
 - a. Dimmer controlled circuits.
 - b. Isolated ground circuits.
 - c. Ground fault and arc fault protected circuits where a GFI and arc fault breakers are used in panelboards.
 - d. Other electronic equipment which produces a high level of harmonic distortion including but not limited to computers, printers, plotters, copy machines, fax machines, where indicated.
 - 4. Conductors in Cabinets:
 - a. Cable and train all wires in panels and cabinets for power and control neatly and uniformly. Use plastic ties in panels and cabinets.
 - b. Tie and bundle feeder conductors in wireways of panelboards.
 - c. Hold conductors away from sharp metal edges.
 - d. Connectors: Retighten mechanical type lugs and connectors for conductors to equipment prior to Notice of Completion.

3.02 FIELD QUALITY CONTROL

A. Tests:

1. Test conductor insulation on feeders of 400 amp and greater for conformity with 1000 volt megohmmeter. Use Insulated Cable Engineers Association testing procedures. Minimum insulation resistance acceptable is 1 megohm for systems 600 volts and below.
2. Test Report: Prepare a typed tabular report indicating the testing instrument, the feeder tested, amperage rating of the feeder, insulation type, voltage, the approximate length of the feeder, conduit type, and the measured resistance of the megohmmeter test. Submit report with operating and maintenance manual.

END OF SECTION

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SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section Includes:
 - 1. Grounding and bonding requirements of electrical installations for personnel safety and to provide a low impedance path for possible ground fault currents as described in CEC Article 250.
 - 2. "Grounding electrode system" refers to all electrodes required by CEC, as well as including made, supplementary, lightning protection system and telecommunications system grounding electrodes.
 - 3. The terms "connect" and "bond" are used interchangeably in this specification and have the same meaning.
- B. Related Work:
 - 1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
 - 2. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.

1.03 SUBMITTALS

- A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

PART 2 - PRODUCTS

2.01 GROUNDING AND BONDING CONDUCTORS

- A. Equipment grounding conductors shall be UL 83 insulated stranded copper, except that sizes No. 10 AWG and smaller shall be solid copper. Insulation color shall be continuous green for all equipment grounding conductors, except that wire sizes No. 4 AWG and larger shall be permitted to be identified per CEC.
- B. Bonding conductors shall be ASTM B8 bare stranded copper, except that sizes No. 10 AWG and smaller shall be ASTM B1 solid bare copper wire.

- C. Conductor sizes shall not be less than what is shown on the drawings and not less than required by the CEC, whichever is greater.

2.02 GROUND RODS

- A. Copperclad steel, 5/8" diameter by 10' long, conforming to UL 467 unless otherwise noted on drawings and details.
- B. Quantity of rods shall be as required to obtain the specified ground resistance or additional rods shall be driven to obtain specified resistance or less.

2.03 SPLICES AND TERMINATION COMPONENTS

- A. Components shall meet or exceed UL 467 and be clearly marked with the manufacturer, catalog number, and permitted conductor size(s).

PART 3 - EXECUTION

3.01 GENERAL

- A. Ground in accordance with the CEC, as shown on drawings, and as hereinafter specified.
- B. System Grounding:
 - 1. Secondary service neutrals: Ground at the supply side of the secondary disconnecting means and at the related transformers.
 - 2. Separately derived systems (transformers downstream from the service entrance): Ground the secondary neutral.
- C. Equipment Grounding: Metallic structures (including ductwork and building steel), enclosures, fire sprinklers, plumbing piping, raceways, junction boxes, outlet boxes, cabinets, machine frames, and other conductive items in close proximity with electrical circuits shall be bonded and grounded.

3.02 INACCESSIBLE GROUNDING CONNECTIONS

- A. Make grounding connections which are buried or otherwise normally inaccessible (except connections for which periodic testing access is required) by exothermic weld.

3.03 SECONDARY EQUIPMENT AND CIRCUITS

- A. Main Bonding Jumper: Bond the secondary service neutral to the ground bus in the service equipment.
- B. Metallic Piping, Building Steel, and Supplemental Electrode(s):
 - 1. Provide a grounding electrode conductor sized per CEC between the service equipment ground bus and all metallic water and gas pipe systems, building

- steel, and supplemental or made electrodes. Jumper insulating joints in the metallic piping. All connections to electrodes shall be made with fittings that conform to UL 467.
2. Provide a supplemental ground electrode and bond to the grounding electrode system.
- C. Service Disconnect: Provide a ground bar bolted to the enclosure with lugs for connecting the various grounding conductors.
- D. Switchgear, Switchboards, Unit Substations, and Motor Control Centers:
1. Connect the various feeder equipment grounding conductors to the ground bus in the enclosure with suitable pressure connectors.
 2. For service entrance equipment, connect the grounding electrode conductor to the ground bus.
 3. Connect metallic conduits, which terminate without mechanical connection to the housing, by grounding bushings and grounding conductor to the equipment ground bus.
- E. Transformers:
1. Exterior: Exterior transformers supplying interior service equipment shall have the neutral grounded at the transformer secondary. Provide a grounding electrode at the transformer.
 2. Separately derived systems (transformers downstream from service equipment): Ground the secondary neutral at the transformer. Provide a grounding electrode conductor from the transformer to nearest component of the grounding electrode system and the ground bar at the service equipment.
- F. Conduit Systems:
1. Ground all metallic conduit systems. All metallic conduit systems shall contain an equipment grounding conductor sized per CEC.
 2. Non metallic conduit systems shall contain an equipment grounding conductor.
 3. Metal conduit containing only a grounding conductor, and which is provided for mechanical protection of the conductor, shall be bonded to that conductor at the entrance and exit from the conduit.
- G. Feeders and Branch Circuits: Install equipment grounding conductors with all feeders, power and lighting branch circuits.
- H. Boxes, Cabinets, Enclosures, and Panelboards:
1. Bond the equipment grounding conductor to each pullbox, junction box, outlet box, device box, cabinets, and other enclosures through which the conductor passes.
 2. Provide lugs in each box and enclosure for equipment grounding conductor termination.
 3. Provide ground bars in panelboards, bolted to the housing, with sufficient lugs to terminate the equipment grounding conductors.
- I. Motors and Starters: Provide lugs in motor terminal box and starter housing or motor control center compartment to terminate equipment grounding conductors.

- J. Receptacles shall not be grounded through their mounting screws. Ground with a jumper from the receptacle green ground terminal to the device box ground screw and the branch circuit equipment grounding conductor.
- K. Fixed electrical appliances and equipment shall be provided with a ground lug for termination of the equipment grounding conductor.
- L. Panelboard Bonding: The equipment grounding terminal buses of the normal and emergency branch circuit panelboards shall be bonded together with an insulated continuous copper conductor not less than No. 8 AWG where panels are in same room together or within 25' of each other. These conductors shall be installed in rigid metal conduit.

3.04 CONDUCTIVE PIPING

- A. Bond all conductive piping systems, interior and exterior, to the building to the grounding electrode system. Bonding connections shall be made as close as practical to the equipment ground bus.

3.05 GROUND RESISTANCE

- A. Grounding system resistance to ground shall not exceed 25 ohms. Make necessary modifications or additions to the grounding electrode system for compliance without additional cost to the Owner. Final tests shall assure that this requirement is met and test results shall be submitted to the Owner with final close out documents.
- B. Resistance of the grounding electrode system shall be measured using a four-terminal fall-of-potential method as defined in IEEE Standard 81. Ground resistance measurements shall be made before the electrical distribution system is energized and shall be made in normally dry conditions not less than 48 hours after the last rainfall. Resistance measurements of separate grounding electrode systems shall be made before the systems are bonded together below grade. The combined resistance of separate systems may be used to meet the required resistance, but the specified number of electrodes must still be provided.
- C. Below-grade connections shall be visually inspected by the IOR prior to backfilling. The Contractor shall notify the IOR 24 hours before the connections are ready for inspection.
- D. Furnish a copy of tests to Owner at completion of project.

3.06 GROUND ROD INSTALLATION

- A. Drive each rod vertically in the earth, not less than 7 1/2' in depth.
- B. Where permanently concealed ground connections are required, make the connections by the exothermic process to form solid metal joints. Make accessible ground connections with mechanical pressure type ground connectors.

- C. Where rock prevents the driving of vertical ground rods, install angled ground rods or grounding electrodes in horizontal trenches to achieve the specified resistance.

3.07 GROUNDING FOR RF/EMI CONTROL

- A. Install bonding jumpers to bond all conduit, cable trays, sleeves and equipment for low voltage signaling and data communications circuits. Bonding jumpers shall consist of 4" wide copper strip or two No. 10 copper conductors spaced minimum 4" apart. Use No. 6 copper where exposed and subject to damage.
- B. Comply with the following when shielded cable is used for communication circuits.
 - 1. Shields shall be continuous throughout each circuit.
 - 2. Connect shield drain wires together at each circuit connection point and insulate from ground. Do not ground the shield.
 - 3. Do not connect shields from different circuits together.
 - 4. Shield shall be connected at one end only. Connect shield to signal reference at the origin of the circuit. Consult with equipment manufacturer to determine signal reference.

END OF SECTION

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SECTION 26 05 29
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Hangers and supports for electrical equipment and systems.
 - 2. Construction requirements for concrete bases.
- B. Related Sections include the following:
 - 1. Section 26 0548 "Vibration and Seismic Controls for Electrical Systems" for products and installation requirements necessary for compliance with seismic criteria.

1.03 SUBMITTALS

- A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

1.04 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. IMC: Intermediate metal conduit.
- C. RMC: Rigid metal conduit.

1.05 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

- D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.06 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Steel slotted support systems.
 - 2. Nonmetallic slotted support systems.
- B. Shop Drawings: Show fabrication and installation details and include calculations for the following:
 - 1. Trapeze hangers. Include Product Data for components.
 - 2. Steel slotted channel systems. Include Product Data for components.
 - 3. Equipment supports.

1.07 INFORMATIONAL SUBMITTALS

- A. Welding certificates.

1.08 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Comply with NFPA 70.

1.09 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified together with concrete Specifications.
- B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Section 07 72 00 "Roof Accessories."

PART 2 - PRODUCTS

2.01 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

- A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Allied Tube & Conduit.
 - b. Cooper B-Line, Inc.; a division of Cooper Industries.

- c. ERICO International Corporation.
 - d. GS Metals Corp.
 - e. Thomas & Betts Corporation.
 - f. Unistrut; Tyco International, Ltd.
 - g. Wesanco, Inc.
2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
 3. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
 4. Channel Dimensions: Selected for applicable load criteria.
- B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
- C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
- D. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
- E. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Hilti Inc.
 - 2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 3) MKT Fastening, LLC.
 - 4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit.
 2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
 - a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) Cooper B-Line, Inc.; a division of Cooper Industries.
 - 2) Empire Tool and Manufacturing Co., Inc.
 - 3) Hilti Inc.
 - 4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
 - 5) MKT Fastening, LLC.
 3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
 4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
 5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
 6. Toggle Bolts: All-steel springhead type.
 7. Hanger Rods: Threaded steel.

2.02 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Section 05 50 00 "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.01 APPLICATION

- A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.
- B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.
- C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
 - 1. Secure raceways and cables to these supports with two-bolt conduit clamps.

3.02 SUPPORT INSTALLATION

- A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.
- B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.
- C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).
- D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
 - 1. To Wood: Fasten with lag screws or through bolts.
 - 2. To New Concrete: Bolt to concrete inserts.
 - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
 - 4. To Existing Concrete: Expansion anchor fasteners.
 - 5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.

6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
 7. To Light Steel: Sheet metal screws.
 8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.
- E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.03 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Section 05 50 00 "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

3.04 CONCRETE BASES

- A. Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.
- B. Use 3000-psi (20.7-MPa), 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Section 03 30 00 "Cast-in-Place Concrete."
- C. Anchor equipment to concrete base.
 1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 2. Install anchor bolts to elevations required for proper attachment to supported equipment.
 3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.05 PAINTING

- A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.
 1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).

- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

SECTION 26 05 33

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Conduit and fittings.
2. Junction and pull boxes.
3. Cabinets, termination cabinets.
4. Concrete boxes and vaults.
5. Fiberglass or composite boxes and vaults.

B. Related Work:

1. Installation of all wire, cable, conductor, boxes/gutters, pull ropes, fiber optic cable raceway, conduit, innerduct, cable sleeve and duct as described on the plans and/or as specified here-in. This scope shall include pathways to be installed underground on site and offsite, underslab, above grade, both concealed and exposed, overhead concealed and exposed as appropriately applied. Raceways/boxes shall be installed in accordance with their intended and allowed uses and as specified here-in whichever is more restrictive. Size and capacity of all raceway/boxes shall be as specified here-in or as depicted on the drawings, but shall not be less than that required by code. Larger raceway sizes may be specified than code would permit. The specifications shall govern.
2. Listed products for termination, coupling, extending, benching supports of raceways shall be used.
3. Raceways/boxes described by this section shall include, but not be limited to, power and control wiring as required.
4. Protection of and cleanliness of pathways and raceways must be assured during the construction process in order to eliminate the possibility of debris entering the conduit, duct, pathway resulting in decreased wire capacity and potential damage to installed conductors and cables.
5. Pathways are shown in a diagrammatic way and are generally accurate as to routing, however, it is the Contractor's responsibility as a means and methods process to coordinate with all other trades that require space within a building. The Contractor shall obtain approval for installation of raceways routing through structural footings, retaining walls, columns, beams, purlins, grade beams, etc.
6. It is the Contractor's responsibility to insure that all raceway and boxes systems penetrate fire assemblies and sound rated assemblies in an approved manner using the appropriate and listed products for the purpose.

7. Trenching and backfilling for all underground conduit systems installed by the Electrical Contractor shall be the responsibility of the Contractor. Conduits shall have minimum cover requirement of 36" below finish grade. More stringent depth requirements may be imposed by the local agency and shall be adhered to, and / or this specification or as detailed on the plans. Joint trenching may be utilized where practicable and where permitted by this specification. Concrete, native material and sand shall be used as backfill material and shall be compacted in accordance with and coordinated with the grading and site preparation requirements. Conduits shall rest in a minimum of 4" bed of sand prior to backfill and compaction. Locations of existing underground (UG) utility systems shall be determined by calling Underground Service Alert (USA) at least 48 hours prior to any excavation. Also refer to Section 26 05 46.13, ELECTRIC UTILITY SYSTEMS.
8. Minimum conduit size shall be 1/2" except if plan shows or code requires larger size. Exception: Use minimum 3/4" for underslab and below grade applications outside of building exterior walls.
9. All electrical, control, communications systems shall be installed in metallic conduit system. This shall include but not be limited to all systems described in Section B.3 above, except for voice and data systems which shall be installed as described on these plans and as specified here-in but shall not be less than the recommendations of EIA/TIA standards.
10. All line voltage wiring within the building shall be installed in metallic conduit.
11. All conduit, concrete pads, underground concrete or fiberglass substructures shall be furnished and installed with the approved materials and type for the application. Provide proper traffic control during construction as well as barriers and protection of all excavations and trenching.
12. Empty or future conduits shall be properly plugged with plastic caps or inserts with a 3/8" polyethylene pull rope. Plastic or "duct" tape will not be acceptable.
13. Exterior installations: After conductors are installed, seal conduit ends to prevent entrance of foreign material using pliable duct seal, caps or waterproof expanding foam.
14. No single conduit run of any type shall exceed 300 degrees of radius bend from termination box to termination box.
15. Separate Raceway System: Provide a separate dedicated raceway system for each system installed, do not combine different systems into a raceway or cable tray system, unless otherwise noted or allowed.
16. Spare, Future Conduits: Conduits labeled conduit only, spare, or for future use, shall be provided with a pullrope, capped at each end, labeled as spare with destination marked, and turned over to the Owner in an unused state. Contractor shall not utilize these conduits for the installation of cabling or conductors as part of this scope of work. Contractor to verify and install at no additional cost to the Owner, additional conduits as required for the installation of the systems being installed.
17. Outlet System: Provide electrical boxes and fittings as required for a complete installation. Including but not limited to outlet boxes, junction boxes, pull boxes, bushings, locknuts, covers and all other necessary components.
18. Code Compliance: Comply with CEC as applicable to construction and installation of electrical boxes and fittings and size boxes according to CEC 312, 314 and 366 except as noted otherwise.

1.03 SUBMITTALS

- A. Provide Shop Drawings and Product Data for the Following Equipment:
 - 1. Conduit and fittings.
 - 2. Outlet boxes.
 - 3. Weatherproof outlet boxes.
 - 4. Junction and pull boxes.
 - 5. Cabinets, termination cabinets.
 - 6. Concrete boxes and vaults.
 - 7. Raceways

1.04 REGULATORY REQUIREMENTS

- A. Conform to requirements of the CEC, latest adopted version with amendments by local AHJs.
- B. Furnish products listed by UL or other independent and nationally recognized testing firm.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Heavy wall Rigid Non-Metallic Conduit, shall be PVC schedule 40 manufactured in accordance with NEMA Standard TC-2, UL-651 and WC 1094A specifications.
- B. Extra heavy wall non-metallic conduit, shall be PVC schedule 80 manufactured in accordance with NEMA Standard TC-2, UL-651 and WC 1094A specifications.
- C. Galvanized Rigid Steel (GRS) conduit shall be hot dipped galvanized, zinc coated and shall comply with Underwriters Laboratories UL-6, ANSI Specification C-80.1 and Federal Specification WW-C-581E.
- D. Electrical Non-Metallic Tubing (ENT), shall be listed to requirements of U.L. 1653, in accordance with CEC Article 362, and meet requirements of BI National Standard CAN/CSA-C22.2 No. 227.1-U.L. 1653. ENT shall be rated for 90 degrees C conductors and shall be recognized for use in 2-hour fire resistance non-load bearing and load bearing wall assemblies. ENT shall be recognized for through-penetration firestop systems as classified to meet U.L. and ICC building codes.
- E. Flexible Metal Conduit (FMC) shall be continuous wound reduced wall galvanized steel produced to UL standards.
- F. Liquid tight flexible metal conduit shall have a thermoplastic cover over a galvanized steel core containing an integral copper ground in sizes to 1 1/4" and shall be in compliance with UL standards and CEC Article 350.
- G. Manufacturers:
 - 1. Outlet Boxes: Bowers, Raco, Steel City or equal.
 - 2. Weatherproof Outlet Boxes: Bell, Red Dot, [Carlon] or equal.

3. Junction and Pull Boxes: Circle AW, Hoffman, Wireguard or equal.
4. Conduit Fittings: O-Z Gedney, Thomas & Betts, or equal.
5. Vaults: Christy, Brooks, Utility Vault or equal.
6. Heavy wall rigid non-metallic conduit, Carlon, Certainteed, R&G Sloane or equal.
7. Extra heavy wall non-metallic conduit, Carlon, Certainteed, R&G Sloane or equal.
8. Galvanized Rigid Steel (GRS) conduit shall be hot dipped galvanized, zinc coated and shall comply with Underwriters Laboratories UL-6, ANSI Specification C-80.1 and Federal Specification WW-C-581E.
9. Electrical Non-Metallic Tubing (ENT), shall be listed to requirements of U.L. 1653, in accordance with CEC Article 362, and meet requirements of BI National Standard CAN/CSA-C22.2 No. 227.1-U.L. 1653. ENT shall be rated for 90 degrees C conductors and shall be recognized for use in 2-hour fire resistance non-load bearing and load bearing wall assemblies. ENT shall be recognized for through-penetration firestop systems as classified to meet U.L. and ICC building codes.
10. Flexible Metal Conduit (FMC), Alfex, American Flexible Conduit or equal.
11. Liquid tight flexible metal conduit, Anacanda (type UA), Electri-flex Liquatite or equal.
12. Exterior In-Grade Boxes for Non-Utility Company, Precast concrete or polymer concrete, Utility Vault and Christy.

2.02 OUTLET BOXES

- A. NEMA 1 gutter, junction and pull boxes shall be fabricated from code gage steel finished in grey enamel with screw cover fronts and concentric knockouts in all sides.
- B. NEMA 3R gutter, junction and pull boxes shall be fabricated from code gage galvanized steel with screw cover fronts and concentric knockouts in the bottom only. Any penetrations to the side, top or back shall be weatherproofed in an approved manner such as "MYERS" gasketed type hub or equal.
- C. Construction: Provide galvanized steel interior outlet wiring boxes, of the type, shape and size, including depth of box, to suit each respective location and installation; constructed with stamped knockouts in back and sides, and with threaded holes with screws for securing box covers or wiring devices. Boxes shall be properly secured to the structure such that they are flush with the finish surface. Boxes shall be made structurally secure by means of the proper fastening devices.
- D. Accessories: Provide outlet box accessories as required for each installation, including mounting brackets, wallboard hangers, extension rings, plaster rings, luminaire studs, cable clamps and metal straps for supporting outlet boxes, compatible with outlet boxes being used and meeting requirements of individual wiring situations.

2.03 WEATHERPROOF OUTLET BOXES

- A. Construction: Provide corrosion-resistant cast iron, with zinc finish, weatherproof outlet wiring boxes, of the type, shape and size, including depth of box, with threaded conduit ends, cast metal face plate with spring-hinged waterproof cap suitably configured for each application, including face plate gasket, blank plugs and corrosion proof

fasteners. Weatherproof boxes to be constructed to have smooth sides, zinc, galvanized finish.

- B. Surface mounted die cast aluminum device boxes shall be provided with screw holes to accommodate cast device covers.
- C. Cover plates on outlet boxes mounted flush in the wall shall be gasketed to the wall in a watertight manner. Weatherproof boxes in wet locations as described in CEC 406.8 (B) shall be provided with a "while-in-use" cover; red dot 'CK' Series of aluminum die-cast construction, NEMA 3R, with lacquer finish.

2.04 JUNCTION AND PULL BOXES

- A. Construction: Provide galvanized sheet steel junction and pull boxes, with screw-on covers; of the type shape and size, to suit each respective location and installation; with welded seams and equipped with steel nuts, bolts, screws and washers.
- B. Location:
 - 1. Install junction boxes above accessible ceilings for drops into walls for receptacle outlets from overhead.
 - 2. Install junction boxes and pull boxes as required to facilitate the installation of conductors and limiting the accumulated angular sum of bends between boxes, cabinets and appliances to 300 degrees.
 - 3. Locations: Junction boxes shall be located only where necessary and only in equipment rooms, closets, and accessible attic and underfloor spaces. A horizontal distance of 24" shall separate outlet boxes on opposite sides of occupancy separation walls, fire-rated walls or partitions.
 - 4. Labeling: Junction box covers shall be marked with indelible ink indicated the circuit numbers passing through the box.

2.05 CONDUIT FITTINGS

- A. Requirements: Provide corrosion-resistant punched-steel box knockout closures, conduit locknuts and plastic conduit bushings of the type and size to suit each respective use and installation.
- B. Steel boxes may allow for field knock-out modifications, but shall in all other ways conform to code requirements.

2.06 EXTERIOR IN-GRADE BOXES FOR NON-UTILITY COMPANY USE SHALL BE:

- A. Precast concrete or polymer concrete type with full bottoms and draining into gravel drywell. . Open bottom splice/pull boxes 24" x 36" and smaller shall be open bottom, with minimum 12" of gravel below for drainage.
- B. Flushmount in hardscape and 1" above grade in softscape.
- C. Provided with correct traffic type lid, i.e., full vehicular, intermediate incidental vehicular or pedestrian-rated as applicable stamped with "ELECTRIC", "LIGHTING", "COMMUNICATIONS", etc. cover identification as shown on the drawings or as

applicable. All boxes or vaults located in streets, driveways, sidewalks wider than 8', and turf areas where mowing takes place shall be traffic rated.

- D. Provided with brass hold-down bolts in cover.
- E. Provided with necessary box extensions to gain proper depth.
- F. Seal all conduit in underground boxes with duct seal after conductors have been installed.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Conduit systems listed below are for use in installations where they are permitted to be used by CEC and/or other occupancy restrictions. The below installation methods do not intend to suggest that these materials be installed in conflict with any applicable code. Special attention to applications shall be made in building types such as Educational, Health Care, wet location, hazardous locations, assembly occupancy and multi-story, but not limited to these. Requirements which are more restrictive than the CEC may be called for by the drawings and / or these specifications. These requirements must be adhered to. The Electrical Contractor shall be responsible to use the proper conduit system for the application. Exposed conduit is not allowed below ceilings or above slab of floor, without the permission and approval of the Engineer. All conduits shall be concealed except in electrical and telecommunication rooms or where shown to be surface mounted. Exposed conduit (where allowed) shall be run square and plumb with building lines in an approved manner. Support roofmount conduits, where allowed, with minimum 12" wide redwood blocks set in mastic unless otherwise detailed in roof requirements or as specified in roofing specification, by the Engineer. Strap conduits to blocks with proper sized conduit straps. Spacing of support shall be a minimum as provided for in the CEC. All exposed conduit mounted below 8' above finished grade shall be strapped at a minimum of 5' spacing.
- B. Non-Metallic Rigid Conduit shall be used in concrete slabs, below concrete slabs on grade, or underground outside of a building slab or foundation. Maintain minimum depth requirements and cover with appropriate fill material. Minimum 4" of bedding and cover of backfill material 1/4" size grain and smaller maximum. Conduit shall be heavy wall Schedule 40 or 80, rigid PVC only. Rigid utility P&C duct shall not be used in any application. Properly sized grounding conductors shall be installed per CEC article 250, in all non-metallic conduit branch circuit and feeder runs. PVC conduit shall be formed or field bent only with the use of properly approved bending tools such as to not decrease the internal bore of the conduit. All conduits shall be cut square and reamed of burrs. Approved and compatible glue shall be used on all PVC fittings to attain watertight joints. All non-metallic conduit runs over 150' in length and over 1 1/4" trade size conduit shall utilize galvanized rigid steel elbows.
- C. Galvanized Rigid Steel (GRS) conduit shall be used where exposed less than 8'-0" above finished grade to 18" below finished grade and where subject to physical damage. Conduits shall be cut square and reamed to remove burrs and sharp edges. Strap conduit below 8' above grade at 5' intervals. Unless otherwise noted, threadless

setscrew and threadless weathertight fittings may be used in lieu of threaded fittings. All threaded ends entering a junction box of any type shall require one locknut on the inside and one on the outside of the enclosure and be provided with a plastic bushing or grounding bushing where necessary for proper grounding. Where exposed to moisture, a watertight hub or other approved method shall be required. All conduits shall be stubbed up straight and uniform into junction boxes, panels, cabinets, etc., and shall be (GRS) properly supported and strapped. All GRS conduit located below grade, shall be tape wrapped.

- D. Electrical Non-Metallic Tubing (ENT) shall be installed in accordance with its listed application. Only listed cement shall be used for connectors, coupling, fittings requiring cement. Unless otherwise noted, ENT systems shall be color coded: Blue for branch and/or feeder power wiring, yellow for communications systems, and red for fire alarm and emergency power systems. Use only approved and listed accessories.
1. Electrical Nonmetallic Tubing (ENT) is designed to replace EMT, flexible metal conduit or other raceway or cable systems, for installation in accordance with Article 362 of the National Electrical Code, Section 12-1500 of the CEC, other applicable sections of the Code, and local codes.
 2. Any ENT used shall be listed to the requirements of UL Standard UL 1653 in accordance with Article 362 of the NEC and Section 12-1500 of the CEC.
 3. Any ENT used shall meet the requirements of BI National Standard CAN/CSA-C22.2 No. 227.1-UL1653 and shall be Listed/Certified in accordance to the Electrical Codes.
 4. Carlon's ENT shall be installed per the technical assessment prepared by fire cause analysis for use in 1hour and 2-hour rated construction.
 5. Penetration of fire rated walls, floors or ceilings shall use Classified Through-Penetration Firestop Systems described in the current Underwriters Laboratories Fire Resistance Directory.
 6. Fittings and outlet boxes shall be designed for use with ENT shall be listed. All fittings, boxes and accessories shall be from one manufacturer.
 7. Only Carlon ENT Blue cement recommended specifically for use with ENT and rigid nonmetallic fittings shall be used.
 8. Unless indicated differently on drawings, ENT systems shall be color coded: BLUE for branch and feeder circuit wiring, YELLOW for communications, and RED for fire alarm and emergency systems, or colors can designate different voltages.
 9. ENT, fittings, and accessories shall be manufactured by Carlon.
 10. ENT shall not be used or allowed in any application where not allowed by CEC Article 362.
- E. Flexible conduit may be used where concealed in building construction or above dropped ceilings, but shall meet the following criteria: No individual circuit path from distribution panel to last device shall exceed a cumulative length of 30' of flexible conduit from start to end. Flexible conduit shall not exceed a total directional change of 270 bending degrees in any one run between conduit terminations. Squeeze type or Jake type steel flex fittings of a grounding type are required. Flexible conduit must be supported in accordance with CEC. Where exposed to the weather, moisture, or spray down flexible conduit shall be of the liquidtight type. Fittings shall be manufactured for use with liquidtight flexible conduit. All motor connections shall be made with liquidtight flex. Flexible conduit may not be used where exposed except for last 2' of equipment connection and unless otherwise noted or approved. A copper ground wire sized per CEC 250-122 shall be installed in all flexible conduit runs. Flexible conduit may not be

used exposed. Weatherproof liquid tight conduit shall not be used at roof level for equipment connections with lengths exceeding 24" nor shall it be used to circumvent a rigid conduit system in a horizontal direction. Connect recessed lighting fixtures to conduit runs with a maximum of 6' of flexible metal conduit extending from junction box to fixture. "Master" "Slave" fixtures are permitted to use manufactured flexible cable of longer dimension up to 12' between "Master" and "Slave" only and only as a U.L. listed system component.

- F. Underground conduits and transition to above grade/slab shall be as follows:
1. PVC elbows allowed if top of elbow is minimum 18" BFG or below top of slab, otherwise GRS elbows are required.
 2. GRS elbows are required if conduit run is 150' or greater.
 3. GRS risers are required from elbow below grade to equipment (device, outlet, panel, cabinet, etc.) above grade.
 4. GRS elbows/risers to be PVC coated or 10 MIL taped wrapped (1/2" lapped) to 3" above finish grade or top of slab.
- G. Conduit Supports: Conduit runs may be supported by one-hole and two-hole straps or supports as manufactured by Unistrut, Minerallac, Caddy or equals. Supports may be fastened by means of anchors, shields, beam clamps, toggle bolts, or other approved methods appropriate for the application and size of conduit. Pipe nailers (J-hooks) may only be used for 1" conduit and smaller and only in wood frame construction. Conduit support methods are subject to review by the engineer and authority having jurisdiction for adequacy. Installations deemed inadequate shall be corrected by the contractor at no cost to the Owner.
- H. Bends and offsets shall be made with approved tools for the type of conduit being utilized. Bends shall be made without kinking or destroying the smooth bore of the conduit. Parallel conduits shall be run straight and true with bends uniform and symmetrical. Minimum radii shall be per CEC 344-24.
- I. Conduit Stub-outs below grade shall be capped with plastic cap, and identified by placing a pull box marked with correctly identified utility such as "Elec", "Tel", etc. Dimension for exact location on field record drawings. Provide lids for proper field application (i.e. traffic, incidental, pedestrian).
- J. Conduit Seals: Where below grade conduits enter structure through slab or retaining wall of building or basement, seal the inside of each conduit as follows:
1. Provide damming material around conductors 3" into conduit.
 2. Fill 3" of conduit with 3M #2123 sealing compound.
 3. Wrap conductors where they exit the conduit with 3M #2229 "Scotch Seal" mastic tape. Lap tape to approximate diameter of the raceway and wrap outside of conduit opening with (minimum) one turn.
 4. Use conduit sealing bushings type CSB (O-Z/Gedney) or equal.
 5. Empty conduits shall be sealed with standard non-hardening duct seal compound and then capped to prevent entrance of moisture and gases and to meet fire resistance requirements.
 6. Provide cable drip loop minimum 12" high.
- K. Marker tape: Place plastic yellow marker tape at 12" below finish grade along and above buried conduits. Label tape "CAUTION: ELECTRICAL LINES BELOW" or similar wording.

- L. Electrical and communications systems raceways routed underground shall not occupy the same trench as plumbing utilities such as sewer, water, storm drain, gas or other wet or dry gaseous utility system. A minimum of 12" of undisturbed earth is required. Where utilities must cross in closer proximity to each other due to physical constraints, 6" minimum crossing distances are allowed, however 18" on all sides of a utility crossing must be concrete encased.
- M. Duct bank defined here-in shall be four or more conduits in a common trench, conduit spacers and saddles shall be required in all trenches where more than two conduits over 2" in diameter travel in the same trench. Proper spacing between systems as outlined above shall be required and spacers shall be located each 5' (maximum) along trench route from point to point.
- N. Conduits, routed below footings, slabs, grade beams, columns, and other structural elements shall be installed in strict compliance with structural details and criteria shown on structural plans. Clearances below structural elements and sleeves through structural elements must be carefully planned to avoid conflict and must be approved by the structural engineer if conflict arises.
- O. All conduit or raceways passing through fire rated walls, floors, or ceilings shall be installed with a listed penetration method which protects the opening to the same rating as the assembly and is non hardening.
- P. Expansion Joints
 1. Conduits 3" and larger, that are secured to the building structure on opposite sides of a building expansion joint, require expansion and deflection couplings. Install the couplings in accordance with the manufacturer's recommendations.
 2. Provide conduits smaller than 3" with junction boxes on both sides of the expansion joint. Connect conduits to junction boxes with sufficient slack of flexible conduit to produce 5" vertical drop midway between the end. All conduit shall have a copper green grounding bonding conductor installed.
- Q. Seismic Joints
 1. At seismic joints, provide conduits rigidly secured to the building structure on opposite sides of a building expansion joint with junction boxes or approved fittings, on both sides of the joint. Connect conduits to junction boxes with sufficient slack flexible conduit such that these slack conduits are 1 1/2 times the distance between conduit ends. Flexible conduit shall have a copper green ground bonding jumper installed.
- R. Location: Locate boxes and conduit bodies so as to ensure accessibility of electrical wiring.
- S. Anchoring: Secure boxes rigidly to the substrate upon which they are being mounted, or solidly embed boxes in concrete or masonry.
- T. Special Application: Provide weatherproof outlets for locations exposed to weather or moisture.
- U. Coordinate all electrical device locations with the engineering floor plan and interior and exterior elevations to prevent mounting devices within elements that they may conflict such as cabinetry, mirrors, planters, etc.

END OF SECTION

SECTION 26 05 34

CABINETS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section Includes:
 - 1. Cabinets where shown on the contract drawings and specified herein.
- B. Related Work:
 - 1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
 - 2. Section 26 05 53, IDENTIFICATION OF ELECTRICAL SYSTEMS.

1.03 SUBMITTALS

- A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Type: Cabinets shall be flush or surface mounted type as indicated on the contract drawing, as per Code and U.L. Standard 50.
- B. Cabinet Construction: Sizes as indicated, constructed of code gauge sheet steel with hinged lockable doors, common keyed with panelboards. Equip cabinets with 3/4" fire retardant treated plywood backboards and/or barriers as applicable, terminal blocks for connection; index card holders and cards mounted behind heavy plastic on inside of cabinet doors.
- C. Finish: Cabinets shall be chemically cleaned and the fronts shall be finished in same way as panelboards and switchboards.
- D. Controls: As indicated on the contract drawings.
- E. Identification: Provide on exterior of cabinet doors engraved plastic nameplate identifying the cabinet as designated on the Contract Drawing. Lettering shall be white

on black finish and shall be minimum 3/16" high. Affix nameplates to cabinet doors with a minimum of two escutcheon pins or screws.

PART 3 - EXECUTION

3.01 GENERAL

- A. Required: To be located where indicated on the Contract Drawing and installed as per manufacturer's instruction. Securely fasten to structural members or Unistrut support in vertical and plumb position and at heights indicated.
- B. Nameplates: Conform to provisions noted in 2.1E above or as designated on the plans.

END OF SECTION

SECTION 26 05 48
VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Isolation pads.
 - 2. Channel support systems.
 - 3. Restraint cables.
 - 4. Anchorage bushings and washers.
- B. Related Sections include the following:
 - 1. Section 26 05 29 "Hangers and Supports for Electrical Systems" for commonly used electrical supports and installation requirements.

1.03 SUBMITTALS

- A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

1.04 DEFINITIONS

- A. The IBC: International Building Code.
- B. ICC-ES: ICC-Evaluation Service.

1.05 PERFORMANCE REQUIREMENTS

- A. Seismic-Restraint Loading:
 - 1. Site Class as Defined in the IBC: D.
 - 2. Assigned Seismic Use Group or Building Category as Defined in the IBC:
 - a. Component Importance Factor: 1.0.
 - b. Component Response Modification Factor: 3.0.
 - c. Component Amplification Factor: 2.5.
 - 3. Design Spectral Response Acceleration at Short Periods (0.2 Second):
 $S_{DS}=1.361g$.

4. Design Spectral Response Acceleration at 1.0-Second Period:
 $S_{D1}=0.663g$.

1.06 ACTION SUBMITTALS

- A. Product Data: For the following:
 1. Include rated load, rated deflection, and overload capacity for each vibration isolation device.
 2. Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of seismic-restraint component used.

1.07 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Show coordination of seismic bracing for electrical components with other systems and equipment in the vicinity, including other supports and seismic restraints.
- B. Qualification Data: For testing agency.
- C. Welding certificates.
- D. Field quality-control test reports.

1.08 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
- B. Comply with seismic-restraint requirements in the IBC unless requirements in this Section are more stringent.
- C. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- D. Seismic-restraint devices shall have horizontal and vertical load testing and analysis and shall bear anchorage preapproval OPA number from OSHPD, preapproval by ICC-ES, or preapproval by another agency acceptable to authorities having jurisdiction, showing maximum seismic-restraint ratings. Ratings based on independent testing are preferred to ratings based on calculations. If preapproved ratings are not available, submittals based on independent testing are preferred. Calculations (including combining shear and tensile loads) to support seismic-restraint designs must be signed and sealed by a qualified professional engineer.
- E. Comply with NFPA 70.

PART 2 - PRODUCTS

2.01 VIBRATION ISOLATORS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ace Mountings Co., Inc.
 - 2. Amber/Booth Company, Inc.
 - 3. California Dynamics Corporation.
 - 4. Isolation Technology, Inc.
 - 5. Kinetics Noise Control.
 - 6. Mason Industries.
 - 7. Vibration Eliminator Co., Inc.
 - 8. Vibration Isolation.
 - 9. Vibration Mountings & Controls, Inc.
- C. Pads: Arrange in single or multiple layers of sufficient stiffness for uniform loading over pad area, molded with a nonslip pattern and galvanized-steel baseplates, and factory cut to sizes that match requirements of supported equipment.
 - 1. Resilient Material: Oil- and water-resistant rubber.

2.02 SEISMIC-RESTRAINT DEVICES

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Amber/Booth Company, Inc.
 - 2. California Dynamics Corporation.
 - 3. Cooper B-Line, Inc.; a division of Cooper Industries.
 - 4. Hilti Inc.
 - 5. Loos & Co.; Seismic Earthquake Division.
 - 6. Mason Industries.
 - 7. TOLCO Incorporated; a brand of NIBCO INC.
 - 8. Unistrut; Tyco International, Ltd.
- B. General Requirements for Restraint Components: Rated strengths, features, and application requirements shall be as defined in reports by an agency acceptable to authorities having jurisdiction.
 - 1. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they will be subjected.

- C. Channel Support System: MFMA-3, shop- or field-fabricated support assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end and other matching components and with corrosion-resistant coating; and rated in tension, compression, and torsion forces.
- D. Restraint Cables: ASTM A 492 stainless-steel cables with end connections made of steel assemblies with thimbles, brackets, swivels, and bolts designed for restraining cable service; and with a minimum of two clamping bolts for cable engagement.
- E. Bushings for Floor-Mounted Equipment Anchor: Neoprene bushings designed for rigid equipment mountings, and matched to type and size of anchors and studs.
- F. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for rigid equipment mountings, and matched to type and size of attachment devices.
- G. Resilient Isolation Washers and Bushings: One-piece, molded, oil- and water-resistant neoprene, with a flat washer face.
- H. Mechanical Anchor: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchors with strength required for anchor and as tested according to ASTM E 488. Minimum length of eight times diameter.

2.03 FACTORY FINISHES

- A. Finish: Manufacturer's standard prime-coat finish ready for field painting.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas and equipment to receive vibration isolation and seismic-control devices for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 APPLICATIONS

- A. Multiple Raceways or Cables: Secure raceways and cables to trapeze member with clamps approved for application by an agency acceptable to authorities having jurisdiction.

- B. Hanger Rod Stiffeners: Install hanger rod stiffeners where indicated or scheduled on Drawings to receive them and where required to prevent buckling of hanger rods due to seismic forces.
- C. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static and seismic loads within specified loading limits.

3.03 SEISMIC-RESTRAINT DEVICE INSTALLATION

- A. Equipment and Hanger Restraints:
 - 1. Install restrained isolators on electrical equipment.
 - 2. Install resilient, bolt-isolation washers on equipment anchor bolts where clearance between anchor and adjacent surface exceeds 0.125 inch (3.2 mm).
 - 3. Install seismic-restraint devices using methods approved by an agency acceptable to authorities having jurisdiction providing required submittals for component.
- B. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.
- C. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.
- D. Drilled-in Anchors:
 - 1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
 - 2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
 - 3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
 - 4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
 - 5. Set anchors to manufacturer's recommended torque, using a torque wrench.
 - 6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.

3.04 ACCOMMODATION OF DIFFERENTIAL SEISMIC MOTION

- A. Install flexible connections in runs of raceways and cables where they cross seismic joints, where adjacent sections or branches are supported by different structural elements, and where they terminate with connection to equipment that is anchored to a different structural element from the one supporting them as they approach equipment.

3.05 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections and prepare test reports.
- B. Perform tests and inspections.
- C. Tests and Inspections:
 - 1. Provide evidence of recent calibration of test equipment by a testing agency acceptable to authorities having jurisdiction.
 - 2. Schedule test with Engineer before connecting anchorage device to restrained component (unless postconnection testing has been approved), and with at least seven days' advance notice.
 - 3. Obtain Engineer's approval before transmitting test loads to structure. Provide temporary load-spreading members.
 - 4. Test at least four of each type and size of installed anchors and fasteners selected by Engineer.
 - 5. Test to 90 percent of rated proof load of device.
 - 6. If a device fails test, modify all installations of same type and retest until satisfactory results are achieved.
- D. Remove and replace malfunctioning units and retest as specified above.
- E. Prepare test and inspection reports.

3.06 ADJUSTING

- A. Adjust isolators after isolated equipment is at operating weight.
- B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.
- C. Adjust active height of spring isolators.
- D. Adjust restraints to permit free movement of equipment within normal mode of operation.

END OF SECTION

SECTION 26 05 53

IDENTIFICATION OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section Includes:

- 1. Nameplates and warning signs where specified herein and as shown on contract documents including the following:
 - a. Nameplates and warning signs permanently installed on all electrical equipment and devices including, but not limited to, the following items:
 - 1) Enclosures for transformers, switchboards, motor control, panels, pullboxes, cabinets, motors, generators, transfer switches.
 - 2) Enclosures for all separately enclosed devices including, but not limited to, disconnect switches, circuit breakers, contactors, time switches, control stations and relays, fire alarm panels and lighting control panel.
 - 3) Special systems such as, but not limited to, telephone, fire alarm, warning and signal systems. Identification shall be at each equipment rack, terminal cabinet, control panel, annunciator and pullbox.
 - 4) Devices mounted within and part of equipment including circuit breakers, switches, control devices, control transformers, relays, indication devices and instruments.
- 2. Conductor and Cable Identification.

- B. Related Work:

- 1. Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
- 2. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.
- 3. Section 26 28 16, ENCLOSED SWITCHES AND CIRCUIT BREAKERS.
- 4. Section 26 05 34, CABINETS.
- 5. Section 26 24 13, SERVICE AND DISTRIBUTION SWITCHBOARD.

1.03 SUBMITTALS

- A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

PART 2 - PRODUCTS

2.01 EQUIPMENT LABEL DESIGNATIONS

- A. Equipment labels indicating equipment designations both emergency and normal. Designation data per drawings or to be supplied with shop drawings approval.
- B. Panelboard labels showing panel designation, voltage, phase and source.
- C. In accordance with CEC 110.16, provide arc flash protection warning labels on all switchboards, panelboards, distribution panels, transformers, safety switches, transfer equipment, etc. Labels shall be per ANSI Z535.4 guidelines.

2.02 MATERIALS

- A. For Labels: Three layer laminated plastic or micarta with engraved white letters over black background.
- B. For Emergency Equipment: Use engraved white letters over red background.
- C. For Warning Signs: Minimum 18 gauge steel with red lettering on white porcelain enamel finish.
- D. Arc flash labels shall be provided as required by CEC Article 70E.
- E. Conductor tape number markers: TayMac MX4280 Series non-fading permanent adhesive.

PART 3 - EXECUTION

3.01 MOUNTING

- A. Equipment labels shall be mounted by self-tapping, threaded screws and bolts, or by rivets. Adhesive types are not acceptable unless specifically noted in this section.
- B. Conductor tape markers shall be consistently placed for ready conductor identification.

3.02 HEIGHTS ON LABELS

- A. Panelboards, Switchboards and Motor Control Centers and Special Systems Enclosures: 1/4" identify equipment designation; 1/8" identify voltage rating and source.
- B. Individual Circuit Breakers, Switches, and Motor Starters in Panelboards, Switchboards, and Motor Control Centers: 3/16" identify circuit and load served, including location of equipment.

- C. Enclosed Circuit Breakers, Enclosed Switches, and Motor Starters: 3/16" identify load served.
- D. Transformers: 3/16" identify equipment designation; 1/8" identify primary and secondary voltages, primary source and secondary load. Include location of primary source or secondary load if remote from transformer.

3.03 WARNING SIGNS

- A. Warning signs shall be permanently mounted with cadmium plated steel screws or nickel-plated brass bolts.
- B. Warning signs to read "DANGER - HIGH VOLTAGE", with letters 1 1/2" high, 3/16" stroke minimum.
- C. Provide warning sign on all doors or immediately next to door for equipment rooms, enclosures or closets containing equipment energized above 150 volts to ground as per CEC, and/or as directed by the Engineer. For interior finish spaces and interior doors, signage shall be coordinated and approved with the Engineer in advance of installation.

END OF SECTION

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SECTION 26 08 10

ELECTRICAL ACCEPTANCE TESTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section Includes:
 - 1. Testing, evaluation and calibration of equipment provided, installed and connected in Division 26.
 - 2. Evaluation of connection and normal operation of utilization equipment, provided in other Divisions, for installation and connection in Division 26.
- B. Related Work:
 - 1. Section 26 05 19, LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.
 - 2. Section 26 28 16, ENCLOSED SWITCHES AND CIRCUIT BREAKERS.
 - 3. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.
 - 4. Section 26 24 19, MOTOR CONTROL CENTERS.

1.03 SUBMITTALS

- A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

1.04 REFERENCES

- A. Acceptance Testing Criteria: Latest edition of Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems, published by IETA.
- B. Applicable Codes, Standards and References:
 - 1. National Electrical Code (NEC).
 - 2. National Electrical Manufacturer's Association (NEMA).
 - 3. American Society for Testing and Materials (ASTM).
 - 4. Institute of Electrical and Electronic Engineers (IEEE).
 - 5. International Electrical Testing Association (IETA).
 - 6. American National Standards Institute (ANSI).
 - 7. State and local codes and ordinances.
 - 8. Insulated Power Cable Engineers Association (IPCEA).
 - 9. Association of Edison Illuminating Companies (AEIC).

10. OSHA Part 1910; Subpart S, 1910.308.
11. National Fire Protection Association (NFPA).

1.05 SYSTEM DESCRIPTION

- A. Performance Requirements:
 1. Retain the services of a recognized independent testing firm for the purpose of performing inspections and tests as specified herein.
 2. Independent test firm providing report direct to Engineer.
 3. All material, equipment, labor and technical supervision to perform tests and inspections provided by testing firm.
 4. It is the intent of these tests to assure that all electrical equipment, Contractor or Owner supplied, is operational within industry and manufacturer's tolerances and is installed in accordance with design Specifications.
 5. Tests and inspections determine suitability for energization.
 6. Supply to the independent testing organization complete sets of approved shop drawings, coordination study (provided by Contractor's equipment supplier under Contractor's direction, setting of all adjustable devices and other information requested by testing agency).

- B. Scope of Testing, Evaluation and Calibration:
 1. Low voltage circuit breakers (greater than 100 amp).
 2. Protective relays and associated instrument transformers.
 3. Grounding systems.
 4. Motor control centers.

1.06 SUBMITTALS

- A. Test Reports:
 1. Maintain written record of all tests.
 2. At completion of project, assemble and certify a final test report. Submit report to Engineer prior to final acceptance to include:
 - a. Summary of project.
 - b. Description of equipment tested.
 - c. Visual inspection report.
 - d. Description of tests.
 - e. Test results.
 - f. Conclusions and recommendations.

1.07 QUALITY ASSURANCE

- A. Qualifications of Testing Firm:
 1. Corporately independent testing organization which can function as an unbiased testing authority, professionally independent of the manufacturers, suppliers and installers of equipment or systems evaluated by testing firms.
 2. Independent organization as defined by OSHA Title 29, Part 1936 and IETA.
 3. Regularly engaged in the testing of electrical materials, devices, appliances, electrical installations and systems for the purpose of preventing injury to persons or damage to property and other equipment.
 4. Engaged in testing practices for minimum of 2 years.

5. Use only full-time technicians, regularly employed by firm for testing services. Electrically unskilled employees are not permitted to perform testing or assistance of any kind. Electricians and line workers may assist, but may not perform testing or inspection services.
6. Submit proof of above qualifications with Bid Documents.

B. Certifications:

1. Comply with OSHA criteria for accreditation of testing laboratories, Title 29, Parts 1907, 1910 and 1936. Full membership in the IETA constitutes proof of such criteria.
2. Lead, on site, technical person currently certified by IETA in Electrical Power Distribution System Testing.
3. All instruments used by testing firm to evaluate electrical performance meet IETA Specifications for Test Instruments.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL

A. Tests:

1. Contractor's Responsibilities:
 - a. Perform routine insulation resistance, continuity and rotation tests for all distribution and utilization equipment prior to and in addition to tests performed by testing firm.
 - b. Notify the testing firm when equipment becomes available for acceptance tests. Coordinate work to expedite project scheduling.
2. Testing Firm's Responsibilities:
 - a. Notify Engineer prior to commencement of any testing.
 - b. Report directly to Engineer any systems, material or installation found defective on the basis of acceptance tests.
 - c. Provide auxiliary portable power supply necessary for conducting tests.

3.02 ADJUSTING

- A. Final Settings: Testing firm responsible for implementing all final settings and adjustments on protective devices and tap changes in accordance with Engineer's specified values.

END OF SECTION

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SECTION 26 09 00

CONTROLS AND INSTRUMENTATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section Includes:
 - 1. Control devices, shown on the drawings and/or required by other sections, to assure a complete and operating system.

1.03 SUBMITTALS

- A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Terminal and Control Cabinets shall be manufactured from code gauge galvanized steel with hinged locking covers finished in grey or hammer tone enamel. Knockouts, barriers and plywood backing shall be provided where required. Cabinets shall be of raintight construction where exposed to the weather. Approved manufacturers are Circle AW, Wireguard, Benner-Nawman, or equal.
- B. Motor Controls shall be manual or magnetic with motor overload thermal relays. Individual thermal elements sized to the correct motor full load amps shall be used. Provide correct NEMA rated enclosure. Select proper voltage, class, size and horsepower rating. Select the correct coil voltage if magnetic.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General Purpose Control Contactors shall be rated for the use with the correct ampere rating, voltage, size and horse power rating. Select the correct control coil voltage.

END OF SECTION

SECTION 26 28 16

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of this Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section Includes:
 - 1. Disconnect and safety switches where shown on the contract drawings and specified herein.

1.03 SUBMITTALS

- A. Submit in accordance with Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL.
- B. Related Work:
 - 1. Section 26 05 53, IDENTIFICATION OF ELECTRICAL SYSTEMS.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Approved Manufacturers: Cutler Hammer, General Electric, ITE-Siemens and Square-D.
- B. Disconnect Switches: Provide with devices enabling the switch to be locked in the open or closed positions.
- C. Manual Motor Switches: Tumbler type rated 3HP, 240 Volts with or without overload heaters as required to protect equipment served.
- D. Externally Operable Safety Switches: To have quick-make, quick-break mechanism, capable of switching 10 times switch rating, with cover interlock to prevent opening with switch in ON position and defeat mechanism for maintenance.
- E. Switches: Shall be general duty (GD) for 240 volt and below and heavy duty (HD) for 277/480 volt type unless otherwise indicated. Provide NEMA 1 enclosures for interior locations and NEMA 3R enclosures for exterior or wet locations. Provide with number

of poles, ampacity, voltage and HP rating, fusible or nonfusible as indicated. Copper blades shall be visible in off position.

- F. Fusible Switches: Equip them with rejection clips for UL Class R fuses. Switches having a dual rating when used with dual element fuses shall have a rating so indicated and shall be confirmed by equipment vendor being connected.
- G. 600 Amperes or Less Fuses: UL Class RKI with a minimum interrupting rating of 200,000 Amperes, Bussmann "Low-Peak Type" or equal.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

- A. Locations: Install switches, disconnects and safety where indicated on the Contract Drawings or as required by CEC.
- B. Fastenings: Securely fasten switches to structural members or unistrut support as directed by the manufacturer.
- C. Manual Motor Switches: Install flush mounted in finished areas.
- D. Manual Motor Switches: Install surface mounted in equipment rooms and non-finished areas. Where installed above inaccessible ceilings provide access panels.
- E. Label all disconnect switches in accordance with Section 26 05 53, IDENTIFICATION OF ELECTRICAL SYSTEMS.
- F. Fuse: All fuses shall be as indicated on the plan or as required by the equipment. Verify fuse size with equipment manufacturer requirements, prior to installation. Use current limiting fuses as indicated on plan. Provide one spare fuse cabinet in each electrical room with one complete set of spare fuses for all sizes of main fuses, subpanel fuses, HVAC equipment fuses and fire alarm.
- G. Terminals shall be minimum 75 degree rated.

END OF SECTION

SECTION 33 11 35

SUBMERSIBLE TURBINE PUMP

PART 1 GENERAL

1.01 SUMMARY

- A. The work shall include all material, labor and equipment necessary to provide raw water supply well (vertical intake) submersible turbine pump with above ground discharge and furnished with suitable driver and accessories as specified herein, for a complete and functional raw water pump.
- B. Unit Responsibility. Unit responsibility for the pump, bowls, motor and wiring/cables, discharge piping up through well cover plate, shall be by one supplier. Contractor shall be responsible for ensuring all well pump components, including pumps, fittings, well vertical discharge piping, controls, electrical wiring, etc. are constructible and coordinated, and meet the intent of the contract documents.

1.02 REFERENCES

1.03 SUBMITTALS

- A. Submit the following:
 - 1. Manufacturer's specification (cut sheet) for the pump, motor
 - 2. Certified pump curves
 - 3. Written guarantee for pumps and motors
 - 4. Operating manuals for pump, motor, electrical equipment

1.04 DELIVERY, STORAGE AND HANDLING

- A. Packing, Shipping, Handling
 - 1. Manufacturer shall package, ship and handle pump, motor and associated parts appropriately to ensure no damage during shipment.
- B. Acceptance at Site
 - 1. Contractor shall receive product at the job site, and shall inspect product for damage. Any damage noted shall be the responsibility of the Contractor and Manufacturer to resolve, at no additional cost to Owner.
 - 2. Once product is deemed acceptable by Contractor, Contractor shall be responsible for condition of product through Project completion and acceptance by Owner.
- C. Storage and Protection
 - 1. Adequately store and protect product in a cool, dry place, and in accordance with manufacturer's recommendations.

1.05 WARRANTY

- A. Provide manufacturer's standard warranty as part of the Submittals defined in this Section.

PART 2 PRODUCTS

2.01 GENERAL

- A. The pump shall be designed and constructed to operate satisfactorily with a reasonable service life, when installed in a dependable and adequate water resource location.
- B. The pumping unit shall be designed and furnished in accordance with the latest Hydraulic Institute and AWWA Standard for submersible turbine pumps.

2.02 MANUFACTURERS

- A. The pump shall be Xylem Goulds Water Technology Model VIS Submersible Pump, or approved equal.

2.03 OPERATING CONDITIONS

- A. Design conditions: 130 gallons per minute @140 feet TDH
- B. Minimum pump efficiency of: 75 Percent
- C. Maximum allowable speed: 1,800 RPM
- D. Pump bowl setting: Refer to Plans
- E. Well diameter I.D.: 12 inches (existing condition)

2.04 PUMP CONSTRUCTION

- A. Bowl assembly:
 - 1. The bowls shall be flanged type constructed of close grained cast iron conforming to ASTM A48, class 30. The bowls shall be free from sand holes, blowholes, and other faults and blemishes, and shall be accurately machined and fitted to close tolerances.
 - 2. Bowls shall be capable of withstanding a hydrostatic pressure equal to twice the pressure at rated flow (122 psi) or 1.5 times shut-off head (105 psi), whichever is greater.
 - 3. The intermediate bowls shall have enamel or epoxy lined interior surfaces in contact with water for maximum efficiency and wear protection.
 - 4. Intermediate bowls shall be of identical design for interchangeability. All the bowls shall be fitted with sleeve type bearings of bronze alloy C89835.
 - 5. A discharge bowl shall be used to connect bowl assembly to the discharge pipe. An extra long bronze bearing packed with non-soluble grease shall be provided in the top bowl and extended into the discharge bowl. The bearing shall have a threaded cast iron cap or plug at the top to protect the bearing from abrasives. The hub of the discharge bowl should be such that the bearing can be easily removed through the top of the hub. A thrust ring shall be above the top impeller to prevent excessive vertical upthrust.
- B. Impellers:
 - 1. The impellers shall be constructed from ASTM B584 Silicon Bronze and shall be of the enclosed type. The impellers shall be free from defects and shall be

accurately cast, machined, balanced, and filed for optimum performance and minimum vibration. Impellers shall be balanced to meet grade G6.3 of ISO 1940 or better, and shall be securely fastened to the bowl shaft with taper locks of C1018.

C. Motor Adapter:

1. The inlet motor adapter shall be of ASTM A536 Gr. 60-40-18 ductile iron and shall contain an extra long bronze bearing. The inlet area shall have a net open area of at least four times the eye of the impeller and shall be protected with a 304 stainless steel screen. The openings on the screen shall not be more than 75% of the minimum opening of the water passage through the bowl or the impeller.

D. Shaft:

1. The pump shaft shall be of ASTM 582 type 416 stainless steel, and shall be precision ground and polished with surface finish better than 40 RMS.

E. Coupling:

1. The shaft coupling shall be of stainless steel and be capable of transmitting the total torque and total thrust of the bowl assembly in either direction of rotation.

F. Discharge Pipe:

1. The discharge pipe shall be ASTM A53 grade B standard weight steel pipe, in 10 feet lengths and connected by threaded sleeve type steel coupling. Discharge pipe shall be 4" nominal diameter. The ends of the pipes shall have ANSI B1.20.1 standard tapered pipe threads. Inside diameter of the pipe shall be such that the head losses shall not be over 5 feet per 100 feet of pipe.

G. Submersible Cable:

1. The pump cable shall be sized to limit the voltage drop to no more than 5%. The cable shall have three separate conductors and a ground and shall be included in a single continuous jacketed assembly. The insulation shall be water and oil resistant, and suitable for continuous immersion. The cable shall be the length of the discharge pipe plus sufficient length to reach the waterproof junction box shown on the drawings. The cable shall be adequately secured to the discharge pipe by plastic ties, or other non metallic means, at 10 foot maximum intervals.

H. Surface Plate:

1. The surface plate shall be of fabricated steel. The plate shall incorporate a long radius elbow welded securely to a ANSI Class 150 flange and shall rigidly support the total weight of the motor, bowl assembly, discharge pipe, cable, and column of water. The plate shall have a cable seal of adequate size to accommodate the cable size and well vent and water level indicator.

I. Submersible Electric Motor

1. The motor shall be a heavy duty canned (or wet wound) type of NEMA design, 1800 RPM, with outside diameter not to exceed 8 inches. The motor shall be capable of continuous operation under water at the specified conditions herein, and as shown on the drawings. A suitable thrust bearing shall be incorporated in the lower end of the motor adequate to receive the entire hydraulic thrust load of the pump unit plus the weight of the rotating parts regardless of the

direction of rotation. The motor shall have a 1.15 service factor, and suitable for use on 480-volt, three phase, 60 Hz electric service.

2. The motor leads shall be of sufficient length so that they may be spliced above the bowl assembly and the leads shall be protected by a type 304 stainless steel cable guard held in place with stainless steel banding. As the motor lead exit the top of the cable guard it shall be properly protected to prevent damaging or cutting the lead by the cable guard material.

2.05 CONTROL STATEMENT

A. General

1. The existing raw water intake system includes horizontal gallery wells that are placed beneath the Nacimiento River bed near Pump Station 1. The horizontal wells collect water from the subflow of the river and this water is then pumped up to a raw water storage tank using vertical turbine pumps. There are two existing pumps, 30 HP each, with 4-stage bowl assemblies, with a slot for future Pump 3. These existing pumps can pump between 600 to 750 gpm.

B. New Vertical Well/Pump (Pump No. 4). The new submersible turbine pump will be placed in the newly installed 12" vertical well. Operation of this pump will be as follows:

1. The new pump will pump in conjunction with the existing raw water pumps, on a day-to-day basis. On occasion, the horizontal well pump only will operate, or only the vertical well will operate, depending on water supply needs of the District and maintenance/repair needs. The pumping scenarios must cover the following:
 - a. Existing Pump (No. 1 or No. 2) will pump in conjunction with new raw water vertical intake pump, Pump No. 4.
 - b. Existing horizontal well pump (No. 1 or No. 2) pumps alone;
 - c. New vertical intake pump (No. 4) pumps alone.
2. The above pumping scenarios will be manually controlled by Operations staff.
3. The existing Pumps 1 and 2 have two basic controls existing:
 - a. There is a level transducer in the pump can that signals for automatic pump shut off in the event of low water level in the pump can.
 - b. Pumps operate one at a time, alternating start/stop cycles.
 - c. Pumps turn on and off automatically in response to raw water tank level (transducer) signal.
 - d. Status: Pump status is communicated to SCADA system, including on/off, alarm.
4. New Pump No. 4 shall operate in a similar fashion as follows:
 - a. The new level transducer in the vertical well will automatically shut off pump at specified maximum drawdown level (currently set at 9 feet below static water level, or approximately 15 feet below ground surface).
 - b. Pump turns on and off automatically in response to raw water tank level (transducer) signal, can also be controlled manually.
 - c. Flow Meter shall transmit 4-20 mA signal including flow rate, and total volumetric flow.

C. The District will contract directly with a SCADA Programmer to update automated controls. This Contract will provide the above listed data for flow rate of the new vertical intake well, total flow, well water level. SCADA Programmer will integrate existing raw water tank level signal to control on/off function of the new vertical well pump, and shut off due to pre-set drawdown level being reached. SCADA Programmer will also program the software to calculate horizontal gallery well pump

flow rate, by subtracting vertical intake well flow rate from the total flow rate (from existing 10" propeller flow meter).

2.06 SUBMERSIBLE LEVEL TRANSDUCER

- A. Manufacturer: KPSI 700, or approved equal.
- B. Measurement Principle: Process pressure acts on a diaphragm, causing a pressure-dependent change in capacitance, which in turn, causes a pressure-dependent change in instrument output.
- C. Materials and construction suitable for application measuring groundwater levels.
- D. Reference format: Vented gage
- E. Moisture Protection: Vent Filter
- F. Range and Units: 0-16.5 PSI.
- G. Static Accuracy: +/- 1.00% of full scale output.
- H. Resolution +0.0001% full scale
- I. Ambient Temperature Range: 20 to +120 degrees F.
- J. Protection Rating: IP 69, NEMA 6P
- K. Pressure Connection: Ported Nose Cap
- L. Electrical Connection: 1/2"-14 MNPT
- M. Cable Type: Polyurethane
- N. Cable Length: Accommodate plan dimension shown
- O. Power Supply: 24 VDC, loop powered.
- P. Device Output: HART digital communication via 4-20 mA loop, proportional to pressure.

PART 3 EXECUTION

3.01 GENERAL

- A. Install pump, motor and ancillary equipment in accordance with manufacturer's recommendations, and as shown on the drawings.

3.02 EXAMINATION

- A. Verify pump and motor assembly is properly assembled prior to lowering into position in the vertical well.

3.03 INSTALLATION

- A. Install pump, motor and level transducer in accordance with manufacturer's recommendations, and as shown on the drawings.
- B. Attach electrical cable to discharge piping as specified in Part 2 of this Section.
- C. For start-up requirements, refer to Section 01 75 00.

3.04 FIELD QUALITY CONTROL

- A. The vertical well pump shall be subjected to a 24-hour operational test before acceptance. The unit under test shall be properly installed on its pad, firmly upon its discharge connection after determination that (a) proper service voltage is being supplied and (b) proper rotation of the impeller. No cooling by forced or circulated air shall be allowed.
- B. Check, align, and certify alignment of pump prior to startup.
- C. Startup and Performance Testing:
 - 1. Operate pump using clear water for continuous period of 10 minutes in presence of Engineer.
 - 2. Verify pump performance by performing time-drawdown test or time-fill test.
 - 3. Check pump and motor for high temperature and excessive vibration.
 - 4. Check for motor overload by taking ampere readings.
- D. Equipment Acceptance:
 - 1. Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.

3.05 DEMONSTRATION

- A. Demonstrate pump startup, shutdown, routine maintenance, and emergency repair procedures to District's personnel.
- B. The service of a qualified representative of the manufacturer shall be provided to inspect the installation of the equipment, make any necessary adjustments, test and place the equipment in satisfactory operating condition.
- C. The manufacturer shall instruct the plant operating personnel in the operation and maintenance of the equipment, including pump startup, shutdown, routine maintenance, and emergency repair procedures.
- D. Manufacturer's qualified representative shall provide the requisite services (Training) for the minimum hours listed below, travel time excluded:
 - 1. 8 hours of on-site assistance and training shall be provided.
 - 2. Training details to be submitted three (3) weeks prior to scheduled training

END OF SECTION

SECTION 33 34 00

WELL TRANSMISSION PIPING

PART 1 GENERAL

1.01 DESCRIPTION

Furnish and install all well ductile iron transmission piping, valves, fittings, and appurtenances shown and specified in accordance with the requirements of the Contract documents. The ductile iron water main including ductile iron piping in the valve vault, shall be complete with all necessary fittings, boxes, supports, anchors, expansion joints, flexible connectors, accessories, lining and coatings, testing, excavation, backfill, encasement, temporary and permanent paving, to provide a functional installation.

1.02 SUBMITTALS

- A. Manufactures Literature
 - 1. Piping and fittings
 - 2. Gate Valve
 - 3. Swing Check Valve
 - 4. Restrained Joints
 - 5. Propeller Flow Meter
 - 6. Combination Air Vacuum Valve

PART 2 PRODUCTS

2.01 3 INCH THROUGH 12 INCH DUCTILE IRON PIPE (DIP) (CLASS 350):

- A. Comply with HRCSD Standard Specifications Section 4.5.C. The following subsections supplement the HRCSD Standard Specifications.
- B. 3-inch through 12-inch diameter ductile iron pipe shall conform to AWWA C151, and the following:
 - 1. Pipe laying lengths shall be provided in 20 feet nominal lengths with allowable trim pipe lengths in accordance with AWWA C151 and special shorter lengths provided as required.
 - 2. Unless specified otherwise, the exterior of all exposed pipe in the vault, and buried ductile iron pipe, specials, and fittings shall be coated with a 1 mil asphaltic coating in accordance with AWWA C151, Section 51-9. Buried ductile iron pipe and fittings shall be polyethylene encased in accordance with AWWA C105. Warning tape shall be per Para. 2.06.
 - 3. Exterior Coating, Exposed Ductile Iron Pipe at vertical intake facility: Ductile iron pipe shall be ordered plain without standard asphaltic coating, then coated with a polyurethane coating system (System C-2) per Section 09 90 00.
 - 4. Gaskets: Rubber gasket joints for ductile iron pressure pipe and fittings shall be styrene butadiene rubber (SBR), ethylene propylene rubber (EPT, EPDM),

or chloroprene (Neoprene, CR), in accordance with the requirements of AWWA C111.

5. All joints shall be flanged or restrained unless otherwise shown or specified.

C. Support of Horizontal Above-Ground Pipes. Provide pipe supports as shown on the drawings. Pipe supports shall be properly and adequately supported and anchored so as to maintain the supported loads in proper position under all operating conditions without unnecessary movement.

1. Other than stainless steel or non-ferrous supports, all supports shall receive protective coatings in accordance with the requirements of Section 09 90 00 Painting and Coating, System C-2.

2.02 FITTINGS

A. Comply with HRCSD Standard Specifications Section 4.5.D. The following subsections supplement the HRCSD Standard Specifications.

B. Fittings shall be ductile iron in accordance with AWWA C110, AWWA C153, or AWWA C606, latest revisions.

C. Lining, coating, encasement and gaskets: Shall be as specified herein for Ductile Iron Pipe.

D. Nuts and bolts: All fittings shall utilize stainless steel bolts and nuts, and shall have anti-seize applied to the threads during installation.

E. Type of fitting: Unless specified otherwise, fittings shall be of the type listed below:

Buried:	Mechanical joint or restrained joint.
Above ground:	Flanged, mechanical joint, or restrained joint.

F. 90 Degree Bends: All 90 degree bends may be short or long radius bends. Bends shall be as manufactured by American Ductile iron Pipe Co, US Pipe Co, or equal.

G. Pressure Rating:

Flanged joints:	4" - 64"	250 psi
Push-on, restrained push-on, or mechanical joints:	4" - 24"	350 psi
Grooved joints:	4" - 36"	250 psi
Grooved couplings:	4" - 18"	250 psi

- 2.03 FLANGES: All flanges shall conform to ANSI B16.1 class 125. Bolt holes in all flanges shall straddle the field vertical centerline. Flange isolation gasket kits shall be provided where two flanges of dissimilar metals are connected.
- 2.04 RESTRAINED JOINT ADAPTERS: adapters for providing restraint for raw water supply line shall be able to replace a standard mechanical joint gland and shall conform to the following:
- A. Adapters for DIP: Shall utilize multiple lugs to provide full circle restraint. Sizes 3" - 12" shall be UL approved for 350 psi on DIP.
- EBAA Iron Series 1100 Megalug,
Sigma One-Lok for DIP or equal
- B. When mating ductile iron pipe inside vault, connection shall be by flange to flange connection.
- 2.05 WARNING TAPE: (NON-DETECTABLE): Warning tape for buried pipe shall be of pigmented polyolefin material, non-detectable, which is chemically inert and will not degrade upon contact with moist soil. Tape shall have tensile strength of 2,500 psi and elongation of 800% per ASTM D-882. Tape shall be 3" wide, blue colored and marked "caution WATER", terra-tape or approved equal.
- 2.06 TRACER WIRE FOR DUCTILE IRON PIPE. Not required.
- 2.07 SWING CHECK VALVES
- A. Type: Iron body, bronze mounted swing check valve conforming to AWWA C508, with outside lever and weight.
- B. Pressure Rating: 175 psi for valves 2" - 12" and smaller, 150 psi for valves 14" - 30".
- C. Flapper: When fully open, shall provide 100 percent of full pipe flow area. Flapper shall be constructed of iron or bronze.
- D. Valve Body The plug valve body shall be cast iron ASTM A126, Class B.
- E. End Connections: Unless shown otherwise, connections shall be flanged, with dimensions, facing, and drilling in full conformance with ANSI B16.1, Class 125.
- F. Hinge Pins: Shall be stainless steel.
- G. Manufacturer: All swing-check valves shall be from the same manufacturer Valves shall be Mueller, Clow, or approved equal.
- 2.08 GATE VALVES
- A. Comply with HRCSD Standard Specifications Section 4.8.
- 2.09 COMBINATION AIR AND VACUM RELEASE VALVES
- A. Comply with HRCSD Standard Specifications Section 4.11.
- B. Size: 1"

C. APCO 143C, Crispin C10, or approved equal.

2.010 PROPELLER FLOW METER

A. Manufacturer: McCrometer Water Specialties Model ML04-D, or approved equal.

B. Materials shall conform to AWWA standard C704-02.

1. Meter tube: fabricated steel.

2. Meter head: cast iron

C. The fanged end tube design with 150 lb. AWWA class D flat face steel flanges

D. Meter size: 2"

E. Measurement range: 40 to 160 GPM

F. Accuracy: +/- 2.00% of measuring range.

G. Temperature Range: 15 to 140 degrees Fahrenheit

H. Max Working Pressure: 150 psi

I. Coating: Internal and external 12-15 mils NSF approved, fusion bonded epoxy resin

J. Propeller: Conical shaped three bladed propeller, injection molded of thermoplastic material resistant to normal water corrosion and deformity due to high flow velocities. Magnetically coupled with the electronic sensor through the sealed gearbox.

K. BEARING: Water lubricated ceramic sleeve and spindle bearing system with a ceramic/stainless spindle. Dual ceramic thrust bearings.

L. DIGITAL INDICATOR-TOTALIZER: Non-volatile EEPROM memory to store totalizer count (updated hourly while running).

1. Two line display.

2. Five digit top line indicates flow rate, and eight digit bottom line provides volumetric flow data.

M. Units of measurement: GPM (flow rate), CF (Volume).

N. Power Supply: Battery with 6 -10 year lifespan.

O. Housing: NEMA 4X rated

P. Signal Output: 4-20 mA

PART 3 EXECUTION

3.01 TRENCH CONSTRUCTION:

A. Comply with HRCSD Standard Specifications Section 4.6 and Standard Drawing W-07

3.02 WARNING TAPE: (NON-DETECTABLE):

- A. Warning tape shall be placed in the trench with the ductile iron pipe. All splices shall be made by tying ends of tape together. The tape shall be placed at 30 inches depth of cover.
- B. Payment for Warning Tape installations shall be included in the contract price paid for those contract items which include such work and there shall be no separate payment therefore.

3.03 POLYETHYLENE ENCASUREMENT

All Ductile Iron pipe, Ductile and Cast Iron fittings, and all valves buried underground shall be encased with loose polyethylene film unless otherwise stated on the plans or in these Technical Provisions.

- A. Polyethylene film encasement shall be not less than 8 mils thick, opaque in color, and shall be applied per Method A of the requirements of the latest revised Standard of ANSI/AWWA C 105/A21.5 entitled, "Polyethylene Encasement for Ductile-Iron Piping for Water and Other Liquids," shall be closely followed.
- B. Pipe wrap tape, 10 mil minimum, Scotchrap™ 50, or equivalent, not less than 2" wide shall be used to secure the polyethylene film. Tape shall extend around the pipe at least twice at each end of the piece of film being installed.
- C. Payment for polyethylene encasement shall be included in the contract price paid for those contract items which include such work and there shall be no separate payment therefore.

3.04 TESTING FOR WATER PIPING

- A. Perform the following tests in the presence of the Engineer. In the event of a failed test, correct all deficiencies and retest. The contractor is responsible for all costs associated with retesting following failed tests, and the Owner may deduct such costs from the payments due.
- B. Water main piping, between well head and valve vault, shall be tested as follows:
 - 1. Pressure and Leakage Test per HRCSD Standards, Paragraph 4.14A.
 - 2. Submit a written plan describing the proposed testing at least 10 days in advance of testing to the District and District's representative. The plan shall be approved prior to performance of testing.
 - 3. The new piping shall remain isolated from the existing system until cleared by HRCSD. A tie-in to the HRCSD system does not constitute acceptance of the pipe by HRCSD.

3.05 FLOW METER

- A. Install, calibrate and start-up and test the meter in strict accordance with the manufacturer's recommendations. Provide required upstream and downstream length of straight-run pipe per manufacturer's recommendations.

END OF SECTION

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