PROJECT MANUAL

BVARA RPP

Bid Opening Tuesday, June 24, 2025, Before 11:00 A.M.



Project Number: 1650.7087-23 Approved: May 13, 2025 Required Contractor's License Classification: B Construction Estimate: \$4,085,209

> Construction Services Division General Services Division of the County Administrative Office 1115 Truxtun Avenue, 3rd Floor Bakersfield, CA 93301

MANDATORY PRE-BID JOBWALK

TUESDAY, JUNE 3, 2025, AT 1:30 P.M. 13601 IRONBARK RD. BAKERSFIELD, CA 93301

INTERESTED CONTRACTORS SHALL ASSEMBLE AT THE FACILITY LOCATED AT 13601 IRONBARK RD. BAKERSFIELD, CA 93301.

DOCUMENT 00 0105

CERTIFICATIONS PAGE

PROJECT TITLE:

BVARA RPP

CLIENT DEPARTMENT:

LOCATION:

PROJECT NUMBER:

OWNER:

13601 Ironbark Rd., Bakersfield, CA 93301

1650.7087-23

COUNTY OF KERN 1115 TRUXTUN AVE., 3RD FLOOR BAKERSFIELD, CA 93301 TEL: 661-868-3000 FAX: 661-868-3109

OWNER PROJECT MANAGER:

Brennan Nettleton

CONSULTANT:

ARCHITECT	

DOCUMENT 00 0110

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DOCUMENT 00 1113 NOTICE TO CONTRACTORS

ARTICLE 1 – INVITATION TO BID

1.01 Notice Inviting Bids: County of Kern (hereinafter "Owner") Owner will receive sealed Bids at the County of Kern, General Services Division of the County Administrative Office, 1115 Truxtun Avenue, Third Floor Bakersfield, California 93301-4639 until 10:59 A.M. on Tuesday, June 24, 2025- for the following public work:

BVARA RPP – 1650.7087-23

1.02 Project Description: The project, in general, consists of but is not limited to, the construction of site utilities, site electrical, picnic area, splashpad, shoreline improvements, floating docks, dog park, and multi-use trail.

Alternate No. 1: Alternately bid improvements consists of, but are not limited to, the extension of multi-use trail.

Alternate No. 2: Alternately bid improvements consists of, but are not limited to, the extension of shoreline improvements.

Alternate No. 3: Alternately bid improvements consists of, but are not limited to, the construction of shade structures.

Work shall be completed within two hundred and forty **(240)** Working Days from the date when Contract Time commences to run.

- **1.03 Procurement of Bidding Documents:** Interested Bidders and subcontractors may obtain Plans, Specifications, Addenda, and Bid Proposal forms to be used for bidding this project at https://pbsystem.planetbids.com/portal/59079/portal-home. It is the sole responsibility of the Bidder to contact the County of Kern, Construction Services Division, 661-868-3000 to verify that all Addenda have been received. Addenda will only be available at the site listed above. Bid Proposals that do not contain a signed cover sheet for all addenda may, in the sole discretion of the County, be rejected as non-responsive.
- **1.04 Instructions:** Bidders shall refer to Document 00 2113 Instructions to Bidders for required documents and items to be submitted in a sealed envelope. Sealed proposals will be received on the date and time indicated in Paragraph 1.01, at the following location:
 - 1. Delivered in person, by courier service or by mail to the County of Kern, General Services Division of the County Administrative Office, 1115 Truxtun Avenue, Third Floor, Bakersfield, California 93301.

It is the sole responsibility of the Bidder to arrive at the General Services Division third floor main lobby at least ten (10) minutes prior to the bid receipt deadline to receive a test time stamp. The time stamp clock in the main lobby of General Services shall be the official time. Any bid received at or after 11:00 A.M. will be returned unopened. Soon after 11:00 A.M. the bids will be publicly opened and read in the third-floor conference room of the County Administrative Center.

- **1.05** Mandatory Pre-Bid Site Visit: Owner will conduct a Mandatory Pre-Bid Conference and Site Visit at 13601 Ironbark Rd., Bakersfield, CA 93301 on Tuesday, June 3, 2025, at 1:30 p.m.
- **1.06** Bid Preparation Cost: Bidders are solely responsible for the cost of preparing their Bids.

1.07 Reservation of Rights: Owner specifically reserves the right, in its sole discretion, to reject any or all Bids, to re-bid, or to waive inconsequential defects in bidding not involving time, price or quality of the work.

ARTICLE 2 – LEGAL REQUIREMENTS

- **2.01 Required Contractor's License(s):** A California "**B**" contractor's license is required to bid this contract. Joint ventures must secure a joint venture license prior to award of this Contract.
- **2.02 Substitution of Securities:** Owner will permit the successful bidder to substitute securities for any retention monies withheld to ensure performance of the contract, as set forth in Document 00 6290 Escrow Agreement For Security Deposits In Lieu Of Retention and incorporated herein in full by this reference, in accordance with Section 22300 of the California Public Contract Code.
- **2.03 Prevailing Wage Laws:** Pursuant to Part 7 of Division 2 of the California Labor Code (Section 1720 et seq.) the Contractor shall pay not less than the prevailing rate of wages to workers on this project as determined by the Director of the California Department of Industrial Relations. The Director's schedule of prevailing rates is on file and open for inspection at County of Kern, General Services Division of the County Administrative Office, 1115 Truxtun Avenue, Third Floor, Bakersfield, California 93301, and is incorporated herein by this reference.

This project may be subject to monitoring and enforcement by the Department of Industrial Relations (DIR), including the obligation to submit certified payroll records directly to the DIR Compliance Monitoring Unit (CMU) at least monthly in a format prescribed by the Labor Commissioner. The contractor must post job site notices as prescribed by DIR regulation.

- 2.04 Required Registration with the State of California Department of Industrial Relations: Pursuant to California Labor Code 1725.5, all contractors and subcontractors must be registered with the Department of Industrial Relations (DIR) in order to be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any public work contract. Detailed information about contractor's responsibilities and online registration may be obtained on the State of California Department of Industrial Relations, Public Works website, <u>http://www.dir.ca.gov/Public-Works/PublicWorks.html</u>
- **2.05** For projects <u>without</u> Federal Funding, each Bidder must be licensed, as required by law, at the time the bid is submitted. For projects <u>with</u> Federal Funding, each Contractor must be licensed at the time the Contract is awarded.

DOCUMENT 00 2113 INSTRUCTIONS TO BIDDERS

Bids are requested by the County of Kern ("hereinafter "Owner"), for a general construction contract, or work described in general, as set forth in Document 00 1113 (Notice to Contractors), and the following additional terms.

ARTICLE 1 - PROCEDURES FOR SUBMISSION OF BIDS

1.01 Required Pre-Bid Conference and Site Visit

- A. Owner may conduct Pre-Bid Conference and Site Visit at the date, time and location indicated in Document 00 1113 (Notice to Contractors), to consider such matters as Bidders may request and perform a Site Visit immediately following, at the Site. If the Notice to Contractors specifies a required Site Visit, Bidders must attend Pre-Bid Conference and Site Visit and sign an attendance roster as a condition to bidding.
- B. The Site Visit may be the Bidders' only opportunity to investigate conditions at the Site. Other Pre-Bid Site Visits may be scheduled at Owner's sole discretion, depending on staff availability.

1.02 Required Pre-Bid Investigations

A. Prior to submission of Bid, Bidder must conduct a careful examination of Bidding Documents and understand the nature, extent, and location of Work to be performed. Refer to Document 00 7200 (General Conditions) on required pre-bid investigations.

1.03 Bidder Questions and Answers

- A. Bidders must direct all questions about the meaning or intent of Bidding Documents to Owner in writing. Interpretations or clarifications considered necessary by Owner in response to such questions will be issued by written Addenda. It is the sole responsibility of the Bidder to contact Construction Services Division at 661-868-3000 to verify that all addenda has been received. Addenda will only be available from the website: https://pbsystem.planetbids.com/portal/59079/portal-home. Owner may not answer questions received less than ten Calendar Days prior to the date for opening Bids.
- B. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect, and Bidders shall not rely on oral statements.

1.04 Addenda

A. Addenda may also be issued to modify the Bidding Documents as deemed advisable by Owner. It is the sole responsibility of the Bidder to contact the County of Kern, Construction Services Division, 661-868-3000, to verify that all addenda has been received. Bid Proposals that do not contain a signed cover sheet for all addenda may, in the sole discretion of the County, be rejected as non-responsive. Addenda may also be acknowledged by number in Document 00 4100 (Bid Form). All addenda shall be part of the Contract Documents. A complete listing of Addenda may be secured from Owner.

ARTICLE 2 - RECEIPT OF BIDS:

2.01 Date and Time

A. Sealed Bids will be received by the Owner until the date and time indicated in Document 00 1113 (Notice to Contractors). All Bid envelopes will be time-stamped to reflect their submittal time. Owner shall reject all Bids received after the specified time and will return such Bids to Bidders unopened. Bidders must submit Bids in accordance with this Document 00 2113.

2.02 Bid Submission:

- A. Owner will receive Bids in a sealed envelope, containing the required items described herein.
- B. Bidders should mark their Bid envelope using the name, address, identifying information and project number, indicated in Document 00 1113 (Notice to Contractors).

2.03 Required Contents of Bid Submittal Envelope

- A. <u>Document 00 4100 (Bid Form)</u>. Bidders must submit Bids on Document 00 4100 (Bid Form) in accordance with the provisions of Document 00 4100. Bidders must complete all Bid items and supply all information required by Bid documents and specifications.
- B. <u>Document 00 4411 (Bond Accompanying Bid)</u>. Bidders must submit Document 00 4411 (Bond Accompanying Bid) accompanied by a cashier's check, certified check (certified without qualification and drawn on a solvent bank of the State of California or a National Bank doing business in the State of California) or completed form of Document 00 4411 of not less than 10% of the base Bid, payable to Owner and completed in accordance with the provisions of Document 00 4411.
- C. <u>Document 00 4412 (Bidder Registration and Experience Form).</u> Bidders must submit Document 00 4412 (Bidder Registration and Experience Form), completed in accordance with the provisions of Document 00 4412.
- D. <u>Document 00 4430 (Subcontractors List)</u>. Bidders must submit Document 00 4430 (Subcontractors List) completed in accordance with the provisions of Document 00 4430. The Subcontractors List must include the names and addresses of all subcontractors for those subcontractors who will perform any portion of work, including labor, rendering of service, or specially fabricating and installing a portion of the work or improvement according to detailed drawings contained in the plans and specifications, in excess of one half of one percent (0.5%) of the total Bid amount. Any violation of this requirement may result in a Bid being deemed non-responsive and not being considered.
- E. <u>Document 00 4452 (Non-Collusion Affidavit)</u>. Bidders must submit Document 00 4452 (Non-Collusion Affidavit) completed in accordance with the provisions of Document 00 4452.
- F. <u>Document 00 4455 (Bidder Certifications)</u>. Bidders must submit Document 00 4455 (Bidder Certification) completed in accordance with the provisions of Document 00 4455.
- G. <u>Document 00 4453 (Iran Contracting Act Certification</u>) Bidders must submit Document 00 4453 (Iran Contracting Act Certification) in accordance with Public Contract Code Sections 2200 et seq.

ARTICLE 3 - BID OPENING AND EVALUATION

3.01 Determination of Apparent Low Bidder

- A. Owner will open each Bidders' Envelope at the time and place indicated in Document 00 1113 (Notice to Contractors), initially evaluate them for bid bond, subcontractor listing and addenda. Further evaluation will follow, and notification of the "Apparent Low Responsive, Responsible Bidder" will be recommended to the Board of Supervisors during an open meeting.
- B. If Apparent Low Bidder is determined to be non-responsive or non-responsible, then Owner may proceed to the next Apparent Low Bidder's Bid pursuant to any procedures determined in its reasonable discretion, and proceed for all purposes as if this Apparent Low Bidder were the original Apparent Low Bidder.

3.02 Evaluation of Bids

A. Bids must be full, complete, clearly written and using the required forms. Bidders shall make any change in the Bid by crossing out the original entry, entering and initialing the new entry. Bidder's

failure to submit all required documents strictly as required entitles Owner to reject the Bid as non-responsive. All Bidders must submit Bids containing each of the fully executed documents supplied in this Project Manual.

- B. In evaluating Bids, Owner will consider Bidders' qualifications, whether or not the Bids comply with the prescribed requirements, unit prices, and other data, as may be requested in Document 00 4100 (Bid Form) or prior to the Notice of Award.
- C. Owner may conduct reasonable investigations and reference checks of Bidder and other persons and organizations as Owner deems necessary to assist in the evaluation of any Bid and to establish Bidder's responsibility, qualifications, financial ability and ability to perform the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time. Submission of a Bid constitutes Bidder's consent to the foregoing.
- D. Owner shall have the right to consider information provided by sources other than Bidder. Owner shall also have the right to communicate directly with Bidder's surety regarding Bidder's bonds.
- E. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between written words and figures will be resolved in favor of the words.
- F. Bids shall be deemed to include the written responses of the Bidder to any questions or requests for information of Owner made as part of Bid evaluation process after submission of Bid.

3.03 Reservation of Rights

- A. Owner reserves the right to reject any or all nonconforming, non-responsive, unbalanced, or conditional Bids, and to reject the Bid of any Bidder as non-responsive as a result of any error or omission in the Bid, or if Owner believes that it would not be in the best interest of Project to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by Owner. For purposes of this paragraph, an "unbalanced Bid" is one having nominal prices for some Bid items and enhanced prices for other Bid items.
- B. Owner may retain Bid securities and Bid bonds of other than the Apparent Low Bidder for a period of 90 Calendar Days after award or full execution of the Contract, whichever first occurs.
- C. Owner may reject any or all Bids and waive any informalities or minor irregularities in the Bids. Owner also reserves the right, in its discretion, to reject any or all Bids and to re-Bid the Project.

ARTICLE 4 - MANDATORY BID PROTEST PROCEDURES:

4.01 Submission of Written Bid Protest

- A. Any Bid protest in connection with the construction contract or work described in general in Document 00 1113 (Notice to Contractors) must be submitted in writing to the General Services Division of the County Administrative Office, 1115 Truxtun Avenue, Third Floor, Bakersfield, California 93301-4639, before 4:30 P.M. of the fifth Business Day following opening of the Bids.
- B. The initial protest document must contain a complete statement of the basis for the protest.
- C. The protest must refer to the specific portion of the document that forms the basis for the protest.
- D. The protest must include the name, address, and telephone number of the person representing the protesting party.
- E. Only Bidders who the Owner otherwise determines are responsive and responsible are eligible to protest a Bid; protests from any other Bidder will not be considered. In order to determine whether a protesting Bidder is responsive and responsible, Owner may evaluate all information contained in any protesting Bidder's Bid.,.

F. The party filing the protest must concurrently transmit a copy of the initial protest document and any attached documentation to all other parties with a direct financial interest that may be adversely affected by the outcome of the protest. Such parties shall include all other Bidders who appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest.

4.02 Exclusive Remedy

A. The procedure and time limits set forth in this paragraph are mandatory and are Bidder's sole and exclusive remedy in the event of Bid protest. Bidder's 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. A Bidder may not rely on a protest submitted by another Bidder, but must timely pursue its own protest.

ARTICLE 5 - AWARD AND EXECUTION OF CONTRACT

5.01 Notice of Award and Submittal of Executed Contract Documents

- A. If Contract is to be awarded, it will be awarded to the lowest responsible responsive Bidder. Such Award, if made, will be made within sixty (60) Calendar Days after the opening of the Bid Proposals.
- B. Successful Bidder must execute and submit to Owner the "Required Contract Documents and Proof of Insurance" set forth below, within the time limits requested by County. Failure to deliver the "Required Contract Documents" to County by 5:00 p.m. of the 10th Day following Contractor's receipt of the Documents, will entitle the Owner to consider the Bid abandoned, and to declare the Bid security forfeited.

5.02 Required Contract Documents and Proof of Insurance

- A. <u>Document 00 5200 (Agreement)</u>, fully executed by successful Bidder. Submit three originals, each bearing an original signature.
- B. <u>Document 00 6001 (Construction Performance Bond)</u>, fully executed by successful Bidder and surety, in the amount set forth in Document 00 6001. Submit three originals.
- C. <u>Document 00 6002 (Construction Labor and Material Payment Bond)</u>, fully executed by successful Bidder and surety, in the amount set forth in Document 00 6002. Submit three originals.
- D. <u>Document 00 6003 (Guaranty)</u>, fully executed by successful Bidder. Submit three originals.
- E. <u>Insurance certificates and endorsements required by Document 00 7300 (Supplementary Conditions—Insurance)</u>: Submit three original set.
- F. Connelly Asbestos Notification. Submit three originals.
- G. Corporate Resolution IF APPLICABLE. Submit three originals.
- H. Fictitious Business form IF APPLICABLE (copy of recorded document). Submit three originals.

5.03 Failure to Execute and Deliver Documents:

A. If Bidder to whom Contract is awarded, within the period described in this Document 00 2113, fails or neglects to execute and deliver all required Contract Documents and file all required bonds, insurance certificates, and other documents, Owner may, in its sole discretion, rescind the award, recover on Bidder's surety bond, or deposit Bidder's cashier's check or certified check for collection, and retain the proceeds thereof as liquidated damages for Bidder's failure to enter into the Contract. Bidder agrees that calculating the damages Owner may suffer as a result of Bidder's failure to execute and deliver all required Contract Documents would be extremely difficult and impractical and that the amount of Bidder's required Bid security shall be the agreed and presumed amount of Owner's damages.

B. Upon such failure to timely deliver all required Contract Documents as set forth herein, Owner may determine the next Apparent Low Bidder and proceed accordingly.

ARTICLE 6 - GENERAL CONDITIONS AND REQUIREMENTS

6.01 Modification of Commencement of Work:

- A. Owner expressly reserves the right to modify the date for the Commencement of Work under the Contract and to independently perform and complete work related to Project. Owner accepts no responsibility to Contractor for any delays attributed to its need to complete independent work at the Site.
- B. Owner shall have the right to communicate directly with Apparent Low Bidder's proposed performance bond surety, to confirm the performance bond. Owner may elect to extend the time to receive faithful performance and labor and material payment bonds.

6.02 Conformed Project Manual:

A. Following Award of Contract, Owner may prepare a conformed Project Manual reflecting Addenda issued during bidding, which will constitute the approved Project Manual.

6.03 Payment Bond:

A. If the Project described in Document 00 1113 (Notice to Contractors) involves an expenditure in excess of twenty-five thousand dollars (\$25,000), the successful Bidder must file a payment bond with and approved by Owner prior to entering upon the performance of the Work, in accordance with Civil Code § 9550.

6.04 Wage Rates:

A. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the State of California Department of Industrial Relations, are on file at the General Services Division of the County Administrative Office, 1115 Truxtun Avenue, Third Floor, Bakersfield, California 93301-4639 and are deemed included in the Bidding Documents. Upon request, Owner will make available copies to any interested party. Also, Contractor shall post the applicable prevailing wage rates at the Site.

6.05 Withdrawal of Bids:

A. Bidders may withdraw their Bids at any time prior to the Bid opening time fixed in this Document 00 2113, only by written request for the withdrawal of Bid filed with Owner at the General Services Division of the County Administrative Office, 1115 Truxtun Avenue, Third Floor, Bakersfield, California 93301. Bidder or its duly authorized representative shall execute request to withdraw Bid.

6.06 Ineligible Contractors and Subcontractors:

A. Owner shall not accept a Bid from a Bidder who is ineligible to bid or work on, or be awarded, a public works project pursuant to California Labor Code section 1777.1 or 1777.7. Bidders and the Contractor who is awarded the project contract shall not utilize, or allow work by, any subcontractor who is ineligible to bid or work on, or be awarded, a public works project pursuant to California Labor Code Section 1777.1 or 1777.7. (See California Public Contract Code Section 6109.) The California Division of Labor Standards Enforcement publishes a list of debarred contractors and subcontractors on the Internet at www.dir.ca.gov/DLSE/debar.html.

6.07 Substitutions:

A. Bidders must base their Bids on products and systems specified in Contract Documents or listed by name in Addenda. Owner will consider substitution requests only for "or equal items." Bidders wanting to use "or equal" item(s) shall submit Document 01 6000-A (Substitution Request Form) no later than 14 Calendar Days following the execution of the Contract by Owner. As a limitation on Bidder's privilege to request substitution of "or equal" items, Owner has found that certain items are designated as Owner standards and certain items are designated to match existing items in use on a particular public improvement either completed or in the course of completion or are available from one source. As to such items, Owner will not permit substitution. Such items are described in the Bidding Documents.

6.08 Definitions:

A. All abbreviations and definitions of terms used in this Document 00 2113 are set forth in Document 00 7200 (General Conditions) and Section 01 4216 (Definitions).

DOCUMENT 00 3100 GEOTECHNICAL DATA AND EXISTING CONDITIONS

ARTICLE 1 - REPORTS AND INFORMATION ON EXISTING CONDITIONS

1.01 Inspection of Reports:

- A. The County of Kern (hereinafter "Owner"), its consultants, and prior contractors may have collected documents providing a general description of the Site and conditions of the Work. These documents may consist of geotechnical reports for and around the Site, contracts, contract specifications, tenant improvement contracts, as-built drawings, utility drawings, and information regarding Underground Facilities (collectively, "Existing Conditions Data".)
- B. Bidders may inspect Geotechnical and Existing Conditions Data. These documents are listed in Section 01 1000 (Summary) and are available for review at the address identified therein. Copies may be obtained by contacting the owner at the following website https://pbsystem.planetbids.com/portal/59079/portal-home.
- C. Existing Conditions Data is for information only and does not describe labor, materials or equipment furnished by Contractor, but rather, information regarding conditions of the work. Such Existing Conditions Data is not a Contract Document.

ARTICLE 2 - USE OF EXISTING CONDITIONS DATA

2.01 Above-Ground Existing Conditions:

- A. Owner makes no warranty or representation of existing aboveground conditions, as-built conditions, or other aboveground actual conditions verifiable by reasonable independent investigation. These conditions are verifiable by Bidder by the performance of its own independent investigation that Bidder must perform prior to bidding and Bidder must not rely on the information supplied by Owner regarding existing conditions.
- B. Bidder represents and agrees that in submitting its Bid, it is not relying on any information regarding above-ground existing conditions supplied by Owner.
- C. Owner is not responsible for information regarding Underground Facilities owned by others.

2.02 Underground Facilities:

- A. Information supplied regarding existing Underground Facilities at or contiguous to the Site is based on information furnished to Owner by others (e.g., the builders of such Underground Facilities or others).
- B. Owner assumes responsibility for only the general accuracy, completeness or thoroughness of information regarding Underground Facilities that are owned by Owner. This express assumption of responsibility applies only if Bidder has conducted the independent investigation required of it under Document 00 7200 (General Conditions) and discrepancies were not apparent. Bidder is solely responsible for any interpretation or conclusion drawn from this information.
- C. Owner is not responsible only for information regarding Underground Facilities owned by others.

2.03 Hazardous Materials Surveys:

- A. Bidders may rely on this data and information for general accuracy regarding the locations of potentially hazardous materials subject of the Work. Owner does not warrant and makes no representation regarding the completeness or thoroughness of any data or information regarding existing conditions or hazardous materials, including, but not limited to, quantities, characteristics, volumes, or associated structural features. Bidder represents and agrees that in submitting a Bid it is not relying on any such data, information or deductions.
- B. Data and information regarding the locations of hazardous materials are not part of Contract Documents.

2.04 Geotechnical Data:

A. Bidder may rely upon the general accuracy of the "technical data" contained in the geotechnical reports and drawings identified above, but only insofar as it relates to subsurface conditions,

provided Bidder has conducted the independent investigation required of it and discrepancies were not apparent.

- B. The term "technical data" shall include actual reported depths, reported quantities, reported soil types, reported soil conditions, and reported material, equipment, or structures that were encountered during subsurface exploration. The term "technical data" does not include, and Bidder may not rely upon, any other data, interpretations, opinions or information shown or indicated in such drawings or reports that otherwise relate to subsurface conditions or described structures. The term "technical data" shall not include the location of Underground Facilities.
- C. Bidder may not rely on the completeness of reports and drawings for the purposes of bidding or construction. Bidder is solely responsible for any interpretation or conclusion drawn from any "technical data" or any other data, interpretations, opinions, or information contained in supplied geotechnical data.
- D. Except as expressly set forth in this Document 00 3100, Owner does not warrant, and makes no representation regarding, the accuracy or thoroughness of any geotechnical data.
- E. Bidder represents and agrees that in submitting its Bid, it is not relying on any geotechnical data supplied by Owner, except as specifically set forth herein.

ARTICLE 3 - INVESTIGATIONS

3.01 Required Investigations:

- A. Before submitting a Bid, each Bidder shall be responsible to obtain such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site or otherwise, which may affect cost, progress, performance or furnishing of Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of Contract Documents.
- B. Bidders shall advise Owner in writing during the Bid period of any questions, suppositions, inferences or deductions Bidders may have for Owner's review and response.
- C. Owner has provided time in the period prior to bidding for Bidder to perform these investigations.

3.02 Access to Site for Investigations:

A. During the Pre-Bid Site Visit(s), Owner will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies, as each Bidder deems necessary for submission of a Bid. Bidders must fill all holes and clean up and restore the Site to its former conditions upon completion of such explorations, investigations, tests, and studies. Such investigations may be performed only under the provisions of Document 00 2113 (Instructions to Bidders) and Document 00 7200 (General Conditions) including, but not limited to, proof of insurance and obligation to indemnify against claims arising from such investigation work. Each Bidder shall supply all equipment required to perform any investigations as each Bidder deems necessary. Owner has the right to limit the number of pieces of machinery operating at one time due to safety concerns.

DOCUMENT 00 4100 BID FORM

TO THE COUNTY OF KERN

THIS BID IS SUBMITTED BY:

(Firm/Company Name)

Project: **BVARA RPP** Project Number: **1650.7087-23**

- 1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an agreement with the County of Kern (hereinafter "Owner") in the form included in the Contract Documents, Document 00 5200 (Agreement), to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Sum and within the Contract Time indicated in this Bid and in accordance with all other terms and conditions of the Contract Documents.
- 2. Bidder accepts all of the terms and conditions of the Contract Documents, Document 00 1113 (Notice to Contractors), and Document 00 2113 (Instructions to Bidders), including, without limitation, those dealing with the disposition of Bid Security. This Bid will remain subject to acceptance for 60 Calendar Days after the day of Bid opening, unless there is a bid protest, then 90 Calendar days after the day of bid opening.
- 3. In submitting this Bid, Bidder represents that Bidder has examined all of the Contract Documents, performed all necessary Pre-Bid investigations, received, reviewed and has included the signed cover sheet for each of the following Addenda in this bid submission:

Addendum Number	Addendum Date	Signature of Bidder

4. The undersigned, as Bidder, declares that: the Bidder is duly licensed under the Contractor's State License Law Business and Professions Code Section 7000 et.seq.; the only persons or parties interested in this proposal as principals are those named herein; this proposal is made without collusion with any other person, firm or corporation; the bidder has examined the location of the proposed work, the attached proposed form of Agreement, Plans, Specifications, and Addenda referred to; the Bidder agrees that if this proposal is accepted by the County, Bidder will contract with the County of Kern by execution of the documents required by Document 00 2113(Instruction to Bidders); to do all the work and furnish all the materials specified in the contract, in the manner and time therein prescribed, and according to the requirements of the Assistant County Administrative Officer, County of Kern, General Services Division of the County

(\$_____)

Administrative Office as therein set forth, and that the Bidder will accept in full payment the following amounts:

Total Bid Price:

(Words)

- 5. Subcontractors for work included in all Bid items are listed on Document 00 4430 (Subcontractors List) submitted herewith.
- 6. The undersigned Bidder understands that Owner reserves the right to reject this Bid.
- 7. If the documents required by Document 00 2113 (Instructions to Bidders) are mailed or delivered to the undersigned Bidder within the time described in Paragraph 2 of this Document 00 4100, or at any other time thereafter before it is withdrawn, the undersigned Bidder will execute and deliver the documents required by Document 00 2113 (Instructions to Bidders) within the times specified therein.
- 8. The undersigned Bidder herewith encloses cash, a cashier's check, or certified check of or on a responsible bank in the United States, or a corporate surety bond furnished by a surety authorized to do a surety business in the State of California, in form specified in Document 00 2113 (Instructions to Bidders), in the amount of ten percent (10%) of the Total Bid Price and made payable to the County of Kern.
- 9. The undersigned Bidder agrees to commence Work under the Contract Documents on the date established in Document 00 7200 (General Conditions) and to complete all Work within the time specified in Document 00 5200 (Agreement).
- 10. The undersigned Bidder agrees that, in accordance with Document 00 7200 (General Conditions), liquidated damages for failure to complete all Work in the Contract within the time specified in Document 00 5200 (Agreement) shall be as set forth in Document 00 5200.
- 11. The names of all persons interested in the foregoing Bid as principals are:

IMPORTANT NOTICE: If Bidder or other interested person is a corporation, give the legal name of corporation, state where incorporated, and names of president and secretary thereof; if a partnership, give name of the firm and names of all individual co-partners composing the firm; if Bidder or other interested person is an individual, give first and last names in full.

NAME OF BIDDER:

licensed in accordance with an act for the registration of Contractors, and with license number:______ Expiration: ______.

(Place of Incorporation, if Applicable)

(Principal)

(Principal)

(Principal)

I certify (or declare) under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

(Signature of Bidder)

NOTE: If Bidder is a corporation, set forth the legal name of the corporation together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If Bidder is a partnership, set forth the name of the firm together with the signature of the partner or partners authorized to sign contracts on behalf of the partnership.

Business Address:			
Contractor's Poprosontativo(s):			
	(N	ame/Title)	
	(N	ame/Title)	
	(N	ame/Title)	
Officers Authorized to Sign Contracts			
	(N	ame/Title)	
	(N	ame/Title)	
	(N	ame/Title)	
Telephone Number(s):			
	(Area Code)	(Number)	_
	(Area Code)	(Number)	
Fax Number(s):	(Area Code)	(Number)	<u> </u>
	(Area Code)	(Number)	
Date of Bid:			

DOCUMENT 00 4323 ALTERNATE BID FORM

Project Name: BVARA RPP Project Number: 1650.7087-23

This form shall be included in the Contractor's bid. The Contractor shall find all alternates in Section 01 1000 (Summary), and Section 01 2300-1 Alternates.

Alternate Bid – No. 1: Alternately bid improvements consists of, but are not limited to, the extension of multi-use trail.

ADD/DEDUCT\$ +/-\$

Alternate Bid – No. 2: Alternately bid improvements consists of, but are not limited to, the extension of shoreline improvements.

ADD/DEDUCT\$_____+/-\$_____

Alternate Bid - No. 1: Alternately bid improvements consists of, but are not limited to, the construction of shade structures.

	ADD/DEDUCT\$	+/-\$	
--	--------------	-------	--

Indicate whether the above alternate is an additional cost (ADD) or a deductive cost (DEDUCT) by lining out the one not used, see example below.

ADD/DEDUCT \$X thousand dollars and X cents +/- \$X,000.00

Should the contractor not specify addition or deduct for the Alternate it will be determined that the Alternate Bid is a deduction.

Low bid shall be based on Base Bid only.

DOCUMENT 00 4411

BOND ACCOMPANYING BID

COUNTY OF KERN

KNOW ALL MEN BY THESE PRESENTS, That we,

as PRINCIPAL, and , as SURETY, are held and firmly bound unto the County of Kern (hereinafter Obligee), a political subdivision of the State of California, in the penal sum of ten percent (10%) of the total amount of the bid of the Principal above named, submitted by said Principal to Obligee for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents. In no case shall the liability of the Surety hereunder exceed the sum of \$

THE CONDITION OF THIS OBLIGATION IS SUCH.

THAT WHEREAS THE PRINCIPAL has submitted the above-mentioned bid to Obligee for certain construction specifically described as follows, for which bids are to be opened at Bakersfield, California, on the date as indicated on the bid documents for the **BVARA RPP – 1650.7087-23**.

NOW, THEREFORE, if the aforesaid Principal is awarded the contract and, within the time and manner required under the Specifications, after the prescribed forms are presented to him for signature, enters into a written Agreement, in the prescribed form, in accordance with the bid, files the two bonds with the Obligee, one to guaranty faithful performance and the other to guaranty payment for labor and materials, as required by law, provides all required insurance certificates. Guaranty, and all other endorsements, forms, and documents required under Document 00 2113 (Instructions to Bidders). then this obligation shall be null and void; otherwise, it shall remain in full force and virtue.

If suit is brought upon this Bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including reasonable costs and Attorney's fees to be fixed by the Court.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this ____ day of _____, 20__.

Correspondence of claims relating to this bond		(SEAL)
should be sent to the survey at the following		(SEAL)
address:		(SEAL)
	PRINCIPAL	
		(SEAL)
		(SEAL)
	SURETY	(SEAL)
Phone: ()		

Note: Signatures of those executing for the Surety must be properly acknowledged.

END OF DOCUMENT

(

)

DOCUMENT 00 4412 BIDDER INFORMATION FORM

INSTRUCTIONS

In order to register to undertake work for Owner, Bidder must:

- 1) Fill out this registration form completely; do not leave blanks.
- 2) Provide certificates of insurance or a letter evidencing coverage

INDEPENDENT CONTRACTOR REGISTRATION

Contractors DIR Registration Nu	umber:	
Contractor's License #		
Date:	Fed I.D. #	
Full Corporate Name of Compar	ny:	
Street Address:		
Mailing Address:		
Phone:	Fax:	
Name of Principal Contact:		
Email of Principal Contact:		
Type of Business:	Sole Proprietor Non-Profit 501(c)(3)	Partnership Corporation
INSURANCE		/
Workers' Compensation:		
Carrier:		
Address:		
Phone and Fax:		
Policy Number:		
General Liability:		
Carrier:		
BVARA RPP 1650.7087-23		Bidder Information Form 00 4412 - 1

Address:
Phone and Fax:
Policy Number:
Policy Limits: \$
A.M. Best Rating:
Automobile Liability:
Carrier:
Address:
Phone and Fax:
Policy Number:
Policy Limits: \$
A.M. Best Rating:
BONDING
Surety Company Providing Bonds:
Address:
Phone and Fax:
Admitted in California YES NO
A.M. Best Rating:

BIDDER CERTIFIES, UNDER PENALTY OF PERJURY, THAT THE FOREGOING INFORMATION IS CURRENT AND ACCURATE AND AUTHORIZES THE COUNTY OF KERN AND ITS AGENTS AND REPRESENTATIVES TO OBTAIN A CREDIT REPORT AND/OR VERIFY ANY OF THE ABOVE INFORMATION.

SIGNATURE

DATE

SAFETY EXPERIENCE

The following statements as to the Bidder's safety experience are submitted with the Bid, as part thereof, and the Bidder guarantees the truthfulness and accuracy of all information.

1. List Bidder's interstate Experience Modification Rate for the last three years.

[20_] ____ [20_] ____ [20_] ____

2. Use Bidder's last year's Cal/OSHA 200 log to fill in the following number of injuries and illnesses:

- a. Number of lost workday cases
- b. Number of medical treatment cases
- c. Number of fatalities
- 3. Employee hours worked last year
- 4. State the name of Bidder's safety engineer/manager:

Attach a resume or outline of this individual's safety and health qualifications and experience.

I CERTIFY, UNDER PENALTY OF PERJURY, THAT THE FOREGOING INFORMATION IS CURRENT AND ACCURATE AND I AUTHORIZE THE COUNTY OF KERN, AND ITS AGENTS AND REPRESENTATIVES TO OBTAIN A CREDIT REPORT AND/OR VERIFY ANY OF THE ABOVE INFORMATION.

Date_____

DOCUMENT 00 4430

SUBCONTRACTORS LIST

Contractors Name: _____

Project Name/Number: BVARA RPP – 1650.7087-23

Bidder submits the following information as to the subcontractors Bidder intends to employ if awarded the Contract. Only list subcontractors whose contract with Contractor is in an amount greater than one-half of 1 percent of Contractor's total bid.

Full Name of Subcontractor and	Description of Work: Reference To Bid Items	Subcontractor's	DIR Registration No
			Registration No.

(Bidder to attach additional sheets if necessary)

Bidder must provide Subcontractor DIR Registration Number within twenty-four hours of bid opening. END OF DOCUMENT

DOCUMENT 00 4452 NON-COLLUSION DECLARATION

PUBLIC CONTRACT CODE §7106

PROJECT TITLE: BVARA RPP - 1650.7087-23

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

The undersigned declares:

I am the ______ of ______ (Office of Affiant) _____ (Name of Bidder)

the party making the foregoing Bid.

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

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

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____, at _____, (City) (Date)

(State)

(Name of Bidder)

(Signature of Principal)

NOTE: If Bidder is a partnership or a joint venture, a copy of this declaration must be signed and sworn to by every member of the partnership or venture.

DOCUMENT 00 4453 IRAN CONTRACTING ACT CERTIFICATION (Public Contract Code Sections 2200 et seq.)

Project Name/Number: BVARA RPP – 1650.7087-23

As required by California Public Contract Code section 2204, the Contractor certifies that the option checked below relating to the Contractor's status in regard to the Iran Contracting Act of 2010 (Public Contract Code sections 2200 *et seq.*) is true and correct:

- □ The Contractor is not:
 - (i) identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code section 2203; or
 - (ii) a financial institution that extends, for 45 days or more, credit in the amount of \$20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.
- □ Kern County h as exempted the Contractor from the requirements of the Iran Contracting Act of 2010 after making a public finding that, absent the exemption, Kern County will be unable to obtain the goods and/or services to be provided pursuant to the Contract.
- The amount of the Contract payable to the Contractor for the project is less than \$1,000,000.

CERTIFICATION

I, the official named below, CERTIFY UNDER PENALTY OF PERJURY, that I am duly authorized to legally bind the bidder to the above selected option. This certification is made under the laws of the State of California.

Firm

Signed

Date

Name/Title

Note: In accordance with Public Contract Code section 2205, false certification of this form shall be reported to the California Attorney General and may result in civil penalties equal to the greater of \$250,000 or twice the Contract amount, termination of the Contract and/or ineligibility to bid on contracts for three years.

DOCUMENT 00 4455 BIDDER CERTIFICATIONS

TO BE EXECUTED BY ALL BIDDERS AND SUBMITTED WITH BID

The undersigned Bidder certifies to the County of Kern (hereinafter "Owner") as set forth in sections 1 through 6 below.

1. STATEMENT OF CONVICTIONS

By my signature hereunder, I hereby swear, under penalty of perjury, that no more than one final, unappealable finding of contempt of court by a Federal Court has been issued against Bidder within the past two years because of failure to comply with an order of a Federal Court or to comply with an order of the National Labor Relations Board.

2. STATEMENT OF BIDDER

Have you, or any officer of yours, or any employee of yours who may have a proprietary interest in your Bid, ever been disqualified, removed, or otherwise prevented from bidding on or completing any Federal, State, or Local Governmental project because of a violation of law or safety regulations:

YES _____ NO _____

3. CERTIFICATION OF WORKER'S COMPENSATION INSURANCE

By my signature hereunder, as the Contractor, I certify that 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 that Code, and I will comply with such provisions before commencing the performance of the work of this Contract.

4. CERTIFICATION OF PREVAILING WAGE RATES AND RECORDS

By my signature hereunder, as the Contractor, I certify that I am aware of the provisions of Section 1773 of the California Labor Code, which requires the payment of prevailing wage on public projects. Also, that the Contractor and any subcontractors under the Contractor shall comply with California Labor Code §1776, regarding wage records, and with California Labor Code §1777.5, regarding the employment and training of apprentices. It is the Contractor's responsibility to ensure compliance by any and all subcontractors performing work under this Contract.

5. CERTIFICATION OF COMPLIANCE WITH PUBLIC WORKS CHAPTER OF LABOR CODE

By my signature hereunder, as the Contractor, I certify that I am aware of Sections 1777.1 and 1777.7 of the California Labor Code and am eligible to bid and work on public works projects.

6. CERTIFICATION OF ADEQUACY OF CONTRACT AMOUNT

By my signature hereunder, as the Contractor, pursuant to Labor Code Section 2810(a), I certify that, if awarded the Contract based on the undersigned's Bid, the Contract will include funds sufficient to allow the Contractor to comply with all applicable local, state, and federal laws or regulations governing the labor or services to be provided. I understand that the County will be relying on this certification if it awards the Contract to the undersigned.

BIDDER:		
		(Name of Bidder)
Date:, [201]	Ву:	
	-	(Signature)
	Name:	
		(Print Name)
	Its:	
		(Title)
	END OF DOCUMENT	

Bidder Certification 00 4455 - 1

DOCUMENT 00 5199 PROPOSED CONTRACT DOCUMENTS TRANSMITTAL

Date

Contractor Address City State Zip

SUBJECT BVARA RPP – 1650.7087-23

The Contract Sum of your proposed contract is ____

Dollars (\$

).

1. The proposed Contract Documents listed below accompany this Document 00 5199. Several departments and entities will require original documents with original "wet" signatures. Therefore, Contractor shall return TWO copies of each of the required documents, each of the TWO copies require original "wet" signatures.

2. Contractor shall return the required documents to the County no later than ______ in order to meet the Board of Supervisors agenda requirements imposed on the Clerk of the Board.

- a. Document 00 5200 (Agreement) DO NOT DATE THE AGREEMENT. DATE OF BOARD MEETING WILL BE INSERTED BY THE CLERK OF THE BOARD.
- b. Document 00 6001 (Construction Performance Bond), executed by you and your surety. BE CERTAIN TO HAVE A POWER OF ATTORNEY AND NOTARY FOR EACH OF THE PERFORMANCE BONDS (TWO IN TOTAL FOR THE PERFORMANCE BOND)
- c. Document 00 6002 (Construction Labor and Material Payment Bond), executed by you and your surety. BE CERTAIN TO HAVE A POWER OF ATTORNEY AND NOTARY FOR EACH OF THE LABOR AND MATERIAL PAYMENT BONDS (TWO IN TOTAL FOR THE LABOR AND MATERIAL PAYMENT BOND)
- d. Insurance certificates (INCLUDE ENDORSEMENTS AND WAIVER OF SUBROGATION), as required under Document 00 7300 (Supplementary Conditions Insurance).
- e. Document 00 6003 (Guaranty)
- f. Document 00 6200 (Withheld Contract Funds Certification)
- g. Connelly Asbestos Notification
- h. Corporate Resolution, if applicable
- i. Fictitious Business form, if applicable (must be copy of recorded document)

3. Failure to comply with these conditions will entitle Owner to consider your Bid abandoned, and to declare your Bid security forfeited.

4. Upon commencement of the Work, you and each of your Subcontractors shall certify copies of payroll records on forms provided by the Division of Labor Standards Enforcement, in accordance with California Labor Code §1776. Contractor and Subcontractors shall provide copies of certified payroll records upon request by the County.

5. General Services Division will recommend the Board of Supervisors execute the Agreement during the meeting of July 15, 2025 2:00 p.m. session. You will receive a copy of the Board letter under separate cover.

6. General Services Division has identified the following staff for this project:

- a. Project Manager Name Phone Number
- b. Project Inspector Name Phone Number
- c. Contract Specialist Name Phone Number

DOCUMENT 00 5200 AGREEMENT

THIS AGREEMENT, dated this _____ day of _____, 20___, is by and between [Insert name of Contractor] whose place of business is located at [Insert address of Contractor] ("Contractor"), and the COUNTY OF KERN, a political subdivision of the State of California (hereinafter "Owner"), acting under and by virtue of the authority vested in Owner by the laws of the State of California

WHEREAS, in consideration for the promises and payment to be made and performed by County, and under the conditions expressed in the incorporated Bid Proposal (Bid), bonds and related papers, Contractor agrees to do all the work and furnish all the materials at the expense of Contractor (except such as the Specifications state will be furnished by County) necessary to construct and complete in a good and workmanlike manner to the satisfaction of the County Administrative Officer of General Services Division of the County Administrative Office all the work shown and described in the plans and specifications for the project known as:

BVARA RPP – 1650.7087-23

NOW, THEREFORE, in consideration of the mutual covenants hereinafter set forth, Contractor and Owner agree as follows:

ARTICLE 1 - SCOPE OF WORK OF THE CONTRACT

1.01 Work of the Contract

A. Contractor shall complete all Work specified in the Contract Documents, in accordance with the Specifications, Drawings, and all other terms and conditions of the Contract Documents (**Work**).

1.02 Price for Completion of the Work

A. Owner shall pay Contractor the following Contract Sum (**Contract Sum**) for completion of Work in accordance with Contract Documents as set forth in Contractor's Bid, attached hereto.

ARTICLE 2 - COMMENCEMENT AND COMPLETION OF WORK

2.01 Commencement of Work

- A. Contractor shall commence Work on the date established in the Notice to Proceed (Commencement Date).
- B. Owner reserves the right to modify or alter the Commencement Date.

2.02 Completion of Work

A. Contractor shall achieve Final Completion of the entire Work two-hundred and forty **[240] Working** Days from the Commencement Date.

ARTICLE 3 - LIQUIDATED DAMAGES FOR DELAY IN COMPLETION OF WORK

3.01 Liquidated Damage Amounts

A. As liquidated damages for delay Contractor shall pay Owner one thousand dollars (\$1,000.00) for each Calendar Day that expires after the time specified herein for Contractor to achieve Final Completion of the entire Work, until achieved.

3.02 Scope of Liquidated Damages

BVARA RPP 1650.7087-23

- A. Measures of liquidated damages shall apply cumulatively.
- B. Limitations and stipulations regarding liquidated damages are set forth in Document 00 7200 (General Conditions).

ARTICLE 4 - CONTRACT DOCUMENTS

4.01 Contract Documents consist of the following documents, including all changes, Addenda, and Modifications thereto:

Document 00 0101	Title Page
Document 00 1113	Notice to Contractors
Document 00 2113	Instruction to Bidders
Document 00 3100	Geotechnical Data and Existing Conditions
Document 00 4100	Bid Form
Document 00 4412	Bidder Information Form
Document 00 4430	Subcontractors List
Document 00 4452	Non-Collusion Declaration
Document 00 4453	Iran Contracting Act Certification
Document 00 4455	Bidder Certifications
Document 00 5199	Proposed Contract Documents Transmittal
Document 00 5200	Agreement
Document 00 5590	Release of Claims
Document 00 6001	Construction Performance Bond
Document 00 6002	Construction Labor and Material Payment Bond
Document 00 6003	Guaranty
Document 00 6200	Withheld Contract Funds Certification
Document 00 7200	General Conditions
Document 00 7280	Apprenticeship Programs
Document 00 7300	Supplementary Conditions – Insurance
Master Specifications	Divisions 01 through 52
Drawings	

4.02 There are no Contract Documents other than those listed above. The Contract Documents may only be amended, modified or supplemented as provided in Document 00 7200 (General Conditions).

ARTICLE 5 - MISCELLANEOUS

- **5.01** Terms and abbreviations used in this Agreement are defined in Document 00 7200 (General Conditions) and Section 01 4216 (Definitions) and will have the meaning indicated therein.
- **5.02** It is understood and agreed that in no instance are the persons signing this Agreement for or on behalf of Owner or acting as an employee, agent, or representative of Owner, liable on this Agreement or any of the Contract Documents, or upon any warranty of authority, or otherwise, and it is further understood and agreed that liability of Owner is limited and confined to such liability as authorized or imposed by the Contract Documents or applicable law.
- **5.03** In entering into a public works contract or a subcontract to supply goods, services or materials pursuant to a public works contract, Contractor or Subcontractor offers and agrees to assign to the awarding body all rights, title and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. §15) or under the Cartwright Act (Chapter 2 (commencing with §16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time Owner tenders final payment to Contractor, without further acknowledgment by the parties.
- **5.04** Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the State of California Department of Industrial Relations, are deemed included in the Contract Documents and on file at

Owner's Office, and shall be made available to any interested party on request. Pursuant to California Labor Code §§ 1860 and 1861, in accordance with the provisions of Section 3700 of the Labor Code, every contractor will be required to secure the payment of compensation to his employees. Contractor represents that it is aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that Code, and Contractor shall comply with such provisions before commencing the performance of the Work of the Contract Documents.

5.05 This Agreement and the Contract Documents shall be deemed to have been entered into in the County of Kern, State of California, and governed in all respects by California law (excluding choice of law rules). The exclusive venue for all disputes or litigation hereunder shall be in the Superior Court for the County of Kern.

IN WITNESS WHEREOF the parties have executed three original Agreements on the day and year first above written.

RECOMMENDED AND APPROVED AS TO CONTENT: GENERAL SERVICES DIVISION OF THE	CONTRACTOR:
COUNTY ADMINISTRATIVE OFFICE	Firm's Name
By Joseph Clark, Supervising Engineer	Type of Entity (Corporation, partnership, sole proprietorship)
APPROVED AS TO FORM: OFFICE OF THE COUNTY COUNSEL	By Signature
By Brian Van Wyk, Deputy County Counsel	Typed Name
COUNTY OF KERN	Title of Individual Executing Document on behalf of Firm
By Michelle Burns–Lusich, Interim Chief General Services Officer	

<u>NOTICE</u>: CONTRACTORS ARE REQUIRED BY LAW TO BE LICENSED AND ARE REGULATED BY CONTRACTORS' STATE LICENSE BOARD. QUESTIONS CONCERNING A CONTRACTOR MAY BE REFERRED TO THE REGISTRAR OF THAT BOARD, WHOSE ADDRESS IS: CONTRACTORS' STATE LICENSE BOARD, 1020 "N" STREET, SACRAMENTO, CALIFORNIA 95814.

DOCUMENT 00 5590

AGREEMENT AND RELEASE OF ANY AND ALL CLAIMS [Public Contract Code § 7100]

THIS AGREEMENT AND RELEASE OF ANY AND ALL CLAIMS ("Agreement and Release"), made and entered into this [date] day of [Month], [201___], by and between the County of Kern (hereinafter "Owner"), and [Insert name of Contractor] ("Contractor"), whose place of business is at [Insert address of Contractor].

RECITALS

- A. Owner and Contractor entered into Contract Number [1650.7087-23] (the "Contract") for construction of Owner BVARA RPP located at 13601 Ironbark Rd., Bakersfield, CA 93301.
- B. The Work under the Contract has been completed.

AGREEMENT

NOW THEREFORE, it is mutually agreed between Owner and Contractor as follows:

1. Contractor will not be assessed liquidated damages except as detailed below:

Original Contract Sum	\$
Modified Contract Sum	\$
Payment to Date	\$
Liquidated Damages	\$
Payment Due Contractor	\$

2. Subject to the provisions of this Agreement and Release, Owner will forthwith pay to Contractor the sum of [______ Dollars and

Cents (\$_____)] under the Contract, less any amounts withheld under the Contract or represented by any Notice to Withhold Funds on file with Owner as of the date of such payment.

- 3. Contractor acknowledges and hereby agrees that there are no unresolved or outstanding claims in dispute against Owner arising from the Contract, except for the claims described in Paragraph 4 of this Document 00 5590. It is the intention of the parties in executing this Agreement and Release that this Agreement and Release shall be effective as a full, final and general release of all claims, demands, actions, causes of action, obligations, costs, expenses, damages, losses and liabilities of Contractor against Owner, and all if its agents, employees, consultants, inspectors, representatives, assignees and transferees, except for the Disputed Claims set forth in Paragraph 4 of this Document 00 5590. Nothing in this Agreement and Release shall limit or modify Contractor's continuing obligations described in Paragraph 6 of this Document 00 5590.
- 4. The following claims submitted under Document 00 7200 (General Conditions), Article 12, are disputed (hereinafter, the "Disputed Claims") and are specifically excluded from the operation of this Agreement and Release.

[Insert information in Chart below, affix attachment if necessary]

CLAIM NO.	DATE SUBMITTED	DESCRIPTION OF CLAIM	AMOUNT OF CLAIM

- 5. Consistent with California Public Contract Code §7100, Contractor hereby agrees that, in consideration of the payment set forth in Paragraph 2 of this Document 00 5590, Contractor hereby releases and forever discharges Owner, and all of its agents, employees, consultants, inspectors, assignees and transferees from any and all liability, claims, demands, actions or causes of action of whatever kind or nature arising out of or in any way concerned with the Work under the Contract.
- 6. Guarantees and warranties for the Work, and any other continuing obligation of Contractor, shall remain in full force and effect as specified in the Contract Documents.
- 7. Contractor shall immediately defend, indemnify and hold harmless Owner, any of the Owner's Representatives, Project Manager, and all of their agents, employees, consultants, inspectors, assignees and transferees, from any and all claims, demands, actions, causes of action, obligations, costs, expenses, damages, losses and liabilities that may be asserted against them by any of Contractor's suppliers and/or Subcontractors of any tier and/or any suppliers to them for any and all labor, materials, supplies and equipment used, or contemplated to be used in the performance of the Contract, except for the Disputed Claims set forth in Paragraph 4 of this Document 00 5590.
- 8. Contractor hereby waives the provisions of California Civil Code §1542, which provide as follows:

A GENERAL RELEASE DOES NOT EXTEND TO CLAIMS WHICH THE CREDITOR DOES NOT KNOW OR SUSPECT TO EXIST IN HIS OR HER FAVOR AT THE TIME OF EXECUTING THE RELEASE, WHICH IF KNOWN BY HIM OR HER, MUST HAVE MATERIALLY AFFECTED HIS OR HER SETTLEMENT WITH THE DEBTOR.

- 9. The provisions of this Agreement and Release are contractual in nature and not mere recitals and shall be considered independent and severable, and if any such provision or any part thereof shall be at any time held invalid in whole or in part under any federal, state, county, municipal or other law, ruling, or regulation, then such provision, or part thereof shall remain in force and effect only to the extent permitted by law, and the remaining provisions of this Agreement and Release shall also remain in full force and effect, and shall be enforceable.
- 10. Contractor represents and warrants that it is the true and lawful owner of all claims and other matters released pursuant to this Agreement and Release, and that it has full right, title and authority to enter into this instrument. Each party represents and warrants that it has been represented by counsel of its own choosing in connection with this Agreement and Release.
- 11. All rights of Owner shall survive completion of the Work or termination of the Contract, and execution of this Agreement and Release.

*** CAUTION: THIS IS A RELEASE - READ BEFORE EXECUTING ***

APPROVED AS TO FORM: OFFICE OF THE COUNTY COUNSEL

By

By

Brian Van Wyk, Deputy County Counsel

COUNTY OF KERN

By Michelle Burns-Lusich Interim General Services Chief Officer

"COUNTY"

APPROVED AS TO CONTENT: CONSTRUCTION SERVICES

Supervising Engineer

Contractor's Name

Type of Entity (corporation, partnership, sole proprietorship)

Bу

Signature

Typed Name

Title of Individual Executing Document on behalf of Firm

END OF DOCUMENT

BVARA RPP 1650.7087-23

DOCUMENT 00 6001 CONSTRUCTION PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS:

1.01 THAT WHEREAS, the COUNTY OF KERN (hereinafter "Owner"), a public agency of the State of California, has awarded to ______as Principal, a contract dated the _____ day of ______, 20__ (the "Contract"), in the amount of \$_____. The Contract is by this reference made a part hereof, for the work of the following project:

BVARA RPP - 1650.7087-23

- **1.02** AND WHEREAS, Principal is required to furnish a bond in connection with the Contract, guaranteeing the faithful performance thereof;
- 1.03 NOW, THEREFORE, we, the undersigned Principal and ______, as Surety are held and firmly bound unto Owner in the sum of 100% OF THE CONTRACT PRICE to be paid to Owner or its successors and assigns; for which payment, well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.
- **1.04** THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, or its heirs, executors, administrators, successors, or assigns approved by Owner, shall promptly and faithfully perform the covenants, conditions, and agreements of the Contract during the original term and any extensions thereof as may be granted by Owner, with or without notice to Surety, and during the period of any guarantees or warranties required under the Contract, and shall also promptly and faithfully perform all the covenants, conditions, and agreements of any alteration of the Contract made as therein provided, notice of which alterations to Surety being hereby waived, on Principal's 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, defend, protect, and hold harmless Owner as stipulated in the Contract, then this obligation shall become and be null and void; otherwise it shall be and remain in full force and effect.
- **1.05** No extension of time, change, alteration, modification, or addition to the Contract, or of the work required thereunder, or work or actions by Owner to mitigate the damages resulting from any breach in performance by Contractor, shall release or exonerate Surety on this bond or in any way affect the obligation of this bond; and Surety does hereby waive notice of any such extension of time, change, alteration, modification, or addition.
- **1.06** Whenever Principal shall be and declared by Owner in default under the Contract, Surety shall promptly remedy the default, or shall promptly, and in no event later than thirty (30) days from notice:
 - A. Undertake through its agents or independent contractors (but having qualifications and experience reasonably acceptable to Owner), to complete the Contract in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract, including without limitation, all obligations with respect to warranties, guarantees, indemnities, and the payment of liquidated damages; or

- B. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and, upon determination by Owner of the lowest responsible bidder, arrange for a contract between such bidder and Owner and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Sum, and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees, and the payment of liquidated damages; but, in any event, Surety's total obligations hereunder shall not exceed the amount set forth in the third paragraph hereof. The term "balance of the Contract Sum," as used in this paragraph, shall mean the total amount payable by Owner to the Principal under the Contract and any amendments thereto, less the amount paid by Owner to Principal.
- **1.07** Surety's obligations hereunder are independent of the obligations of any other surety for the performance of the Contract, and suit may be brought against Surety and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing Owner's rights against the others. If suit is brought upon this bond the Surety shall pay reasonable costs and attorney's fees to be fixed by the court.
- **1.08** Surety may not use Contractor to complete the Contract absent Owner's Consent. Owner shall have the right in its sole discretion to continue the work of the Contract, as necessary following a default and/or termination, as necessary to prevent risks of personal injury, property damage or delay to the Project.
- **1.09** No right of action shall accrue on this bond to or for the use of any person or corporation other than Owner or its successors or assigns.
- **1.10** Surety shall join in any proceedings brought under the Contract upon Owner's demand, and shall be bound by any judgment.
- **1.11** Correspondence or claims relating to this bond shall be sent to Surety at the address set forth below.

IN WITNESS WHEREOF, we have hereunto set our hands this ___day of _____. 20__,

SURETY

CONTRACTOR AS PRINCIPAL

Company	(Corp. Seal)	Company	(Corp. Seal)	
Signature		Signature		
Name & Title		Name & Title		
Address		Address		
City, State, Zip Code		City, State, Zip Code		
		Phone		
END OF DOCUMENT				

DOCUMENT 00 6002 CONSTRUCTION LABOR AND MATERIAL PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS:

1.01 THAT WHEREAS, the COUNTY OF KERN (hereinafter "Owner"), a public agency of the State of California, has awarded to ______as Principal, a contract dated the _____day of _____, 20__ (the "Contract"), in the amount of \$_____. The Contract is by this reference made a part hereof, for the work of the following project:

BVARA RPP – 1650.7087-23

- A. AND WHEREAS, Principal is required to furnish a bond in connection with the Contract to secure the payment of claims of laborers, mechanics, material suppliers, and other persons as provided by law;
- B. NOW, THEREFORE, we, the undersigned Principal ______, as Surety, are held and firmly bound unto Owner in the sum of 100% OF THE CONTRACT PRICE (\$______), for which payment well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.
- C. THE CONDITION OF THIS OBLIGATION IS SUCH, that if Principal, or its executors, administrators, successors, or assigns approved by Owner, or its subcontractors shall fail to pay any of the persons named in California Civil Code §9100, or amounts due under the State of California Unemployment Insurance Code with respect to work or labor performed under the Contract, or for any amounts required to be deducted, withheld, and paid over to the State of California Employment Development Department from the wages of employees of Principal and subcontractors pursuant to Section 13020 of the State of California Unemployment Insurance Code with respect to such work and labor, that Surety will pay for the same in an amount not exceeding the sum specified in this bond, plus reasonable attorneys' fees, otherwise the above obligation shall become and be null and void.
- D. This bond shall inure to the benefit of any of the persons named in California Civil Code §9100, as to give a right of action to such persons or their assigns in any suit brought upon this bond. The intent of this bond is to comply with the California Mechanic's Lien Law.
- E. Surety, for value received, hereby expressly agrees that no extension of time, change, modification, alteration, or addition to the undertakings, covenants, terms, conditions, and agreements of the Contract, or to the work to be performed thereunder, shall in any way affect the obligation of this bond; and it does hereby waive notice of any such extension of time, change, modification, alteration, or addition to the undertakings, covenants, terms, conditions, and agreements of the Contract, or to the work to be performed thereunder.
- F. Surety's obligations hereunder are independent of the obligations of any other surety for the payment of claims of laborers, mechanics, material suppliers, and other persons in connection with Contract; and suit may be brought against Surety and such other sureties, jointly and severally, or against any one or more of them, or against less than all of them without impairing
Owner's rights against the other. If suit is brought upon this bond the Surety shall pay reasonable costs and attorney's fees to be fixed by the court.

G. Correspondence or claims relating to this bond shall be sent to Surety at the address set forth below.

IN WITNESS WHEREOF, we have hereunto set our hands this ____ day of _____, 20__.

CONTRACTOR AS PRINCIPAL

SURETY

Company	(Corp. Seal)	Company	(Corp. Seal)
Signature		Signature	
Name & Title		Name & Title	
Address		Address	
City, State, Zip Code		City, State, Zip Code	
		Phone	

END OF DOCUMENT

DOCUMENT 00 6003 GUARANTY

TO: THE COUNTY OF KERN (hereinafter "Owner"), for construction of **BVARA RPP** located at <u>13601</u> <u>Ironbark Rd., Bakersfield, CA 93301.</u>

The undersigned guarantees all construction performed on this Project and also guarantees all material and equipment incorporated therein.

Contractor hereby grants to Owner for a period of one year following the date of Final Acceptance of the Work completed, or such longer period specified in the Contract Documents, its unconditional warranty of the quality and adequacy of all of the Work including, without limitation, all labor, materials and equipment provided by Contractor and its Subcontractors of all tiers in connection with the Work.

Neither final payment nor use nor occupancy of the Work performed by the Contractor shall constitute an acceptance of Work not done in accordance with this Guaranty or relieve Contractor of liability in respect to any express warranties or responsibilities for faulty materials or workmanship. Contractor shall remedy any defects in the Work and pay for any damage resulting therefrom, which shall appear within one year, or longer if specified, from the date of Final Acceptance of the Work completed.

If within one year after the date of Final Acceptance of the Work completed, or such longer period of time as may be prescribed by laws or regulations, or by the terms of Contract Documents, any Work is found to be Defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, correct such Defective Work. Contractor shall remove any Defective Work rejected by Owner and replace it with Work that is not Defective, and satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If Contractor fails to promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the Defective Work corrected or the rejected Work removed and replaced. Contractor shall pay for all claims, costs, losses and damages caused by or resulting from such removal and replacement. Where Contractor fails to correct Defective Work, or defects are discovered outside the correction period, Owner shall have all rights and remedies granted by law.

Inspection of the Work shall not relieve Contractor of any of its obligations under the Contract Documents. Even though equipment, materials, or Work required to be provided under the Contract Documents have been inspected, accepted, and estimated for payment, Contractor shall, at its own expense, replace or repair any such equipment, material, or Work found to be Defective or otherwise not to comply with the requirements of the Contract Documents up to the end of the guaranty period.

All abbreviations and definitions of terms used in this Agreement shall have the meanings set forth in the Contract Documents.

 \parallel

 \parallel

The foregoing Guaranty is in addition to any other warranties of Contractor contained in the Contract Documents, and not in lieu of, any and all other liability imposed on Contractor under the Contract Documents and at law with respect to Contractor's duties, obligations, and performance under the Contract Documents. In the event of any conflict or inconsistency between the terms of this Guaranty and any warranty or obligation of the Contractor under the Contract Documents or at law, such inconsistency or conflict shall be resolved in favor of the higher level of obligation of the Contractor.

Date	Name/Title	
Contractor	Signature	
For maintenance, repair or replacement service contact:		
Name	Telephone	
Address	Alt. Telephone	
City, State, and Zip		

END OF DOCUMENT

DOCUMENT 00 6200 WITHHELD CONTRACT FUNDS CERTIFICATION

Public Contract Code Section §22300 requires the inclusion in invitations for public agency bids and in public agency contracts a provision which will, at the expense of the contractor, permit the substitution of securities of equal value for any construction progress monies withheld to ensure performance under a contract. Therefore, as a contractor on: **BVARA RPP – 1650.7087-23**.

- [] I do not intend to substitute securities for monies withheld and thereby avail myself of the process and rights provided in Public Contract Code Section §22300.
- [] I do intend to exercise my option as specified in Public Contract Code Section §22300 and hereby agree to the following:
- 1. I will establish an escrow agreement satisfactory to the County, with a state or federally chartered bank, which shall contain at a minimum provisions governing inter alia:
 - a. The amount of securities to be deposited;
 - b. The type of securities to be deposited, (eligible securities for deposit are described in Government Code Section 16430);
 - c. The providing of powers of attorney or other documents necessary for the transfer of the securities deposited;
 - d. The terms and conditions of conversion to cash to provide funds to meet defaults by the Contractor including, but not limited to termination of the Contractor's control over the work, stop notices filed pursuant to law, assessment of liquidated damages or other amounts to be kept or retained under the provisions of the contract;
 - e. The decrease in value of securities on deposit; and
 - f. The termination of the escrow agreement upon completion of the contract and acceptance by the County.
- 2. I will obtain written consent of the surety to any such agreement; and
- 3. I will attach to each progress payment submitted a notarized copy of escrow instructions executed by agents thereof and on bank letterhead as proof that such an account has been established. Such instructions will set forth that securities deposited shall not be withdrawn for any purpose (with contractor's complete and unreserved agreement) without prior written approval by the County of Kern with respect to the project herein above referenced.

Signature of Bidder

END OF DOCUMENT

DOCUMENT 00 6210

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

California Public Contract Code §22300

(County of Kern – Contractor.)

This Esc	row Agreement is	made ar	nd entere	d into on			by	and betwe	en the
County of Kern	whose address	is 1115	Truxtun	Avenue,	Third	Floor,	Bakersfield,	California	93301
(hereinafter	"County"),and					,	whose	address	is
(hereinafter "Contractor") and									

___, whose address is _____

(hereinafter "Escrow Agent"),

<u>WITNESSETH:</u>

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

1. Pursuant to Section 22300 of the Public Contract Code of the State of California, Contractor has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by County pursuant to the Construction Contract entered into between the County and the Contractor in the amount of One Million Dollars (\$1,000,000), dated November 7, 2023 (hereinafter referred to as the "Contract"). Alternatively, on written request of the Contractor, the County shall make payments of the retention earnings directly to the Escrow Agent. When the Contractor deposits the securities as a substitute for Contract earnings, the Escrow Agent shall notify the County within 10 days of the deposit. The market value of the securities at the time of the substitution shall be at least equal to the cash amount then required to be withheld as retention under the terms of the Contract between the County and Contractor. Securities shall be held in the name of County of Kern, and shall designate the Contractor as the beneficial owner.

2. County shall make progress payments to the Contractor for those funds which otherwise would be withheld from progress payments pursuant to the Contract provisions, provided that Escrow Agent holds securities in the form and amount specified herein.

3. When County makes payment of retentions earned directly to Escrow Agent, Escrow Agent shall hold them for the benefit of Contractor until the time that the escrow created under this Contract is terminated. Contractor may direct the investment of the payments into securities.

All terms and conditions of this Agreement and the rights and responsibilities of the parties shall be equally applicable and binding when County pays Escrow Agent directly.

4. Contractor shall be responsible for paying all fees, costs, and expenses incurred by Escrow Agent in administering the escrow account and all expenses of County. These expenses and payment terms shall be determined by County, Contractor and Escrow Agent.

5. The interest earned on the securities or the money market accounts held in escrow and all interest earned on that interest shall be for the sole account of Contractor and shall be subject to withdrawal by Contractor at any time and from time to time without notice to County.

6. Contractor shall have the right to withdraw all or any part of the principal in the escrow account only by written notice to Escrow Agent accompanied by written authorization from County to Escrow Agent that County consents to the withdrawal of the amount sought to be withdrawn by Contractor.

7. County shall have a right to draw upon the securities in the event of default by Contractor. Upon Seven (7) days written notice to the Escrow Agent from County of the default, Escrow Agent shall immediately convert the securities, any interest earned on the securities, and all interest earned on the interest, to cash and shall distribute the cash as instructed by County. Escrow Agent shall have no duty to determine whether a default has occurred and may rely solely upon the written notice of such default from County.

8. Upon receipt of written notification from County certifying that the Contract is final and complete, and that Contractor has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Contractor all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all moneys and securities on deposit and payment of fees and charges.

9. Escrow Agent shall rely on the written notifications from County and Contractor pursuant to Sections 5 to 8 of this Agreement. County and Contractor shall hold Escrow Agent harmless from Escrow Agent's release, conversion, and disbursement of the securities and interest as set forth above.

10. The names of the persons who are authorized to give written notice or to receive written notice on behalf of the County and on behalf of Contractor in connection with the foregoing, and exemplars of their respective signatures are as follows:

(a) On behalf of the County:

Aimee Espinoza Auditor-Controller-County Clerk 1115 Truxtun Avenue, 2nd Floor Bakersfield, CA 93301 or Geoffrey Hill, Chief General Services Officer 1115 Truxtun Avenue, 3rd Floor Bakersfield, CA 93301

On behalf of the Contractor

Signature

Signature

Signature

(c) On behalf of the Escrow Agent

Signature

At the time the Escrow Account is opened, the County and Contractor shall deliver to the Escrow Agent a fully executed counterpart of this Agreement.

(b)

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date first set forth above.

RECOMMENDED AND APPROVED AS TO CONTENT: GENERAL SERVICES DIVISION OF THE COUNTY ADMINISTRATIVE OFFICE	COUNTY OF KERN BOARD OF SUPERVISORS
By Michelle Burns-Lusich, Interim Chief General Services Officer	By Chairman, Board of Supervisors "COUNTY"
APPROVED AS TO FORM: OFFICE OF THE COUNTY COUNSEL	Contractor's Name Type of Entity (corporation, partnership, sole
By Brian Van Wyk, Deputy NAME OF BANK	BySignature
By Signature	Print Name
Name, Title	Title of Individual Executing Document on behalf of Firm
"ESCROW AGENT"	"CONTRACTOR"

END OF DOCUMENT

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DOCUMENT 00 7200

GENERAL CONDITIONS

ARTICLE 1 - INTERPRETATION OF CONTRACT DOCUMENTS

1.1 Interpretation Of Documents

- A. Contract Documents are complementary; what is called for by one is as binding as if called for by all.
- B. Individual Contract Documents subdivide at first level into Articles, and then into paragraphs.

1.2 Order Of Precedence Of Documents

- A. In the case of discrepancy or ambiguity in the Contract Documents, the following order of precedence shall prevail:
 - 1. Modifications in inverse chronological order (i.e., most recent first), and in the same order as specific portions they are modifying;
 - 2. Agreement Forms (Document 00 5200), and terms and conditions referenced therein;
 - 3. Supplementary General Conditions, if included;
 - 4. General Conditions (Document 00 7200);
 - 5. Division 1 Specifications, if included;
 - 6. Drawings and Technical Specifications (Division 2 and above);
 - 7. Written numbers over figures, unless obviously incorrect;
 - 8. Figured dimensions over scaled dimensions;
 - 9. Large-scale Drawings over small-scale Drawings.
- B. Any conflict between Drawings and Technical Specifications (Division 2 and above) will be resolved in favor of the document of the latest date (i.e., the most recent document), and if the dates are the same or not determinable, then in favor of Specifications.
- C. Any conflict between a bill or list of materials shown in the Contract Documents and the actual quantities required to complete Work required by Contract Documents, will be resolved in favor of the actual quantities.
- D. All Technical Specifications included in the Project manual shall be included within the Contract Documents unless identified otherwise.

ARTICLE 2 - PRE-BID INVESTIGATIONS

2.1 **Pre-Bid Investigations Required**

- A. Prior to and as a condition of submitting a Bid and executing Document 00 5200 (Agreement), Contractor shall investigate fully the Work of the Contract. Contractor shall visit the Site, examine thoroughly and understand fully the nature and extent of the Contract Documents, Work, Site, locality, actual conditions and as-built conditions.
- B. During performance of the Contract, Contractor will be charged with knowledge of all information that it should have learned in performing these pre-bid investigations and other obligations, and shall not be entitled to Change Orders (time or compensation) due to any information, error, inconsistency, omission, or conditions that Contractor should have known as a part of this Work. Contractor shall be responsible for the resultant losses, including, without limitation, the cost of correcting Defective Work.

2.2 Limited Reliance Permitted On Owner's Existing Conditions Data

A. Regarding aboveground and as-built conditions shown on the Contract Documents or supplied by Owner, such information has been compiled in good faith, however, Owner does not expressly or impliedly warrant or represent that such information is correctly shown or indicated, or otherwise complete for construction purposes. Contractor must independently verify such information as part of its pre-bid investigations, and where conditions are not reasonably verifiable or discrepancies are identified, bring such matters to Owner's attention through written question issued during the bid period. In executing Document 00 5200 (Agreement), Contractor shall rely on the results of its own independent investigation and shall not rely on Owner-supplied information regarding aboveground conditions and as-built conditions, and Contractor shall accept full responsibility for its verification work sufficient to complete the Work as intended.

B. Regarding subsurface conditions other than Underground Facilities shown on the Contract Documents or otherwise supplied by Owner, Contractor may rely only upon the general accuracy of actual reported depths, actual reported character of materials, actual reported soil types, actual reported water conditions, or actual obstructions shown or indicated in the Contract Documents. Owner is not responsible for the completeness of any subsurface condition information, contractor's conclusions or opinions drawn from any subsurface condition information, or subsurface conditions that are not specifically shown. (For example, Owner is not responsible for soil conditions in areas contiguous to areas where a subsurface condition is shown.)

2.3 Pre-Bid Investigation Requirements For Excavation And Utilities Relocation Projects

- A. As part of its pre-bid investigations for Projects involving excavation and/or relocation of existing utilities, Contractor shall verify information regarding Underground Facilities, including but not limited to, requesting additional information or verification of information as necessary.
- Β. Because of the nature and location of the Project, the existence of Underground Facilities is deemed inherent in the Work of the Contract, as is the fact that Underground Facilities are not always accurately shown or completely shown on as-built records, both as to their depth and location. Contractor shall, therefore, take care to note the existence and potential existence of Underground Facilities, in particular, above and below grade structures, drainage lines, storm drains, sewers, water, gas, electrical, chemical, hot water, and other similar items and utilities. Contractor shall carefully consider all supplied information, request additional information Contractor may deem necessary, and visually inspect the Site for above ground indications of Underground Facilities (such as, for example not by way of limitation, the existence of existing service laterals, appurtenances or other types of utilities, indicated by the presence of an underground transmission main or other visible facilities, such as buildings, new asphalt, meters and junction boxes, on or adjacent to the Site). Contractor shall also consider local underground conditions and typical practices for Underground Facilities, either through its own direct knowledge or through its subcontractors, and fully consider this knowledge in assessing the existing information and the reasonableness of its reliance.

ARTICLE 3 - SUBCONTRACTORS

3.1 Subcontractor Listing Law

- A. Contractor shall comply with the Subcontractor Listing law, California Public Contract Code §§4101 et seq. Contractor shall not substitute any other person or firm in place of any Subcontractor listed in the Bid except as may be allowed by law.
- B. Subcontractors shall not assign or transfer their subcontracts or permit them to be performed by any other contractor without Owner's written approval. At Owner's request, Contractor shall provide Owner with a complete copy of all executed subcontracts or final commercial agreements with Subcontractors and/or suppliers.

3.2 Subcontracts

- A. Subcontract agreements shall preserve and protect the rights of Owner under the Contract Documents so that subcontracting will not prejudice such rights. To the extent of the Work to be performed by a Subcontractor, Contractor shall require the Subcontractor's written agreement (1) to be bound to the terms of Contract Documents and (2) to assume all the obligations and responsibilities that Contractor assumes toward Owner under the Contract Documents. (These agreements include for example, and not by way of limitation, all warranties, claims procedures and rules governing submittals of all types to which Contractor is subject under the Contract Documents.)
- B. Contractor shall provide for the assignment to Owner of all rights any Subcontractor (of any tier) may have against any manufacturer, supplier, or distributor for breach of warranties and guarantees relating to the Work performed by the Subcontractor under the Contract Documents.

Subcontracts shall provide and acknowledge Owner as an intended third-party beneficiary of each subcontract and supply contract (of any tier).

ARTICLE 4 - DRAWINGS AND SPECIFICATIONS

4.1 Intent Of Drawings And Specifications

- A. Contractor shall interpret words or phrases used to describe Work (including services), materials, or equipment that have well-known technical or construction industry or trade meaning in accordance with that meaning. Drawings' intent specifically includes the intent to depict construction that complies with all applicable laws, codes and standards.
- B. As part of the "Work," Contractor shall provide all labor, materials, equipment, machinery, tools, facilities, services, employee training and testing, hoisting facilities, Shop Drawings, storage, testing, security, transportation, disposal, the securing of all necessary or required field dimensions, the cutting or patching of existing materials, notices, permits, documents, reports, agreements and any other items required or necessary to timely and fully complete Work described and the results intended by Contract Documents and, in particular, Drawings and Specifications. Divisions and Specification Sections and the identification on any Drawings shall not control Contractor in dividing Work among Subcontractors or suppliers or delineating the Work to be performed by any specific trade.
- C. Contractor shall perform reasonably implied parts of Work as "incidental work" although absent from Drawings and Specifications. Incidental work includes any work not shown on Drawings or described in Specifications that is necessary or normally or customarily required as a part of the Work shown on Drawings or described in Specifications. Incidental work includes any work necessary or required to make each installation satisfactory, legally operable, functional, and consistent with the intent of Drawings and Specifications or the requirements of Contract Documents. Contractor shall perform incidental work without extra cost to Owner. Incidental work shall be treated as if fully described in Specifications and shown on Drawings, and the expense of incidental work shall be included in price Bid and Contract Sum.

4.2 Checking Of Drawings And Specifications

A. Before undertaking each part of Work, Contractor shall carefully study and compare Contract Documents and check and verify pertinent figures shown in the Contract Documents and all applicable field measurements. Contractor shall be responsible for any errors that might have been avoided by such comparison. Figures shown on Drawings shall be followed; Contractor shall not scale measurements. Contractor shall promptly report to Owner, in writing, any conflict, error, ambiguity or discrepancy that Contractor may discover. Contractor shall obtain a written interpretation or clarification from Owner before proceeding with any Work affected thereby.

4.3 Interpretation Of Drawings And Specifications

- A. A typical or representative detail on Drawings shall constitute the standard for workmanship and material throughout corresponding parts of Work. Where necessary, and where reasonably inferable from Drawings, Contractor shall adapt such representative detail for application to such corresponding parts of Work. The details of such adaptation shall be subject to prior approval by Owner. Repetitive features shown in outline on Drawings shall be in exact accordance with corresponding features completely shown.
- B. Should any discrepancy appear or any misunderstanding arise as to the import of anything contained in Drawings and Specifications, or should Contractor have any questions or requests relating to Drawings or Specifications, Contractor shall refer the matter to Owner, in writing, with a copy to the Architect/Engineer, where applicable. Owner will issue with reasonable promptness written responses, clarifications or interpretations as Owner may determine necessary, which shall be consistent with the intent of and be reasonably inferable from Contract Documents. Such written clarifications or interpretations shall be binding upon Contractor. If Contractor believes that a written response, clarification or interpretation justifies an adjustment in the Contract Sum or Contract Time, Contractor shall give Owner prompt written notice. If the parties are unable to agree to the amount or extent of the adjustment, if any, then Contractor shall perform the Work in

conformance with Owner's response, clarification, or interpretation and may make a written claim for the adjustment as provided in Article 12.

C. The following general specifications shall apply wherever in the Specifications, or in any directions given by Owner in accordance with or supplementing Specifications, it is provided that Contractor shall furnish materials or manufactured articles or shall do Work for which no detailed specifications are shown. Materials or manufactured articles shall be of the best grade, in quality and workmanship, obtainable in the market from firms of established good reputation. If not ordinarily carried in stock, the materials or manufactured articles shall conform to industry standards for first class materials or articles of the kind required, with due consideration of the use to which they are to be put. Work shall conform to the usual standards or codes, such as those cited herein, for first class work of the kind required. Contractor shall specify in writing to Owner the materials to be used or Work to be performed under this Paragraph ten Working Days prior to furnishing such materials or performing such Work.

4.4 Use Of Drawings And Specifications.

A. Drawings, Specifications and other Contract Documents were prepared for use for Work of Contract Documents only. No part of Contract Documents shall be used for any other construction or for any other purpose except with the written consent of Owner. Any unauthorized use of Contract Documents is prohibited and at the sole liability of the user.

4.5 Standard Specifications.

- A. Standard Specifications refers to the most recent edition of the Standard Specifications of the State of California, Business and Transportation Agency, Department of Transportation.
- B. In case of conflict between the Standard Specifications and these General Conditions or the Division 1 Specifications, the General Conditions and Division 1 Specifications shall take precedence over and be used in lieu of the conflicting provisions of the Standard Specifications.

ARTICLE 5 - COMMENCEMENT OF THE WORK

5.1 Submission Of Required Schedules

- A. Contractor shall submit to Owner in draft for review and discussion at the Preconstruction Conference, and in final prior to the first payment application, the following schedules:
 - 1. Schedule of Values
 - 2. Critical Path Method Construction Schedule
 - 3. Schedule of Submittals.
- B. No progress payment shall be due or owing to Contractor until such schedules are submitted to and acceptable to Owner and/or Architect/Engineer as meeting the requirements of the Contract Documents. In Owner's sole discretion, Owner may elect to instead withhold a portion of any progress payment for unacceptable compliance with contract requirements for such schedules.
- C. Owner's acceptance of Contractor's schedules will not create any duty of care or impose on Owner any responsibility for the sequencing, scheduling or progress of Work nor will it interfere with or relieve Contractor from Contractor's full responsibility therefore.

5.2 Commencement Date Of Contract Time

A. The Contract Time will commence ten (10) Working Days following execution of the Agreement by the Board of Supervisors, if a Notice to Proceed is given, on the date indicated in the Notice to Proceed.

ARTICLE 6 - CONTRACTOR'S ORGANIZATION AND EQUIPMENT

6.1 Contractor's Legal Address

A. Address, facsimile number, and email address given in Contractor's Bid are hereby designated as Contractor's legal address, facsimile number, and email address. Contractor may change its legal address, facsimile number, and email address by notice in writing, delivered to Owner,

which in conspicuous language advises Owner of a change in legal address, facsimile number, or email address, and which Owner accepts in writing. Delivery to Contractor's legal address or depositing in any post office or post office box regularly maintained by the United States Postal Service, in a wrapper with postage affixed, directed to Contractor at legal address, or of any drawings, notice, letter or other communication, shall be deemed legal and sufficient service thereof upon Contractor. Facsimile or email to Contractor's designated facsimile number or email address of any letter, memorandum, or other communication on standard or legal sized paper, with proof of facsimile transmission or email confirmation, shall be deemed legal and sufficient service thereof upon Contractor.

6.2 Contractor's Superintendents Or Forepersons

A. Contractor shall at all times be represented on Site by one or more superintendents or forepersons authorized and competent to receive and carry out any instructions that Owner may give, and shall be liable for faithful observance of instructions delivered to Contractor or to authorized representative or representatives on Site. The Superintendent shall not be changed except with the consent of the County unless the Superintendent proves to be unsatisfactory to the Contractor and ceases to be in its' employ. If the Superintendent proves to be unsatisfactory to Owner, they shall be replaced within ten (10) Calendar Days after written notice from Owner to Contractor.

6.3 Proficiency In English

A. Supervisors, security guards, safety personnel and employees who have unescorted access to the Site shall possess proficiency in the English language in order to understand, receive and carry out oral and written communications or instructions relating to their job functions, including safety and security requirements.

6.4 Contractor's And Subcontractors' Employees

A. Contractor shall employ, and shall permit its Subcontractors to employ, only competent and skillful personnel to do Work. If Owner notifies Contractor that any of its employees, or any of its Subcontractors' employees on Work is incompetent, unfaithful, disorderly or profane, or fails to observe customary standards of conduct or refuses to carry out any provision of the Contract Documents, or uses threatening or abusive language to any person on Work representing Owner, or violates sanitary rules, or is otherwise unsatisfactory, and if Owner requests that such person be discharged from Work, then Contractor or its Subcontractor shall immediately discharge such person from Work and the discharged person shall not be re-employed on the Work except with consent of Owner.

6.5 Contractor's Use Of The Site

A. Contractor shall not make any arrangements with any person to permit occupancy or use of any land, structure or building within the limits of the Work, for any purpose whatsoever, either with or without compensation, in conflict with any agreement between Owner and any Owner, former Owner or tenant of such land, structure or buildings. Contractor may not occupy Owner-owned property outside the limit of the Work as indicated on the Drawings unless it obtains prior approval from Owner.

ARTICLE 7 - OWNER'S ADMINISTRATION OF WORK

7.1 Owner's Representative(s)

- A. Owner's Representative(s) will have limited authority to act on behalf of Owner as set forth in the Contract Documents.
- B. Except as otherwise provided in these Contract Documents or subsequently identified in writing by Owner, Owner will issue all communications to Contractor through Owner's Representative, and Contractor shall issue all communications to Owner through Owner's Representative in a written document delivered to Owner.

C. Should any direct communications between Contractor and Owner's consultants, architects or engineers not identified in Article 2 of Document 00 5200 (Agreement) occur during field visits or by telephone, Contractor shall immediately confirm them in a written document copied to Owner.

7.2 Owner's Observation Of The Work

- A. Work shall be performed under Owner's general observation and administration. Contractor shall comply with Owner's directions and instructions in accordance with the terms of Contract Documents, but nothing contained in these General Conditions shall be taken to relieve Contractor of any obligations or liabilities under the Contract Documents. Owner's failure to review or, upon review, failure to object to any aspect of Work reviewed, shall not be deemed a waiver or approval of any non-conforming aspect of Work.
- B. Subject to those rights specifically reserved in the Contract Documents, Owner will not supervise, or direct, or have control over, or be responsible for, Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or Contractor's failure to comply with laws and regulations applicable to the furnishing or performance of Work. Owner will not be responsible for Contractor's failure to perform or furnish the Work in accordance with Contract Documents.

7.3 Architect/Engineer's Observation Of Work

- A. Owner may engage an Architect/Engineer, an independent consultant or Project Manager (collectively for purposes of this Paragraph, "Project Manager/Architect") to assist in administering the Work. If so engaged, Project Manager/Architect will advise and consult with Owner, but will have authority to act on behalf of Owner only to the extent provided in the Contract Documents or as set forth in writing by Owner. Project Manager/Architect will not be responsible for and will not have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with Work. Project Manager/Architect will not be responsible for or have control over the acts or omissions of Contractor, Subcontractors or their agents or employees, or any other persons performing Work.
- B. Project Manager/Architect may review Contractor's Submittals, such as Shop Drawings, Product Data, and Samples, but only for conformance with design concept of Work and with information given in the Contract Documents.
- C. Project Manager/Architect may visit the Site at intervals appropriate to stage of construction to become familiar generally with the progress and quality of Work and to determine in general if Work is proceeding in accordance with Contract Documents. Based on its observations, Project Manager/Architect may recommend to Owner disapproval or rejection of Work that Project Manager/Architect believes to be Defective or will not produce a complete Project that conforms to Contract Documents or will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by Contract Documents. Owner will also have authority to require special inspection or testing of Work, whether or not the Work is fabricated, installed or completed.

7.4 Owner's And Architect/Engineer's Exercise Of Contract Responsibilities

A. Owner, Project Manager, Architect/Engineer and all Owner's representatives, in performing their duties and responsibilities under the Contract Documents, accept no duties, responsibilities or duty of care, nor may the same be implied or inferred, towards Contractor, any Subcontractor, sub-Subcontractor or supplier, except those set forth expressly in the Contract Documents.

7.5 Owner's Right Of Access To The Work

A. During performance of Work, Owner and its agents, consultants, and employees may at any time enter upon Work, shops or studios where any part of the Work may be in preparation, or factories where any materials for use in Work are being or are to be manufactured, and Contractor shall provide proper and safe access and facilities for this purpose, and shall make arrangements with manufacturers to facilitate inspection of their processes and products to such extent as Owner's interests may require. Other contractors performing work for Owner may also enter upon Work for all purposes required by their respective contracts. Subject to the rights reserved in the Contract Documents, Contractor shall have sole care, custody, and control of the Site and its Work areas.

7.6 Owner's Right Of Separate Construction

- A. Owner may perform with its own forces, construction or operations related to the Project, or the Site during Contractor's operations. Owner may also award separate contracts in connection with other portions of the Project or other construction or operations, on the Site or areas contiguous to the Site, under conditions similar to these Contract Documents, or may have utility Owners perform other work.
- B. Contractor shall adjust its schedule and fully coordinate with and shall afford all other contractors, utility districts and Owner (if Owner is performing work with its own forces), proper and safe access to the Site, and reasonable opportunity for the installation and storage of their materials. Contractor shall ensure that the execution of its Work properly connects and coordinates with others' work, do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work, and shall cooperate with them to facilitate the progress of the Work.
- C. To the extent that any part of Contractor's Work is to interface with work performed or installed by other contractors or utility owners, Contractor shall inspect and measure the in-place work. Contractor shall promptly report to Owner in writing any defect in in-place work that will impede or increase the cost of Contractor's interface unless corrected.

ARTICLE 8 - CONTRACTOR'S PROSECUTION AND PROGRESS OF THE WORK

8.1 Contractor To Supervise The Work

- A. Subject to those rights specifically reserved in the Contract Documents, Contractor shall supervise, direct, have control over, and be responsible for, Contractor's means, methods, techniques, sequences or procedures of construction, safety precautions and programs incident thereto, and compliance with laws and regulations applicable to the furnishing or performance of Work.
- B. Contractor shall keep on the Site at all times during Work progress a competent resident Superintendent, who shall not be replaced without Owner's express written consent. The Superintendent shall be Contractor's representative at the Site and shall have complete authority to act on behalf of Contractor. All communications to and from the Superintendent shall be as binding as if given to or by Contractor.
- C. Contractor shall supervise, inspect, and direct Work competently and efficiently, devoting the attention and applying such personal skills and expertise as may be required and necessary to perform Work in accordance with Contract Documents. Contractor shall be solely responsible for and have control and charge of construction means, methods, techniques, sequences and procedures, safety precautions and programs in connection with the Work. Contractor shall be responsible to see that the completed Work complies accurately with Contract Documents.
- D. Contractor is fully responsible for Contractor's own acts and omissions. Contractor is responsible for all acts and omissions of its Subcontractors, suppliers, and other persons and organizations performing or furnishing any of the Work, labor, materials, or equipment under a direct or indirect contract with Contractor.
- E. Contractor shall conduct monthly Contractor Safety Committee meetings, and weekly toolbox safety talks.

8.2 Contractor To Maintain Cost Data

- A. Contractor shall maintain full and correct information as to the number of workers employed in connection with each subdivision of Work, the classification and rate of pay of each worker in form of certified payrolls, the cost to Contractor of each class of materials, tools and appliances used by Contractor in Work, and the amount of each class of materials used in each subdivision of Work. Contractor shall provide summaries or reports comparing actual Project costs with Bid estimates or budgets, upon Owner's request.
- B. Contractor shall maintain daily job reports recording all significant activity on the job, including the number of workers on Site, Work activities, problems encountered and delays. Contractor shall

provide Owner with copies for each Day Contractor works on the Project, to be delivered to Owner either the same Day or the following morning before starting work at the Site. Contractor shall take pre-construction and monthly progress photographs of all areas of the Work. Contractor shall maintain copies of all correspondence with Subcontractors and records of meetings with Subcontractors.

C. Owner shall have the right to audit and copy Contractor's books and records of any type, nature or description relating to the Project (including but not limited to financial records reflecting in any way costs claimed on the Project), and to inspect the Site, including Contractor's trailer, or other job Site office, and this requirement shall be contained in the subcontracts of Subcontractors working on Site. By way of example, Owner shall have the right to inspect and obtain copies of all Contract Documents, planning and design documents, Bid proposal and negotiation documents, cost records and job cost variance reports, design modification proposals, value engineering or other cost reduction proposals, revisions made to the original design, job progress reports, photographs, and as-built drawings maintained by Contractor. Owner and any other applicable governmental entity shall have the right to inspect all information and documents maintained hereunder at any time during the Project and for a period of five years following Final Completion, in accordance with the provisions of Section 8546.7 of the California Government Code. This right of inspection shall not relieve Contractor of its duties and obligations under the Contract Documents. This right of inspection shall be specifically enforceable in a court of law, either independently or in conjunction with enforcement of any other rights in the Contract Documents.

8.3 Contractor To Supply Sufficient Workers And Materials

A. Unless otherwise required by Owner under the terms of Contract Documents, Contractor shall at all times keep on the Site materials and employ qualified workers sufficient to prosecute Work at a rate and in a sequence and manner necessary to complete Work within the Contract Time. This obligation shall remain in full force and effect notwithstanding disputes or claims of any type.

8.4 Contractor To Maintain Project Record Documents

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Contract Modifications, Change Orders, Work Directives, Force Account orders, and written interpretations and clarifications in good order and annotated to show all asbuilt changes made during construction. These Project Record Documents, together with all approved Samples and a counterpart of all approved Shop Drawings, shall be maintained and available to Owner for reference. Upon completion of the Work, Contractor shall deliver to Owner, the Project Record Documents, Samples and Shop Drawings and as-built drawings.
- B. Throughout Contractor's performance of the Work of the Project, Contractor shall maintain construction records to include: shop drawings; product data/material data sheets; samples; submittal; purchases; materials; equipment; inspections; applicable handbooks; applicable codes and standards; maintenance and operating manuals and instructions; RFI Log; Submittal Log; other related documents and revisions which arise out of the Construction Contracts. Contractor shall maintain records of principal building layout lines, elevations for the bottom of footings, floor levels, and key site elevations (certified by a qualified surveyor or professional engineer). Contractor shall make all records available to Owner. At the completion of the Project, Contractor shall deliver all such records to the Owner to have a complete set of record as-built drawings.

8.5 Contractor To Not Disrupt Owner Operation

A. Contractor shall schedule and execute all Work in a manner that does not interfere with or disrupt Owner operations, including but not limited to, parking, utilities (electricity, gas, water), noise, access by employees and administration, access by vendors, physicians, patients and any other person or entity using Owner facilities or doing business with Owner. Contractor shall produce and supply coordination plans and requests to Owner, following Owner procedures, for all necessary interference of construction with Owner, which Owner will reasonably cooperate with.

8.6 Contractor To Provide Temporary Facilities And Controls

A. Unless expressly provided otherwise in the Contract Documents, Contractor shall provide all temporary utilities (including without limitation electricity, water, natural gas), lighting, heating, cooling and ventilating devices, telephone, sanitary facilities, barriers, fences and enclosures, tree and plant protection, fire protection, pollution, erosion, Storm Water Pollution Prevention controls, noise and traffic control, and any other necessary services required for construction, testing or completion of the Work.

ARTICLE 9 - WARRANTY, GUARANTY, AND INSPECTION OF WORK

9.1 Warranty And Guaranty

- A. General Representations and Warranties: Contractor represents and warrants that it is and will be at all times fully qualified and capable of performing every Phase of the Work and to complete Work in accordance with the terms of Contract Documents. Contractor warrants that all construction services shall be performed in accordance with generally accepted professional standards of good and sound construction practices and all requirements of the Contract Documents. Contractor warrants that Work, including but not limited to each item of materials and equipment incorporated therein, shall be new, of suitable grade of its respective kind for its intended use, and free from defects in design, engineering, materials, construction and workmanship. Contractor warrants that Work shall conform in all respects with all applicable requirements of federal, state and local laws, applicable construction codes and standards, licenses, and permits, Drawings and Specifications and all descriptions set forth therein, and all other requirements of Contract Documents. .
- B. Extended Guarantees: Any guarantee exceeding one year provided by the supplier or manufacturer of any equipment or materials used in the Project shall be extended for such term. Contractor shall supply Owner with all warranty and guarantee documents relative to equipment and materials incorporated in the Project and guaranteed by their suppliers or manufacturers.
- C. Environmental and Toxics Warranty: The covenants, warranties and representations contained in this Paragraph are effective continuously during Contractor's Work on the Project and following cessation of labor for any reason including, but not limited to, Project completion. Contractor covenants, warrants and represents to Owner that:
 - 1. To Contractor's knowledge after due inquiry, no lead or Asbestos-containing materials were installed or discovered in the Project at any time during Contractor's construction thereof. If any lead or Asbestos-containing materials were discovered, Contractor made immediate written disclosure to Owner.
 - 2. To Contractor's knowledge after due inquiry, no electrical transformers, light fixtures with ballasts or other equipment containing PCBs are or were located on the Project at any time during Contractor's construction thereof. If any such materials were discovered, Contractor made immediate written disclosure to Owner.
 - 3. To Contractor's knowledge after due inquiry, no storage tanks for gasoline or any other toxic substance are or were located on the Project at any time during Contractor's construction thereof. If any such materials were discovered, Contractor made immediate written disclosure to Owner.
 - 4. Contractor's operations concerning the Project are and were not in violation of any applicable environmental federal, state, or local statute, law or regulation dealing with hazardous materials substances or toxic substances and no notice from any governmental body has been served upon Contractor claiming any violation of any such law, ordinance, code or regulation, or requiring or calling attention to the need for any Work, repairs, construction, alteration, or installation on or in connection with the Project in order to comply with any such laws, ordinances, codes, or regulations, with which Contractor has not complied. If there are any such notices with which Contractor has complied, Contractor shall provide Owner with copies thereof.

9.2 Inspection Of Work

A. Work and materials, and manufacture and preparation of materials, from beginning of construction until Final Completion and acceptance of Work, shall be subject to inspection and

rejection by Owner, its agents, representatives or independent contractors retained by Owner to perform inspection services, or governmental agencies with jurisdictional interests. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and program so that they may comply therewith as applicable. Upon request or where specified, Owner shall be afforded access for inspection at the source of supply, manufacture or assembly of any item of material or equipment, with reasonable accommodations supplied for making such inspections.

- B. Contractor shall furnish, in such quantities and sizes as may be required for proper examination and tests, Samples or test specimens of all materials to be used or offered for use in connection with Work, in addition to tests and submittals required in the individual material or equipment specification sections. Contractor shall prepare Samples or test specimens at its expense and furnish them to Owner. Contractor shall submit all Samples in ample time to enable Owner to make any necessary tests, examinations, or analyses before the time it is desired to incorporate the material into the Work.
- C. Contractor shall give Owner no less than 48 hours notice of readiness of Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- D. If applicable laws or regulations of any authority 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, and furnish Owner with the required certificates of inspection, or approval. Owner will pay the cost of initial testing and Contractor shall pay all costs in connection with any follow-up or additional testing. Contractor shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for the acceptance of materials or equipment to be incorporated in the Work, or of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.
- E. If Contractor covers any Work, or the work of others, prior to any required inspection, test or approval without written approval of Owner, Contractor shall uncover the Work at Owner's request. Contractor shall bear the expense of uncovering Work and replacing Work.
- F. Contractor shall furnish tools, labor and materials necessary to make examination of Work that may be completed or in progress, even to the extent of uncovering or taking down portions of finished Work. Cost of making examination and of reconstruction shall be borne by Contractor.
- G. Inspection of the Work by or on behalf of Owner, or Owner's failure to do so, shall not under any circumstances be deemed a waiver or approval of any non-conforming aspect of the Work. Contractor shall have an absolute duty, in the absence of a written Change Order signed by Owner, to perform Work in conformance with the Contract Documents and to immediately correct Defective Work immediately upon Contractor's knowledge.
- H. Any inspection, evaluation, or test performed by or on behalf of Owner relating to the Work is solely for the benefit of Owner, and shall not be relied upon by Contractor. Contractor shall not be relieved of the obligation to perform Work in accordance with the Contract Documents, nor relieved of any guaranty, warranty, or other obligation, as a result of any inspections, evaluations, or tests performed by Owner, whether or not such inspections, evaluations, or tests are permitted or required under the Contract Documents. Contractor shall be solely responsible for testing and inspecting Work already performed to determine whether such Work is in proper condition to receive later Work.

9.3 Correction Of Defective Work

- A. Owner may direct Contractor to correct any Defective Work or remove it from the Site and replace it with Work that is not Defective and satisfactorily correct or remove and replace any damage to other Work or the work of others resulting from the correction or removal. Contractor shall be responsible for any and all claims, costs, losses and damages caused by or resulting from such correction or removal. Owner's rights under this Paragraph shall be in addition to any other rights it may have under the Contract Documents or by law.
- B. If Contractor fails to supply sufficient skilled workers, suitable materials or equipment, or to furnish or perform the Work in such a way that the completed Work will conform to Contract Documents,

Owner may order Contractor to replace any such Defective Work, or stop any portion of Work to permit Owner (at Contractor's expense) to replace such Defective Work. These Owner rights are entirely discretionary on the part of Owner, and shall not give rise to any duty on the part of Owner to exercise the rights for the benefit of Contractor or any other party.

9.4 Acceptance And Correction Of Defective Work By Owner

- A. Owner may in its sole discretion elect to accept Defective Work. Contractor shall pay all claims, costs, losses and damages attributable to Owner's evaluation of and determination to accept such Defective Work. If Owner accepts any Defective Work prior to final payment, a Change Order may be issued incorporating the necessary revisions in the Contract Documents with respect to the Work and the Contract Sum. If the parties are unable to agree to the amount of an appropriate decrease in the Contract Sum, Owner may deduct from monies due Contractor, all claims, costs, losses, damages, expenses and liabilities attributable to the Defective Work. If Contractor disagrees with Owner's calculations, Contractor may make a claim as provided in Article 12 of this Document 00 7200. If Owner accepts any Defective Work after final payment, Contractor shall pay to Owner, an appropriate amount as determined by Owner.
- Β. Owner may correct and remedy deficiency if, after five (5) Calendar Days of written notice to Contractor, Contractor fails to correct Defective Work or to remove and replace rejected Work; or provide a plan for correction of Defective Work acceptable to Owner; or perform Work in accordance with Contract Documents. In connection with such corrective and remedial action, Owner may exclude Contractor from all or part of the Site; take possession of all or part of Work and suspend Contractor's Work related thereto; and incorporate in Work any materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, its representatives, agents, employees, and other contractors and Project Manager/Architect's consultants' access to the Site to enable Owner to exercise the rights and remedies under this Paragraph. Contractor shall be responsible for all claims, costs, losses, damages, expenses and liabilities incurred or sustained by Owner in exercising such rights and remedies. A Change Order may be issued incorporating the necessary revisions in the Contract Documents with respect to Work and the Contract Sum. If the parties are unable to agree to the amount of an appropriate decrease in the Contract Sum, Owner may deduct from monies due Contractor, all claims, costs, losses and damages caused by or resulting from the correction or removal. If Contractor disagrees with Owner's calculations, Contractor may make a claim as provided in Article 12 of this Document 00 7200.

9.5 Rights Upon Inspection, Correction Or Acceptance

- A. Contractor shall not be allowed an extension of Contract Time because of any delay in the performance of Work attributable to the exercise by Owner of its rights and remedies under this Article. Where Owner exercises its rights under this Article, it retains and may still exercise all other rights it has by law or under the Contract Documents including, but not limited to, the right to terminate Contractor's right to proceed with the Work under the Contract Documents for cause and/or make a claim or back charge where a Change Order cannot be agreed upon.
- B. Inspection by Owner or its authorized agents or representatives shall not relieve Contractor of its obligation to have furnished material and workmanship in accordance with Contract Documents. Payment for Work completed through periodic progress payments, final payment or otherwise shall not operate to waive Owner's right to require full compliance with Contract Documents and shall in no way be deemed as acceptance of any defective Work paid therefor. Contractor's obligation to complete the Work in accordance with Contract Documents shall be absolute, unless Owner agrees otherwise in writing.

9.6 **Proof Of Compliance Of Contract Provisions**

A. In order that Owner may determine whether Contractor has complied or is complying with requirements of Contract Documents not readily enforceable through inspection and tests of Work and materials, Contractor shall at any time, when requested, submit to Owner properly authenticated documents or other satisfactory proofs of compliance with all applicable requirements.

B. Before commencing any portion of Work, Contractor shall inform Owner in writing as to time and place at which Contractor wishes to commence Work, and nature of Work to be done, in order that proper provision for inspection of Work may occur, and to assure measurements necessary for record and payment. Information shall be given to Owner a reasonable time in advance of time at which Contractor proposes to begin Work, so that Owner may complete necessary preliminary work without inconvenience or delay to Contractor.

9.7 Correction Period And Project Warranty Period:

- A. If within one year after the Date of Completion as identified on the recorded Notice of Completion, or such longer period of time as may be prescribed by laws, regulations or by the terms of Contract Documents or any extended warranty or guaranty, any Work (completed or incomplete) is found to be Defective, Contractor shall promptly without cost to Owner and in accordance with Owner's written instructions, correct such Defective Work. Contractor shall remove any Defective Work rejected by Owner and replace it with Work that is not Defective, and satisfactorily correct and remove and replace any damage to other Work or the work of others resulting therefrom. If Contractor fails to promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the Defective Work corrected or the rejected Work removed and replaced. Contractor shall pay for all claims, costs, losses and damages caused by or resulting from such removal and replacement. Where Contractor fails to correct Defective Work, or defects are discovered outside the correction period, Owner shall have all rights and remedies granted by law.
- B. In special circumstances where a part of the Work is occupied or a particular item of equipment is placed in continuous service before the date of completion as identified in the recorded Notice of Completion of all the Work, the correction period for that part of Work or that item may start to run from an earlier date if so provided by Change Order.
- C. Where Defective Work or rejected Work (and damage to other Work resulting therefrom) has been corrected, removed, or replaced under this provision after the commencement of the correction period, the correction period hereunder with respect to such Work shall be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

9.8 No Waiver

- A. Neither recordation of the Notice of Completion nor final certificate for payment nor provision of the Contract nor partial or entire use or occupancy of premises by Owner shall constitute acceptance of Work not done in accordance with Contract Documents nor relieve Contractor of liability in respect to express warranties or responsibility for faulty materials or workmanship.
- B. If, after installation, operation, or use of materials or equipment to be provided under Contract proves to be unsatisfactory to Owner, Owner shall have right to operate and use materials or equipment until said materials and equipment can, without damage to Owner, be taken out of service for correction or replacement. Period of use of Defective materials or equipment pending correction or replacement shall in no way decrease guarantee period required for acceptable corrected or replaced items of materials or equipment.
- C. Nothing in the Contract Documents shall be construed to limit, relieve, or release Contractor's, Subcontractors', and equipment suppliers' liability to Owner for damages sustained as result of latent defects in materials or equipment caused by negligence of Contractor, its agents, suppliers, employees, or Subcontractors.

ARTICLE 10 - MODIFICATIONS OF CONTRACT DOCUMENTS

10.1 Owner's Right To Direct Changed Work.

A. Owner may, without notice to the sureties and without invalidating the Contract, make changes in the Work ("Changed Work"), including without limitation: alterations, deviations, additions to, or deletions from Contract Documents; increase or decrease the quantity of any item or portion of the Work; expand, reduce or otherwise change the Contract Time; delete any item or portion of the Work; and require extra Work. Contractor shall perform such Work under applicable

provisions of the Contract Documents, unless specifically provided otherwise at the time the change is ordered.

B. If Changed Work is of such a nature as to increase or decrease the time or cost of any part of Work, price fixed in Contract shall be increased or decreased by amount as the Contractor and Owner may agree upon as reasonable and proper allowance for increase or decrease in cost of Work using the cost guidelines set forth in this Article, and absent such agreement, then as Owner may direct (with Contractor retaining its rights under Article 12 herein).

10.2 Required Documentation For Changed Work

- A. Changes affecting the Contract Time or Contract Sum of the Work shall be set forth in a written Change Order that shall specify:
 - 1. The Work performed in connection with the change to be made;
 - 2. The amount of the adjustment of the Contract Sum, if any, and the basis for compensation for the Work ordered; and
 - 3. The extent of the adjustment in the Contract Time, if any.
- B. A Change Order will become effective when signed by Owner, notwithstanding that Contractor has not signed it. A Change Order will become effective without Contractor's signature, provided Owner indicates same thereon (by indicating it as a "unilateral change order").

10.3 Procedures And Pricing Of Changed Work

A. Procedures for changed work and pricing of changed work, claims and all forms of extra compensation, are set forth in Section 01 2050 (Modification Procedures).

ARTICLE 11 - TIME ALLOWANCES

11.1 Time Allowances

A. Time is of the essence. Contract Time may only be changed by Change Order, and all time limits stated in the Contract Documents are to mean that time is of the essence.

11.2 Excusable Delay And Inexcusable Delay Defined.

- A. Excusable Delay. Subject to the provisions on Notice of Delay below, Contract Time may be adjusted in an amount equal to the time lost due to:
 - 1. Changes in the Work ordered by Owner ("**Changes**");
 - 2. Acts or neglect by Owner, Architect, any Owner Representative, utility owners or other contractors performing other work, not permitted or provided for in the Contract Documents, provided that Contractor has performed its responsibilities under the Contract Documents (including but not limited to pre-bid investigations) ("Acts or Neglect"); or
 - 3. Fires, floods, epidemics, abnormal weather conditions beyond the parameters otherwise set forth in this Article, earthquakes, civil or labor disturbances, or acts of God (together, "force majeure events"), provided damages resulting therefrom are not the result of Contractor's failure to protect the Work as required by Contract Documents ("Force Majeure").
- B. Inexcusable Delay. Contract Time shall not be extended for any period of time where Contractor (and/or any Subcontractor) is delayed or prevented from completing any part of the Work due to a cause that is within Contractor's risk or responsibility under the Contract Documents. Delays attributable to or within the control of a Subcontractor, or its subcontractors, or supplier, are deemed delays within the control of Contractor.
- C. Float. Float shall be treated as a Project resource. Contractor shall not be entitled to a time extension for impacts that consume float, but do not impact the critical path.

11.3 Notice Of Delay

A. Within five (5) Working Days of the beginning of any delay (excepting adverse weather delays), Contractor shall notify Owner in writing, by submitting a notice of delay that shall describe the anticipated delays resulting from the delay event in question. If Contractor requests an extension of time, Contractor shall submit a TIE within seven (7) WorkingDays of the notice of delay. Owner will determine all claims and adjustments in the Contract Time. No claim for an adjustment in the Contract Time will be valid and such claim will be waived if not submitted in accordance with the requirements of this subparagraph. In cases of substantial compliance with the seven-day notice requirement here (but not to exceed fifteen (15) Working Days from the beginning of the delay event), Owner may in its sole discretion recognize a claim for delay accompanied with the proper TIE, provided Contractor also shows good faith and a manifest lack of prejudice to Owner from the late notice.

11.4 Compensable Time Extensions

- A. Subject to other applicable provisions of the Contract Documents, Contractor may be entitled to adjustment in Contract Sum in addition to Contract Time for:
 - 1. Excusable delay caused solely by Changes in the Work ordered by Owner, as provided above, and/or
 - 2. Excusable delay caused solely by Acts or Neglect by Owner or other person, as provided above.

11.5 Non-Compensable Time Extensions

- A. Subject to other applicable provisions of the Contract Documents, Contractor may be entitled to adjustment in Contract Time only, without adjustment in Contract Sum, for
 - 1. Periods of excusable delay caused solely by weather or Force Majeure events as provided above in this Article, or
 - 2. Periods of concurrent delay, where delay results from two or more causes, one of which is compensable (resulting from Changes or Acts or Neglect as set forth above in this Article), and the other of which is non-compensable or inexcusable, such as: acts or neglect of Contractor, Subcontractors or others for whom Contractor is responsible; other acts, omissions and conditions which would not entitle Contractor to adjustment in Contract Time; adverse weather; and/or actions of Force Majeure as provided above in this Article.

11.6 Adverse Weather

- A. If the Contractor is delayed in the performance of the Work because of acts of God, fire, strikes, unavailability of materials or similar occurrences beyond his control, the Owner may grant such extension of time to complete the contract as he deems appropriate, providing the contractor has notified the Owner in writing of the causes of the delay within five (5) Working Days of the beginning of the delay.
- B. Requests for extensions of time to complete the contract based on delays in the performance of the work due to inclement weather must be submitted in writing to the County with appropriate justification on the number of days of delay. The Contractor and County will review the inclement weather days weekly. The Contractor will not be entitled to payment for costs incurred as a result of taking such actions.
- C. During unfavorable weather, wet ground, or other unsuitable construction conditions, Contractor shall employ best practices to protect the Work, manage the construction site and rainwater during inclement weather and provide requirements of implemented SWPPP and BMP's. Persons performing the Work shall examine surfaces to receive their Work and shall report in writing to Contractor, with copy to Owner representative and the Architect conditions detrimental to the Work. Failure to examine and report discrepancies makes the Contractor responsible, at no increase in Contract Sum, for corrections Owner may require. Commencement of Work constitutes acceptance of surface.

11.7 Liquidated Damages

A. Time is of the essence. Execution of Contract Documents by Contractor shall constitute its acknowledgement that Owner will actually sustain damages in the form of Contract administration expenses (such as Project management and consultant expenses) in the amount fixed in the Contract Documents for each and every Day during which completion of Work required is delayed

beyond expiration of time fixed for completion plus extensions of time allowed pursuant to provisions hereof.

ARTICLE 12 - CLAIMS BY CONTRACTOR

12.1 Obligation to File Claims for Disputed Work

A. Should it appear to Contractor that the Work to be performed or any of the matters relative to the Contract Documents are not satisfactorily detailed or explained therein, or should any questions arise as to the meaning or intent of the Contract Documents, or should any dispute arise regarding the true value of any work performed, work omitted, extra work that the Contractor may be required to perform, time extensions, payment to the Contractor during performance of this Contract, performance of the Contract, and/or compliance with Contract procedures, or should Contractor otherwise seek extra time or compensation FOR ANY REASON WHATSOEVER, then Contractor shall first follow procedures set forth in the Contract (including but not limited to other Articles of this Document 00 7200 and Section 01 2050). If a dispute remains, then Contractor shall give written notice to Owner that expressly invokes this Article 12. Owner shall decide the issue in writing within 15 Working Days; and Owner's written decision shall be final and conclusive. If Contractor disagrees with Owner's SOLE AND EXCLUSIVE REMEDY is to promptly file a written claim setting forth Contractor's position as required herein.

12.2 Form And Contents Of Claim

A. Contractor's written claim must identify itself as a "Claim" under Article 12 and must include the following: (1) a narrative of pertinent events; (2) citation to contract provisions; (3) theory of entitlement; (4) complete pricing of all cost impacts; (5) a time impact analysis of all time delays that shows actual time impact on the critical path; (6) documentation supporting items 1 through 5; a verification under penalty of perjury of the claim's accuracy. The Claim shall be submitted to Owner within thirty (30) Calendar Days of receiving Owner's written decision, or the date Contractor contends such decision was due, and shall be priced like a change order according to Section 01 2050, and must be updated monthly as to cost and entitlement if a continuing claim. Routine contract materials, for example, correspondence, RFI, Change Order requests, or payment requests shall not constitute a claim. Contractor shall bear all costs incurred in the preparation and submission of a claim.

12.3 Administration During/After Claim Submission

- A. Owner may render a final determination in writing based on the Claim or may in its discretion conduct an administrative hearing on Contractor's claim, in which case Contractor shall appear, participate, answer questions and inquiries, and present any further evidence or analysis requested by Owner prior to rendering a final determination in writing. Should Owner take no action on the Claim within 45 Calendar Days of submission, it shall be deemed denied. The parties may extend this 45 day period by mutual agreement upon submission of a claim.
- B. Notwithstanding and pending the resolution of any claim or dispute, Contractor shall diligently prosecute the disputed work to final completion in accordance with Owner's determination.
- C. After their submission, claims that total less than \$375,000 in the aggregate at Contract closeout shall also be subject to the Local Agency Disputes Act.
- D. Owner shall issue payment on any undisputed portion of the Claim within 60 days of Owner's final determination in writing. Failure by County to issue a written statement shall result in the claim being rejected in its entirety. A Claim that is denied by reason of Owner's failure to respond shall not constitute an adverse finding with regard to the merits of the Claim

12.4 Informal Conference and Mediation

A. If the Contractor disputes the Owner's written statement, or if the Owner fails to respond to a Claim issued pursuant to this Article within the time prescribed, the Contractor may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested,

the Owner shall schedule a meet and confer conference within thirty (30) calendar days of the demand.

- B. Within ten (10) business days following the conclusion of the meet and confer conference, if the Claim or any portion of the Claim remains in dispute, the Owner shall provide the Contractor with a written statement identifying the portion of the Claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the Claim shall be made within sixty (60) days after the Owner issues this written statement.
- C. Any remaining disputed portion of the Claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the Owner and the Contractor sharing the associated costs equally. The Owner and Contractor shall mutually agree to a mediator within ten (10) business days after the disputed portion of the Claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator, and those mediators shall selected a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of a neutral mediator.
- D. Mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this Article.
- E. If mediation is unsuccessful, the parts of the Claim remaining in dispute shall be subject to applicable procedures outside this Article.
- F. Unless otherwise agreed to by the Owner and the Contractor in writing, the mediation conducted pursuant to this Article shall excuse any further obligation under Section 20104.4 of the Public Contract Code to mediate after litigation has been commenced.
- G. The Claim resolution procedures in this Article do not preclude Owner from requiring arbitration of disputes under private arbitration if mediation under this Article does not resolve the parties' dispute.
- H. Amounts not paid in a timely manner as required by this Article shall bear interest at 7 percent per annum.

12.5 Claims by Subcontractors

A. If a Subcontractor or a lower tier Subcontractor lacks legal standing to assert a Claim against Owner because privity of contract does not exist, the Contractor may present to the Owner a Claim on behalf of a Subcontractor or lower tier Subcontractor. A Subcontractor may request in writing, either on his or her own behalf, or on behalf of a lower tier Subcontractor, that the Contractor present a Claim for work which was performed by the Subcontractor or by a lower tier Subcontractor on behalf of the Subcontractor. The Subcontractor requesting that the Claim be presented to Owner shall furnish reasonable documentation to support the Claim. Within fortyfive (45) days of receipt of this written request, the Contractor shall notify the Subcontractor in writing as to whether the Contractor presented the Claim to the Owner and, if the original Contractor did not present the Claim, provide the Subcontractor with a statement of the reasons for not having done so.

12.6 Compliance

A. The provisions of this Article 12 constitute a non-judicial claim settlement procedure that, pursuant to Section 930.2 of the California Government Code, shall constitute a condition precedent to submission of a valid Government Code Section 910 Claim under the California Government Code. Contractor shall bear all costs incurred in the preparation, submission and administration of a claim. Any claims presented thereafter in accordance with the Government Code must affirmatively indicate Contractor's prior compliance with the claims procedure herein and the previous dispositions under Paragraph 12.03 above of the claims asserted. Pursuant to Government Code Section 930.2, the one-year period in Government Code section 911.2 shall

be reduced to 150 Calendar Days from either accrual of the cause of action, substantial completion or termination of the contract, whichever occurs first; in all other respects, the requirements of the Government Code shall apply unchanged, including, without limitation, Contractor's obligation to file a Government Code Section 910 Claim.

- B. Failure to submit and administer claims as required in Article 12 shall waive Contractor's right to claim on any specific issues not included in a timely submitted claim. Claim(s) or issue(s) not raised in a timely protest and timely claim submitted under this Article 12 may not be asserted in any subsequent litigation, Government Code Section 910 Claim, or legal action.
- C. Owner shall not be deemed to waive any provision under this Article 12, if at Owner's sole discretion, a claim is administered in a manner not in accord with this Article 12. Waivers or modifications of this Article 12 may only be made a signed change order approved as to form by legal counsel for both Owner and Contractor; oral or implied modifications shall be ineffective.

12.7 Civil Actions; Consistency with Public Contract Code Section 9204 and 20104 et seq.

- A. If the Government Code claim is denied, Contractor may file an action in court. Such action shall be subject to Public Contract Code sections 9204 or 20104.4. This Section applies only to Claims subject to Public Contract Code Sections 9204 or 20104; if a Claim is not subject to those sections, the Contractor's rights to file a civil action shall be as otherwise provided by law.
- B. If any Claim arising under this Contract is subject to the provisions of Public Contract Code sections 9204 or 20104 et seq., and if the provisions of that article require a procedure or procedural element different from that established herein, then the provisions of that article shall apply in place of the conflicting procedure or procedural element established herein.

ARTICLE 13 - UNDERGROUND CONDITIONS

13.1 Contractor To Locate Underground Facilities.

- A. During construction, Contractor shall comply with Government Code Sections 4216 to 4216.9, and in particular Section 4216.2 which provides, in part: "Except in an emergency, every person planning to conduct any excavation shall contact the appropriate regional notification center at least two (2) Working Days, but no more than ten (10 Working Days, prior to commencing that excavation, if the excavation will be conducted in an area which is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the excavator, and, if practical, the excavator shall delineate with white paint or other suitable markings the area to be excavated. The regional notification center shall provide an inquiry identification number to the person who contacts the center and shall notify any member, if known, who has a subsurface installation in the area of the proposed excavation."
- B. Contractor shall contact Underground Service Alert (USA) or the appropriate regional notification center, and schedule the Work to allow ample time for the center to notify its members and, if necessary, for any member to field locate and mark its facilities. Contractor is charged with knowledge of all subsurface conditions reflected in underground utility records. Contractor shall advise Owner of any conflict between information provided in Document 00 3100 (Geotechnical Data and Existing Conditions), the Drawings and that provided by underground utility records. Contractor's excavation shall be subject to and comply with the Contract Documents.
- C. Contractor shall also investigate the existence of existing service laterals, appurtenances or other types of utilities, indicated by the presence of an underground transmission main implied by the presence of visible facilities, such as buildings, new asphalt, meters and junction boxes, on or adjacent to the Site, even if not shown or indicated in Document 00 3100 (Geotechnical Data and Existing Conditions), or the Drawings or that provided by underground utility records. Contractor shall immediately secure all such available information and notify Owner and the utility owner, in writing, of its discovery.

13.2 Contractor To Protect Underground Facilities.

A. At all times during construction, all operating Underground Facilities shall remain in operation, unless the Contract Documents expressly indicate otherwise. Contractor shall maintain such

Underground Facilities in service where appropriate; shall repair any damage to them caused by the Work; and shall incorporate them into the Work, including reasonable adjustments to the design location (including minor relocations) of the existing or new installations. Contractor shall take immediate action to restore any in service installations damaged by Contractor's operations.

- B. Prior to performing Work at the Site, Contractor shall lay out the locations of Underground Facilities that are to remain in service and other significant known underground installations indicated by the Underground Facilities Data. Contractor shall further locate, by carefully excavating with small equipment, potholing and principally by hand, all such utilities or installations that are to remain and that are subject to damage. If additional utilities whose locations are unknown are discovered, Contractor shall immediately report to Owner for disposition of the same. Additional compensation or extension of time on account of utilities not shown or otherwise brought to Contractor's attention, including reasonable action taken to protect or repair damage, shall be determined as provided in this Document 00 7200.
- C. If during construction, an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated in the materials supplied by Owner for bidding or in information on file at USA or otherwise reasonably available to Contractor, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby (and in no event later than five (5) Working Days), and prior to performing any Work in connection therewith (except in an emergency), identify the owner of such Underground Facility and give written notice to Underground Facility owner and Owner. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. The cost of all of the following will be included in the Contract Sum and Contractor shall have full responsibility for (a) reviewing and checking all available information and data including, but not limited to, information made available for bidding and information on file at USA; (b) locating all Underground Facilities shown or indicated in the Contract Documents, available information, or indicated by visual observation including, but not limited to, and by way of example only, engaging qualified locating services and all necessary backhoeing and potholing; (c) coordination of the Work with the owners of such Underground Facilities during construction; and (d) the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.
- E. Consistent with California Government Code §4215, as between Owner and Contractor, Owner will be responsible for the timely removal, relocation, or protection of existing main or trunk line utility facilities located on the Site only if such utilities are not identified in the Contract Documents or information made available for bidding. Owner will compensate for the cost of locating and repairing damage not due to Contractor's failure to exercise reasonable care, removing and relocating such main or trunk line utility facilities not indicated in the Contract Documents or information made available for bidding with reasonable accuracy, and equipment on the Project necessarily idled during such Work. Contractor shall not be assessed liquidated damages for delay in completion of the Project, when such delay was caused by the failure of Owner or the utility to provide for removal or relocation of such utility facilities.

13.3 Concealed Or Unknown Conditions

- A. If either of the following conditions is encountered at Site when digging trenches or other excavations that extend deeper than four feet below the surface, Contractor shall give a written Notice of Differing Site Conditions to Owner promptly before conditions are disturbed, except in an emergency as set forth in this Document 00 7200, and in no event later than five (5) Working Days after first observance of:
 - 1. Subsurface or Latent physical conditions which differ materially from those indicated in the Contract Documents; or
 - 2. Unknown physical conditions of an unusual nature or which differ materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.
- B. In response to Contractor's Notice of Differing Site Conditions under this Paragraph, Owner will investigate the identified conditions, and if they differ materially and cause increase or decrease in Contractor's cost of, or time required for, performance of any part of the Work, Owner will

negotiate the appropriate change order following the procedures set forth in the Contract Documents. If Owner determines that physical conditions at the Site are not Latent or are not materially different from those indicated in Contract Documents or that no change in terms of the Contract Documents is justified, Owner will so notify Contractor in writing, stating reasons (with Contractor retaining its rights under Article 12 of this Document 00 7200.)

- C. Contractor shall not be entitled to any adjustment in the Contract Sum or Contract Time regarding claimed Latent or materially different Site conditions (whether above or below grade) if Contractor knew or should have known of the existence of such conditions at the time Contractor submitted its Bid, failed to give proper notice, or relied upon information, conclusions, opinions or deductions of the kind that the Contract Documents preclude reliance upon.
- D. Regarding Underground Facilities, Contractor shall be allowed an increase in the Contract Sum or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that is owned and was built by Owner only where the Underground Facility:
 - 1. Was not shown or indicated in the Contract Documents or in the information supplied for bidding purposes or in information on file at USA; and
 - 2. Contractor did not know of it; and
 - 3. Contractor could not reasonably have been expected to be aware of it or to have anticipated it from the information available. (For example, if surface conditions such as pavement repairs, valve covers, or other markings, indicate the presence of an Underground Facility, then an increase in the Contract Sum or an extension of the Contract Time will not be due, even if the Underground Facility was not indicated in the Contract Documents, in the information supplied to Contractor for bidding purposes, in information on file at USA, or otherwise reasonably available to Contractor.)
- E. Contractor shall bear the risk that Underground Facilities not owned or built by Owner may differ in nature or locations shown in information made available by Owner for bidding purposes, in information on file at USA, or otherwise reasonably available to Contractor. Underground Facilities are inherent in construction involving digging of trenches or other excavations on Owner's Project, and Contractor is to apply its skill and industry to verify the information available.
- F. Contractor's compensation for claimed Latent or materially different Site conditions shall be limited to the actual, reasonable, incremental increase in cost of that portion of the Work, resulting from the claimed Latent or materially different Site conditions. Such calculation shall take into account the estimated value of that portion of the Work and the actual value of that portion of the Work, using for guidance Contractor's or its subcontractor's bid amount and actual amounts incurred for that portion of the Work and the reasonable expectation (if any) of differing or difficult site conditions in the Work area based on the available records and locale of the Work. For example, if Contractor excavates in an area unexpected, then such costs would be recoverable entirely; while if Contractor extends an existing excavation, then such costs would be recoverable if the resulting excavation costs in that work area exceeded the reasonable expectations therefore.

13.4 Notice Of Hazardous Waste Or Materials Conditions

- A. Contractor shall give a written Notice of Hazardous Materials Condition to Owner promptly, before any of the following conditions are disturbed (except in an emergency as set forth in this Document 00 7200), and in no event later than 24 hours after first observance of any:
 - Material that Contractor believes may be hazardous waste or hazardous material, as defined in Section 25117 of the Health and Safety Code (including, without limitation, Asbestos, lead, PCBs, petroleum and related hydrocarbons, and radioactive material) that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law ("hazardous material"); or
 - 2. Other material that may present an imminent substantial danger to persons or property exposed thereto in connection with Work at the Site ("other materials").
- B. Except as otherwise provided in the Contract Documents or as provided by applicable law, Contractor shall not be required to give any notice for the disturbance or observation of any such

hazardous materials or other materials where such matter is disturbed or observed as part of the scope of Work under the Contract Documents (such as hazardous waste or hazardous material investigation, remediation or disposal activities which are identified as the subject of Work under the Contract Documents), where Contractor complies with all requirements in the Contract Documents and applicable law respecting such materials.

- C. Contractor's Notice of Hazardous Materials Condition shall indicate whether the hazardous materials or other materials were shown or indicated in the Contract Documents to be within the scope of Work, and whether the hazardous materials or other materials were brought to the Site by Contractor, its Subcontractors, suppliers, or anyone else for whom Contractor is responsible.
- D. Contractor shall not be entitled to any adjustment in the Contract Sum or Contract Time regarding claimed hazardous waste or materials if:
 - 1. Contractor knew of the existence of such hazardous materials or other materials at the time Contractor submitted its Bid; or
 - 2. Contractor should have known of the existence of such hazardous material or other materials as a result of its having the responsibility to obtain additional or supplementary examinations, investigation, explorations, tests, studies, and data concerning the conditions at or contiguous to the Site prior to submitting its Bid; or
 - 3. Contractor failed to give the written notice within the required timeframe set forth below.
- E. If Owner determines that conditions involve hazardous materials or other materials and that a change in Contract Document terms is justified, Owner may issue either a Request for Proposal or Construction Change Order under the procedures described in the Contract Documents. If Owner determines that conditions do not involve hazardous materials or other materials or that no change in Contract Document terms is justified, Owner will notify Contractor in writing, stating the reasons for its determination.
- F. In addition to the parties' other rights under this Document 00 7200, if Contractor does not agree to resume Work based on a reasonable belief that it is unsafe, or does not agree to resume Work under special conditions, Owner may order the disputed portion of Work deleted from the Work, or performed by others, or Owner may invoke its right to terminate Contractor's right to proceed under the Contract Documents in whole or in part, for convenience or for cause as the facts may warrant.
- G. If Contractor does not agree with any Owner determination of any adjustment in the Contract Sum or Contract Time under this Article, Contractor may make a claim as provided in Article 12 of this Document 00 7200.

ARTICLE 14 - LEGAL AND MISCELLANEOUS

14.1 Laws And Regulations

A. Contractor shall keep fully informed of and shall comply with all laws, ordinances, regulations and orders of any properly constituted authority affecting the Contract Documents, Work and persons connected with Work, and shall protect and indemnify Owner and its officers, employees, consultants and agents against any claim or liability, including attorney's fees, arising from or based on violation of law, ordinance, regulation or order, whether by Contractor or by Subcontractors, employees or agents. Authorized persons may at any time enter upon any part of Work to ascertain compliance of all applicable laws, ordinances, regulations and orders.

14.2 Permits And Taxes

A. Contractor shall procure all permits and licenses applicable to the Work (including environmental matters to the extent applicable); pay all charges and fees, including fees for street opening permits; comply with, implement and acknowledge effectiveness of all permits; initiate and cooperate in securing all required notifications or approvals therefore; and give all notices necessary and incident to due and lawful prosecution of Work, unless otherwise provided herein. Owner will pay applicable building permits, sanitation and water fees for the completed construction, except as otherwise provided in the Contract Documents. Contractor shall pay all sales and/or use taxes levied on materials, supplies, or equipment purchased and used on or incorporated into Work, and all other taxes properly assessed against equipment or other

property used in connection with Work, without any increase in the Contract Sum. Contractor shall make necessary arrangements with proper authorities having jurisdiction over roads, streets, pipelines, navigable waterways, railroads, and other works in advance of operations, even where Owner may have already obtained permits for the Work.

14.3 Communications And Information Distribution

- A. All communications recognized under the Contract Documents shall be in writing, in the form of a serialized document, by type of communication. For example, RFI's shall be serialized beginning with RFI No. 1; payment applications shall be serialized beginning with Payment Application No. 1, submittals shall be serialized per specification section and transmitted with transmittal sheets beginning with Transmittal No. 1; and correspondence shall be serialized beginning with letter No. 1. Contractor may propose other record management and identification systems or protocols, intended to facilitate orderly transmittal of project information, storage and retrieval of such information, which Owner will review consistent with these stated objectives, and accept or reject in its sole discretion.
- B. Documents Requiring Signatures. All documents requiring signatures for approval prior to implementing action, as stipulated in other portions of Contract Documents, shall require a manually signed, serialized letter delivered to the other party at its address for notice otherwise specified in the Contract Documents, either personally or by mail.
- C. Electronic data transfer of such correspondence will serve to expedite preliminary concurrence of information, only. Receipt of "hard copy" signature on forms is required prior to implementing action or work as the conditions may require. For example, change orders and authorizations for extra cost, require signatures. A party may acknowledge receipt of portable document file (PDF) copies of required correspondence by e-mail, but in the absence of such acknowledgment, mail or personal delivery is required.
- D. All emails shall be copied to Owner's and Contractor's Project Representative. Owner reserves the right to preclude e-mail communication, in whole or in part, as Project needs may require. Communication between Owner and Contractor shall not be via Twitter, Facebook, or other types of instant text message systems. Any such communications shall be inadmissible for any purpose related to this Contract.

14.4 Suspension Of Work

A. Owner may, without cause, order Contractor in writing to suspend, delay or interrupt Work in whole or in part for such period of time as Owner may determine. An adjustment shall be made for increases in cost of performance of Work of the Contract Documents caused by any such suspension, delay or interruption, calculated using the measures set forth in Section 01 2050 (Modification Procedures). No adjustment shall be made to extent that performance is, was or would have been so suspended, delayed or interrupted by another cause for which Contractor is responsible.

14.5 Termination Of Contract For Cause

- A. The Contractor shall be in default of the Contract Documents and Owner may terminate the Contractor's right to proceed under the Contract Documents, for cause, in whole or in part, should the Contractor commit a material breach of the Contract Documents and not cure such breach within ten (10) Calendar Days of the date of notice from Owner to the Contractor demanding such cure; or, if such breach is curable but not curable within such ten (10) day period, within such period of time as is reasonably necessary to accomplish such cure. (In order for the Contractor to avail itself of a time period in excess of ten (10) Calendar Days, the Contractor must provide Owner within the ten (10) day period with a written plan acceptable to Owner that demonstrates actual resources, personnel and a schedule to promptly to cure said breach, and then diligently commence and continue such cure according to the written plan).
- B. In the event of termination by Owner for cause as provided herein, the Contractor shall deliver to Owner possession of the Work in its then condition, including but not limited to, all designs, engineering, Project records, cost data of all types, plans and specifications and contracts with vendors and subcontractors, all other documentation associated with the Project, and all construction supplies and aids dedicated solely to performing the Work which, in the normal

course of construction, would be consumed or only have salvage value at the end of the construction period. The Contractor shall remain fully liable for the failure of any Work completed and materials and equipment provided through the date of such termination to comply with the provisions of the Contract Documents. The provisions of this Section shall not be interpreted to diminish any right which Owner may have to claim and recover damages for any breach of the Contract Documents or otherwise, but rather, the Contractor shall compensate Owner for all loss, cost, damage, expense, and/or liability suffered by Owner as a result of such termination and/or failure to comply with the Contract Documents.

C. In the event a termination for cause is later determined to have been made wrongfully or without cause, then the termination shall be treated as a termination for convenience, and the Contractor shall have no greater rights than it would have had following a termination for convenience. Any Contractor claim arising out of a termination for cause shall be made in accord with Article 12 herein. No other loss, cost, damage, expense or liability may be claimed, requested or recovered by the Contractor.

14.6 Termination Of Contract For Convenience

- A. Owner may terminate performance of the Work under the Contract Documents in accordance with this clause in whole, or from time to time in part, whenever Owner shall determine that termination is in Owner's best interest. Termination shall be effected by Owner delivering to the Contractor notice of termination specifying the extent to which performance of the Work under the Contract Documents is terminated, and the effective date of the termination.
- B. Contractor shall comply strictly with Owner's direction regarding the effective date of the termination, the extent of the termination, and shall stop work on the date and to the extent specified.
- C. Contractor shall be entitled to a total payment on account of the Contract work so terminated measured by (i.) the actual cost to Contractor of Work actually performed, up to the date of the termination, with profit and overhead limited to twelve percent (12%) of actual cost of work performed, up to but not exceeding the actual contract value of the work completed as measured by the Schedule of Values and Progress Schedule, (ii.) offset by payments made and other contract credits. In connection with any such calculation, however, Owner shall retain all rights under the Contract Documents, including but not limited to claims, indemnities, or setoffs.
- D. Under no circumstances may Contractor recover legal costs of any nature, nor may Contractor recover costs incurred after the date of the termination or lost profits on terminated Work.

14.7 Remedies

- A. Subject to Contract Documents provisions regarding Contractor claims, claim review, and claim resolution, and subject to the limitations therein, the exclusive jurisdiction and venue for resolving all claims, counter claims, disputes and other matters in question between Owner and Contractor arising out of or relating to Contract Documents, any breach thereof or the Project shall be the applicable court of competent jurisdiction located in the State and County where the Project is located.
- B. All Owner remedies provided in the Contract Documents shall be taken and construed as cumulative and not exclusive; that is, in addition to each and every other remedy herein provided; and in all instances Owner shall have any and all other equitable and legal rights and remedies which it would have according to law.

14.8 Contract Integration and Non-Waiver

A. The Contract Documents, any Contract Modifications and Change Orders, shall represent the entire and integrated agreement between Owner and Contractor regarding the subject matters hereof and thereof and shall constitute the exclusive statement of the terms of the parties' agreement. The Contract Documents, and any Contract Modifications and Change Orders, shall supersede any and all prior negotiations, representations or agreements, written or oral, express or implied, that relate in any way to the subject matter of the Contract Documents or written Modifications. Owner and Contractor represent and agree that, except as otherwise expressly provided in the Contract Documents, they are entering into the Contract Documents and any subsequent written Modification in sole reliance upon the information set forth or referenced in the

Contract Documents or Contract Modifications; the parties are not and will not rely on any other information, which shall be inadmissible in any proceeding to enforce these documents.

- B. Either party's waiver of any breach or failure to enforce any of the terms, covenants, conditions or other provisions of the Contract Documents at any time shall not in any way affect, limit, modify or waive that party's right thereafter to enforce or compel strict compliance with every term, covenant, condition or other provision hereof, any course of dealing or custom of the trade or oral representations notwithstanding.
- C. Neither acceptance of the whole or any part of Work by Owner nor any verbal statements on behalf of Owner or its authorized agents or representatives shall operate as a waiver or modification of any provision of the Contract Documents, or of any power reserved to Owner herein nor any right to damages provided in the Contract Documents.

14.9 Interpretation

- A. Should any part, term or provision of this Agreement or any of the Contract Documents, or any document required herein or therein to be executed or delivered, be declared invalid, void or unenforceable, all remaining parts, terms and provisions shall remain in full force and effect and shall in no way be invalidated, impaired or affected thereby. If the provisions of any law causing such invalidity, illegality or unenforceability may be waived, they are hereby waived to the end that this Agreement and the Contract Documents may be deemed valid and binding agreements, enforceable in accordance with their terms to the greatest extent permitted by applicable law. In the event any provision not otherwise included in the Contract Documents is required to be included by any applicable law, that provision is deemed included herein by this reference (or, if such provision is required to be included in any particular portion of the Contract Documents, that provision is deemed included in that portion).
- B. Contract Documents shall not be construed to create a contractual relationship of any kind between (1) Project Manager or any Owner's representative and Contractor; (2) Owner and/or its Representatives and a Subcontractor, sub-Subcontractor, or supplier of any Project labor, materials, or equipment; or (3) between any persons or entities other than Owner and Contractor.

14.10 Patents

A. Fees or claims for any patented invention, article or arrangement that may be used upon or in any manner connected with performance of the Work or any part thereof shall be included in the Bid price for doing the Work. Contractor shall defend, indemnify and hold harmless Owner and each of its officers, employees, consultants and agents, including, but not limited to, the Board and each Owner's Representative, from all damages, claims for damages, costs or expenses in law or equity, including attorney's fees, arising from or relating to any claim that any article supplied or to be supplied under the Contract Documents infringes on the patent rights, copyright, trade name, trademark, service mark, trade secret or other intellectual property right of any person or persons or that the person or entity supplying the article does not have a lawful right to sell the same. Such costs or expenses for which Contractor agrees to indemnify and hold harmless the above indemnities include but are not limited to any and all license fees, whether such fees are agreed by any indemnitee or ordered by a court or administrative body of any competent jurisdiction.

14.11 Substitution For Patented And Specified Articles

A. Except as noted specifically in the instructions to Bidders or in Contract Documents, whenever in Specifications, material or process is designated by patent or proprietary name or by name of manufacturer, such designation shall be deemed to be used for purpose of facilitating description of material and process desired, and shall be deemed to be followed by the words "or Approved Equal" and Contractor may offer any substitute material or process that Contractor considers "equal" in every respect to that so designated and if material or process offered by Contractor is, in opinion of Owner, Equal in every respect to that so designated, its use will be approved. However, Contractor may utilize this right only by timely submitting Document 01 6000-A (Substitution Request Form) as provided in Document 00 2113 (Instructions to Bidders). A substitution will be approved only if it is a true "or equal" item in every aspect of its design and quality, including but not limited to its dimensions, weights, materials of construction, service

requirements, durability, functioning, impact on contiguous construction elements, overall schedule and design.

14.12 Interest Of Public Officers

A. No representative, officer, or employee of Owner no member of the governing body of the locality in which the Project is situated, no member of the locality in which Owner was activated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the Project, during the tenure of the official or for one year thereafter, shall, as principal, agent, attorney or otherwise, be directly or indirectly interested, in the Contract Documents or the proceeds thereof.

14.13 Limit Of Liability

A. OWNER, AND EACH OF ITS OFFICERS, BOARD MEMBERS, EMPLOYEES, CONSULTANTS AND AGENTS INCLUDING, BUT NOT LIMITED TO, PROJECT MANAGER AND EACH OTHER OWNER REPRESENTATIVE, SHALL HAVE NO LIABILITY TO CONTRACTOR FOR SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, EXCEPT TO THE LIMITED EXTENT THAT THESE CONTRACT DOCUMENTS OR APPLICABLE PUBLIC CONTRACTING STATUTES MAY SPECIFY THEIR RECOVERY.

ARTICLE 15 - WORKING CONDITIONS AND PREVAILING WAGES

15.1 Use Of Site/Sanitary Rules

- A. All portions of the Work shall be maintained at all times in neat, clean and sanitary condition. Contractor shall furnish toilets for use of Contractor's and Subcontractors' employees on the Site where needed, and their use shall be strictly enforced. All toilets shall be properly secluded from public observation, and shall be located, constructed and maintained subject to Owner's approval.
- B. Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Site and land areas identified in and permitted by Contract Documents and other land and areas permitted by applicable laws and regulations, rights of way, permits and easements or as designated by Owner, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, any improvement located thereon, or to Owner or occupant thereof resulting from the performance of Work.
- C. During the progress of the Work, Contractor shall keep the Site and the Project free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, Contractor shall clean the site, remove all waste materials, rubbish and debris from and about the Site as well as all tools, appliances, construction equipment and machinery and surplus materials. Contractor shall leave the premises clean and ready for occupancy by Owner at Completion of Work. Contractor shall restore to original condition all property not designated for alteration by Contract Documents.
- D. Contractor shall not load nor permit any part of any structure or pavement to be loaded in any manner that will endanger the structure or pavement, nor shall Contractor subject any part of Work or adjacent property to stresses or pressures that will endanger it. Contractor shall conduct all necessary existing conditions investigation regarding structural, mechanical, electrical or any other system existing, shall perform Work consistent with such existing conditions, and shall have full responsibility for insufficiencies or damage resulting from insufficiencies of existing systems, equipment or structures to accommodate performing the Work.
- E. No person performing any service or providing any goods designated under this Contract shall participate in any political or religious activity on County time or in any manner involving the use of county property or expenditure of public funds nor conveying the implication of County endorsement or support for a candidate for local, state, or federal office. Notwithstanding the foregoing, nothing in this Contract shall be construed to unlawfully limit an individual's Constitutional rights. Accordingly, the limitations contained in this Subsection 15.1(E) are for the sole purpose of preventing proselytizing and politicking while engaged in the performance of services under this Contract.

15.2 Protection Of Work, Persons, And Property

- A. Contractor shall be responsible for initiating, maintaining and supervising all safety and site security precautions and programs in connection with Work, and shall develop and implement a site security and safety plan throughout construction. Contractor shall comply with all safety requirements specified in any safety program established by Owner, or required by state, federal or local laws and ordinances. Contractor shall be responsible for remedying all theft or damage to Work, property or structures, and all injuries to persons, either on the Site or constituting the Work (e.g., materials in transit), arising from the performance of Work of the Contract Documents from a cause.
- B. Contractor shall comply with all applicable laws and regulations of any public body having jurisdiction for safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owners of adjacent property and of Underground Facilities and utility Owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property.
- C. Contractor shall remedy all damage, injury or loss to any property referred to above in this Article, caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, supplier, or any other person or organization directly or indirectly employed by any of them to perform or furnish any Work or anyone for whose acts any of them may be liable. Contractor's duties and responsibility for safety and for protection of Work shall continue until such time as all the Work is completed and Final Acceptance of the Work. Owner and its agents do not assume any responsibility for collecting any indemnity from any person or persons causing damage to Contractor's Work.
- D. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.
- E. Owner may, at its option, retain such moneys due under the Contract Documents as Owner deems necessary until any and all suits or claims against Contractor for injury to persons or property shall be settled and Owner receives satisfactory evidence to that effect.
- F. Work within the right-of-way lines of the city and/or Owner and/or State shall be done in accordance with the standards and specifications of the controlling agency. Permit for such work shall be obtained and paid for by the Contractor before executing the work within such right-of-ways.

15.3 Responsibility For Safety And Health

- A. Contractor shall ensure that its and each tier of Subcontractors' employees, agents and invitees comply with applicable health and safety laws while at the Site. These laws include the Occupational Safety and Health Act of 1970 and rules and regulations issued pursuant thereto, and Owner's safety regulations as amended from time to time. Contractor shall comply with all Owner directions regarding protective clothing and gear.
- B. Contractor shall be fully responsible for the safety of its and its Subcontractors' employees, agents and invitees on the Site. Contractor shall notify Owner, in writing, of the existence of hazardous conditions, property or equipment at the Site that are not under Contractor's control. Contractor shall be responsible for taking all the necessary precautions against injury to persons or damage to the property of Contractor, Subcontractors or persons from recognized hazards until the responsible party corrects the hazard.
- C. Contractor shall confine all persons acting on its or its Subcontractors' behalf to that portion of the Site where Work under the Contract Documents is to be performed, Owner-designated routes for ingress and egress thereto, and any other Owner-designated area. Except those routes for ingress and egress over which Contractor has no right of control, within such areas, Contractor shall provide safe means of access to all places at which persons may at any time have occasion to be present.

15.4 Emergencies

In emergencies affecting the safety or protection of persons or Work or property at the Site or adjacent thereto, Contractor, without special instruction or authorization from Owner, is obligated to act to prevent threat and damage, injury or loss, until directed otherwise by Owner. Contractor shall give Owner prompt written notice of actions taken due to emergency.

15.5 Use Of Roadways And Walkways

A. Contractor shall not unnecessarily interfere with use of any roadway, walkway or other facility for vehicular or pedestrian traffic. Before beginning any interference and only with Owner's prior concurrence, Contractor may provide detour or temporary bridge for traffic to pass around or over the interference, which Contractor shall maintain in satisfactory condition as long as interference continues. Unless otherwise provided in the Contract Documents, Contractor shall bear the cost of these temporary facilities.

15.6 Nondiscrimination

A. No person or entity shall discriminate in the employment of persons upon public works because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sexual preference, or gender of such persons, except as provided in Section 12940 of the California Government Code. Every contractor for public works violating the provisions of Section 1735 of the California Labor Code is subject to all the penalties imposed for a violation of Chapter 1, Part 7, Division 2 of the California Labor Code.

15.7 Prevailing Wages And Working Hours

- A. Contractor shall pay to persons performing labor in and about Work provided for in the Contract Documents an amount equal to or more than the general prevailing rate of per diem wages for (1) work of a similar character in the locality in which the Work is performed and (2) legal holiday and overtime work in said locality. The per diem wages shall be an amount equal to or more than the stipulated rates contained in a schedule that has been ascertained and determined by the Director of the State Department of Industrial Relations and Owner to be the general prevailing rate of per diem wages for each craft or type of workman or mechanic needed to execute this Contract. Contractor shall also cause a copy of this determination of the prevailing rate of per diem wages to be posted at each Site. The Director's schedule of prevailing rates is on file and open for inspection at County of Kern, General Services Division of the County Administrative Office, 1115 Truxtun Avenue, Third Floor, Bakersfield, California 93301, and is incorporated herein by this reference.
- B. Contractor shall forfeit, as a penalty to Owner, Fifty Dollars (\$50.00) for each laborer, workman, or mechanic employed in performing labor in and about the Work provided for in the Contract Documents for each Day, or portion thereof, that such laborer, workman or mechanic is paid less than the said stipulated rates for any Work done under the Contract Documents by him or her or by any Subcontractor under him or her, in violation of Articles 1 and 2 of Chapter 1 of Part 7 of Division II of the California Labor Code. The sums and amounts which shall be forfeited pursuant to this Paragraph and the terms of the California Labor Code shall be withheld and retained from payments due to Contractor under the Contract Documents, pursuant to this Document 00 7200 and the California Labor Code, but no sum shall be so withheld, retained or forfeited except from the final payment without a full investigation by either the State Department of Industrial Relations or by Owner. The Labor Commissioner pursuant to California Labor Code §1775 shall determine the final amount of forfeiture.
- C. Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of Work or labor on Work provided for in the Contract, provision that Subcontractor shall pay persons performing labor or rendering service under subcontract or other arrangement not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the Work is performed, and not less than the general prevailing rate of per diem wages for holiday and overtime work fixed in the California Labor Code.
- D. Contractor stipulates that it shall comply with all applicable wage and hour laws, including without limitation, California Labor Code §§ 1776 and 1810-1815. Failure to so comply shall constitute a default under this Contract.

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- E. Contractor and its Subcontractors shall be responsible for compliance with Labor Code §§ 1810-1815.
 - 1. Eight hours of labor performed in execution of the Contract constitutes a legal day's work. The time of service of any workman employed on the Project is limited and restricted to 8 hours during any one calendar day, and 40 hours during any one calendar week.
 - 2. Contractor and its Subcontractors shall keep an accurate record showing the name of and actual hours worked each calendar day and each calendar week by each worker employed by him or her in connection with the Project. The record shall be kept open at all reasonable hours for inspection by Owner and the Division of Labor Standards Enforcement.
 - 3. Contractor or its Subcontractors shall, as a penalty to Owner, forfeit twenty-five dollars (\$25) for each worker employed in the execution of the Contract Documents by the respective Contractor or Subcontractor for each calendar day during which the worker is required or permitted to work more than 8 hours in any one calendar day and 40 hours in any one calendar week in violation of the provisions of Labor Code §§ 1810-1815.
 - 4. Work performed on the Project by employees of Contractor or its Subcontractors in excess of 8 hours per day, and 40 hours during any one week, shall be permitted upon compensation for all hours worked in excess of 8 hours per day at not less than 1 1/2 times the basic rate of pay.
- F. Contractor and its Subcontractors shall be responsible for compliance with Labor Code Section 1776.
 - 1. Contractor and Subcontractors must keep accurate payroll records, 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 Work of the Contract Documents. Each payroll record shall contain or be verified by a written declaration as required by Labor Code Section 1776.
 - 2. The payroll records enumerated above must be certified and shall be available for inspection at all reasonable hours at the principal office of the Contractor as required by Labor Code Section 1776.
 - a. Contractor shall inform Owner of the location of records enumerated above, including the street address, city and county, and shall, within five (5) Working Days, provide a notice of a change of location and address.
 - b. Contractor or Subcontractor has ten (10) Working Days in which to comply subsequent to receipt of a written notice requesting the records enumerated above. In the event that the Contractor or Subcontractor fails to comply with the ten-day period, he or she shall, as a penalty to Owner on whose behalf the contract is made or awarded, forfeit \$25.00 for each calendar day, or portion thereof, for each worker, until strict compliance is effectuated. Upon the request of the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement, these penalties shall be withheld from progress payments then due. Contractor is not subject to a penalty assessment pursuant to this Paragraph due to the failure of a Subcontractor to comply with this Paragraph.
 - 3. Contractor shall also deliver certified payrolls to Owner with each Application for Payment as set forth above in this Document 00 7200 (General Conditions).
 - 4. This project may be subject to monitoring and enforcement by the Department of Industrial Relations (DIR), including the obligation to submit certified payroll records directly to the DIR Compliance Monitoring Unit (CMU) at least monthly in a format prescribed by the Labor Commissioner. The contractor must post job site notices as prescribed by DIR regulation.

15.8 Environmental Controls

A. Contractor shall comply with all rules, regulations, ordinances, and statutes that apply to any Work performed under the Contract Documents including, without limitation, any toxic, water, stormwater management and soil pollution controls and air pollution controls specified in California Government Code §11017. Contractor shall be responsible for insuring that Contractor's Employees, Subcontractors, and the public are protected from exposure to airborne hazards or contaminated water, soil, or other toxic materials used during or generated by activities on the Site or associated with the Project.

15.9 Shoring Safety Plan

- A. Any conflict between this Paragraph and Division 2 of the Specifications shall be resolved in favor of the most stringent requirement.
- B. At least five (5) Working Days in advance of any excavation five feet or more in depth, Contractor shall submit to Owner a detailed plan showing the shoring, bracing and sloping design (including calculations) and other provisions to be made for worker protection from the hazard of caving ground during the excavation, as required by California Labor Code §6705. A civil or structural engineer registered in California shall prepare and sign any plan that varies from the shoring system standards established by the State Construction Safety Orders.
- C. During the course of Work, Contractor shall be responsible for determining where sloping, shoring, and/or bracing is necessary and the adequacy of the design, installation, and maintenance of all shoring and bracing for all excavation, including any excavation less than five feet in depth. Contractor will be solely responsible for any damage or injuries that may result from excavating or trenching. Owner's acceptance of any drawings showing the shoring or bracing design or Work schedule shall not relieve Contractor of its responsibilities under this Paragraph.
- D. Appoint a qualified supervisory employee who shall be responsible to determine the sloping or shoring system to be used depending on local soil type, water table, stratification, depth, etc.

15.10 Required Registration with the State of California Department of Industrial Relations

A. Pursuant to California Labor Code 1725.5, all contractors and subcontractors must be registered with the Department of Industrial Relations (DIR) in order to be qualified to bid on, be listed in a bid proposal, subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any public work contract. Detailed information about contractor's responsibilities and online registration may be obtained on the State of California Department of Industrial Relations, Public Works website, http://www.dir.ca.gov/Public-Works/PublicWorks.html

END OF DOCUMENT

DOCUMENT 00 7280 APPRENTICESHIP PROGRAM

ARTICLE 1 - COMPLIANCE REQUIRED

1.01 Contractor and Subcontractors shall comply with the requirements of California Labor Code §§1776, 1777.5, and 1777.6 concerning the employment of apprentices by Contractor or Subcontractors. Willful failure to comply may result in penalties, including loss of the right to Bid on or receive public works contracts.

ARTICLE 2 - CERTIFICATION OF APPROVAL

- **2.01** California Labor Code §1777.5, as amended, requires a Contractor or Subcontractor employing tradespersons in any apprenticeable occupation to apply to the joint apprenticeship committee nearest the site of a public works project and which administers the apprenticeship program in that trade for a certification of approval. The certificate shall also fix the ratio of apprentices to journeypersons that will be used in performance of the Contract. The ratio of work performed by apprentices to journeypersons in such cases shall not be less than one *hour* of apprentices work for every five *hours* of labor performed by journeypersons (the minimum ratio for the land surveyor classification shall not be less than one apprentice for each five journeypersons), except:
 - A. When unemployment for the previous three month period in the area exceeds an average of 15 percent;
 - B. When the number of apprentices in training in the area exceeds a ratio of one to five;
 - C. When a trade can show that it is replacing at least 1/30 of its membership through apprenticeship training on an annual basis state-wide or locally; or
 - D. Assignment of an apprentice to any work performed under a public works contract would create a condition which would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large or if the specific task to which the apprentice is to be assigned is of such a nature that training cannot be provided by a journeyperson.

ARTICLE 3 - FUND CONTRIBUTIONS

3.01 Contractor is required to make contributions to funds established for administration of apprenticeship programs if Contractor employs registered apprentices or journeypersons in any apprenticeable trade on such contracts and if other contractors on the public works site are making such contributions.

ARTICLE 4 - APPRENTICESHIP STANDARDS

4.01 Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of the California Department of Industrial Relations, or from the Division of Apprenticeship Standards and its branch offices.

END OF DOCUMENT

DOCUMENT 00 7300 SUPPLEMENTARY CONDITIONS – INSURANCE AND INDEMNIFICATION

ARTICLE 1 - INSURANCE

1.01 At or before the date specified in Document 00 2113 (Instructions to Bidders), Contractor, in order to protect the County of Kern ("Owner") and its board members, officials, agents, officers, and employees against all claims and liability for death, injury, loss and damage as a result of Contractor's actions in connection with the performance of Contractor's obligations, as required in the Contract Documents, shall secure and maintain insurance as described below. Contractor shall not perform any work under the Contract Documents until Contractor has obtained all insurance required under this section and the required certificates of insurance and all required endorsements have been filed with Owner's authorized insurance representative. Receipt of evidence of insurance that does not comply with all applicable insurance requirements shall not constitute a waiver of the insurance requirements set forth herein. The required documents must be signed by the authorized representative of the insurance company shown on the certificate. Upon request, Contractor shall supply proof that such person is an authorized representative thereof, and is authorized to bind the named underwriter(s) and their company to the coverage, limits and termination provisions shown thereon. Contractor shall promptly deliver a certificate of insurance, and all required endorsements, with respect to each renewal policy, as necessary to demonstrate the maintenance of the required insurance coverage for the term specified herein. Such certificates and endorsements shall be delivered prior to the expiration date of any policy and bear a notation evidencing payment of the premium thereof if so requested. Contractor shall immediately pay any deductibles and self-insured retentions under all required insurance policies upon the submission of any claim by Contractor or Owner as an additional insured.

Contractor shall maintain in full force and effect, at all times during the term of this Agreement, the following insurance:

A. <u>Workers' Compensation and Employers Liability Insurance Requirement</u> -- In the event Contractor has employees who may perform any services pursuant to the Contract Documents, Contractor shall submit written proof that Contractor is insured against liability for workers' compensation in accordance with the provisions of section 3700 of the California Labor Code.

In signing the Agreement, Contractor makes the following certification, required by section 1861 of the 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 workers' compensation or to undertake selfinsurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work pursuant to the Contract Documents.

Contractor shall require any sub-contractors to provide workers' compensation for all of the subcontractors' employees, unless the sub-contractors' employees are covered by the insurance afforded by Contractor. If any class of employees engaged in work or services performed under this Agreement is not covered by California Labor Code section 3700, Contractor shall provide and/or require each sub-contractor to provide adequate insurance for the coverage of employees not otherwise covered.

Contractor shall also maintain employer's liability insurance with limits of one million dollars (\$1,000,000) for bodily injury or disease.

B. <u>General Liability Insurance Requirements</u> – Contractor shall maintain in full force and effect, at all times during the term of the Agreement Commercial General Liability Insurance including, but not

limited to, Contractual Liability Insurance (specifically concerning the indemnity provisions of the Contract Documents), Products-Completed Operations Hazard, Personal Injury (including bodily injury and death), and Property Damage for liability arising out of Contractor's performance of work under the Agreement. Contractor shall maintain the Products-Completed Operations Hazard coverage for the longest period allowed by law following termination of the Agreement. The amount of said insurance coverage required by the Contract Documents shall be the policy limits, which shall be at least two million dollars (\$2,000,000) each occurrence and four million dollars (\$4,000,000) aggregate.

- C. <u>Automobile Liability Insurance Requirements</u> Contractor shall maintain Automobile Liability Insurance against claims of Personal Injury (including bodily injury and death) and Property Damage covering any vehicle and/or all owned, leased, hired and non-owned vehicles used in the performance of services pursuant to the Contract Documents with coverage equal to the policy limits, which shall be at least one million dollars (\$1,000,000) each occurrence.
- D. <u>Contractor's Pollution Legal Liability Insurance Requirements</u>, for liability arising out of, or in connection with, the performance of all required services under this Agreement, with coverage equal to the policy limits, which shall be at least one million dollars (\$1,000,000) per occurrence and two million dollars (\$2,000,000) aggregate with at least 72 hours of emergency response dedicated coverage in addition to covering third party claims for bodily injury and property damage, remediation costs, civil fines and penalties.
- 1.02 The Commercial General Liability and Automobile liability Insurance required in sub-paragraphs B. and C. above shall include an endorsement naming the County of Kern and County's board members, officials, officers, agents, employees and volunteers as additional insureds for liability arising out of the Agreement and any operations related thereto. Said endorsement shall be provided using <u>one</u> of the following three options: (i) on ISO form CG 20 10 11 85; or (ii) on ISO form CG 20 37 10 01 <u>plus</u> either ISO form CG 20 10 10 01 or CG 20 33 10 01; or (iii) on such other forms which provide coverage at least equal to or better than form CG 20 10 11 85.
- **1.03** The Contractor may use Umbrella or Excess Policies to provide the liability limits as required in this agreement. This form of insurance will be acceptable provided that all of the Primary and Umbrella or Excess Policies shall provide all of the insurance coverages herein required, including, but not limited to, primary and non-contributory, additional insured, Self-Insured Retentions (SIRs), indemnity, and defense requirements. The Umbrella or Excess policies shall be provided on a true "following form" or broader coverage basis, with coverage at least as broad as provided on the underlying Commercial General Liability insurance. No insurance or self-insurance maintained by the County, whether primary or excess, and which also apply to a loss covered hereunder, shall be called upon to contribute to a loss.
- **1.04** Any self-insured retentions in excess of \$100,000 must be declared on the Certificate of Insurance or other documentation provided to Owner and must be approved by the Kern County Risk Manager.
- **1.05** If any of the insurance coverages required under the Contract Documents is written on a claimsmade basis, Contractor, at Contractor's option, shall either (i) maintain said coverage for at least five (5) years following the termination of this Agreement with coverage extending back to the effective date of this Agreement; or (ii) purchase an extended reporting period of not less than five (5) years following the termination of the Agreement.
- **1.06** <u>Cancellation of Insurance</u> -- The above stated insurance coverages required to be maintained by Contractor shall be maintained until the completion of all of Contractor's obligations under the Contract Documents except as otherwise indicated herein. Each insurance policy supplied by Contractor shall not be suspended, voided, modified, canceled, or reduced in coverage or in limits except after ten (10) days notice by Contractor in the case of non-payment of premiums, or on thirty (30) days prior written notice in all other cases. This notice requirement does not waive the

insurance requirements stated herein. Contractor shall immediately obtain replacement coverage for any insurance policy that is terminated, canceled, non-renewed, or whose policy limits have been exhausted or upon insolvency of the insurer that issued the policy.

- **1.07** All insurance shall be issued by a company or companies admitted to do business in California and listed in the current "Best's Key Rating Guide" publication with a minimum rating of A-; VII. Any exception to these requirements must be <u>pre-approved</u> by the County Risk Manager.
- **1.08** If Contractor is, or becomes during the term of the Agreement, self-insured or a member of a self-insurance pool, Contractor shall provide coverage equivalent to the insurance coverages and endorsements required above. Owner will not accept such coverage unless Owner determines, in its sole discretion and by written acceptance, that the coverage proposed to be provided by Contractor is equivalent to the above-required coverages.
- **1.09** All insurance afforded by Contractor pursuant to the Contract Documents shall be primary to and not contributing to any other insurance or self-insurance maintained by Owner. An endorsement shall be provided on all policies which shall waive any right of recovery (waiver of subrogation) against Owner. A waiver of right of recovery (waiver of subrogation) is only required when Contractor's personnel deliver services or perform service for the County while on County property.
- **1.10** Insurance coverages in the minimum amounts set forth herein shall not be construed to relieve Contractor for any liability, whether within, outside, or in excess of such coverage, and regardless of solvency or insolvency of the insurer that issues the coverage; nor shall it preclude Owner from taking such other actions as are available to it under any other provision of the Contract Documents or otherwise in law.
- **1.11** Failure by Contractor to maintain all such insurance in effect at all times required by the Contract Documents shall be a material breach of the Contract by Contractor. Owner, at its sole option, may terminate the Contract and obtain damages from Contractor resulting from said breach. Alternatively, Owner may purchase such required insurance coverage, and without further notice to Contractor, Owner shall deduct from sums due to Contractor any premiums and associated costs advanced or paid by Owner for such insurance. If the balance of monies obligated to Contractor pursuant to the Contract are insufficient to reimburse Owner for the premiums and any associated costs, Contractor agrees to reimburse Owner for the premiums and pay for all costs associated with the purchase of said insurance. Any failure by Owner to take this alternative action shall not relieve Contractor of its obligation to obtain and maintain the insurance coverages required by the Contract Documents.
- **1.12** If injury occurs to any employee of Contractor, Subcontractor or sub-subcontractor for which the employee, or the employee's dependents in the event of employee's death, is entitled to compensation from Owner under provisions of the Workers' Compensation Insurance and Safety Act, as amended, or for which compensation is claimed from Owner, Owner may retain out of sums due Contractor under the Contract Documents, an amount sufficient to cover such compensation, as fixed by the Workers' Compensation Insurance and Safety Act, as amended, until such compensation is paid, or until it is determined that no compensation is due. If Owner is compelled to pay compensation, Owner may, in its discretion, either deduct and retain from the Contract Sum the amount so paid, or require Contractor to reimburse Owner.
- **1.13** Nothing herein shall be construed as limiting in any way the extent to which Contractor or any Subcontractor may be held responsible for payment of damages resulting from their operations.
- **1.14** All Subcontractors shall maintain the same insurance required to be maintained by Contractor with respect to their portions of the Work unless otherwise indicated in the Contract Documents, and Contractor shall cause the Subcontractors to furnish proof thereof to Owner within ten days

of Owner's request.

ARTICLE 2 - RESPONSIBILITY OF CONTRACTOR AND INDEMNIFICATION

- **2.01** Owner and each of its officers, employees, consultants and agents including, but not limited to, the Board, Project Manager and each Owner's Representative, shall not be liable or accountable in any manner for loss or damage that may happen to any part of the Work; loss or damage to materials or other things used or employed in performing the Work; injury, sickness, disease, or death of any person; or damage to property resulting from any cause whatsoever except their sole negligence, willful misconduct or active negligence, attributable to performance or character of the Work, and Contractor releases all of the foregoing persons and entities from any and all such claims.
- **2.02** To the furthest extent permitted by law (including without limitation California Civil Code §2782), Contractor shall assume defense of, and indemnify and hold harmless, Owner and each of its officers, employees, consultants and agents, including but not limited to the Board, Project Manager and each Owner's Representative, from claims, suits, actions, losses and liability of every kind, nature and description, including but not limited to claims and fines of regulatory agencies and attorney's fees of County Counsel and counsel retained by Owner, expert fees, costs of staff time, and investigation costs, directly or indirectly arising out of, connected with or resulting from performance of the Work, failure to perform the Work, or condition of the Work which is caused in whole or part by any act or omission of Contractor, Subcontractors, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, resulting from any cause whatsoever.
- **2.03** With respect to third-party claims against Contractor, Contractor waives any and all rights to any type of express or implied indemnity against Owner and each of its officers, employees, consultants and agents including, but not limited to Owner, the Board, Project Manager and each Owner's Representative. Owner shall provide timely notice to Contractor of any third-party claim relating to the Contract Documents, in accordance with Section 9201 of the California Public Contract Code.
- **2.04** Approval or purchase of any insurance contracts or policies shall in no way relieve from liability nor limit the liability of Contractor, its Subcontractors of any tier, or the officers or agents of any of them.
- **2.05** To the furthest extent permitted by law (including, without limitation, Civil Code §2782), the indemnities, releases of liability and limitations of liability, claims procedures, and limitations of remedy expressed throughout the Contract Documents shall apply even in the event of breach of Contract, negligence (active or passive), fault or strict liability of the party(ies) indemnified, released, or limited in liability, and shall survive the termination, rescission, breach, abandonment, or completion of the Work or the terms of the Contract Documents. If Contractor fails to perform any of these defense or indemnity obligations, Owner may in its discretion back charge Contractor for Owner's costs and damages resulting therefrom and withhold such sums from progress payments or other Contract moneys which may become due.
- **2.06** The indemnities in the Contract Documents shall not apply to any indemnified party to the extent of its sole negligence or willful misconduct; nor shall they apply to Owner or other indemnified party to the extent of its active negligence.

END OF DOCUMENT

ige 2.	Name		
s on pa	Business name, if different from above		
r type	Check appropriate box: Individual/ Sole proprietor Corporation Partnership Other	•	Exempt from backup withholding
Print c : Instru	Address (number, street, and apt. or suite no.)	Requester's name and	address (optional)
pecific	City, state, and ZIP code		
See S	List account number(s) here (optional)		
Part	Taxpayer Identification Number (TIN)		

Enter your TIN in the appropriate box. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on	Social security number
page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see How to get a TIN on page 3.	or
	Employer identification number

Note: If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Part II	Certification					

Under penalties of perjury, I certify that:

- 1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
- 2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
- 3. I am a U.S. person (including a U.S. resident alien).

Certification instructions. You must cross out item **2** above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item **2** does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the Certification, but you must provide your correct TIN. (See the instructions on page 4.)

Sign Here	Signature of
11010	U.S. person

Purpose of Form

A person who is required to file an information return with the IRS, must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

U.S. person. Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),

2. Certify that you are not subject to backup withholding, or

 $\ensuremath{\textbf{3.}}$ Claim exemption from backup withholding if you are a U.S. exempt payee.

Note: If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Foreign person. If you are a foreign person, use the appropriate Form W-8 (see **Pub. 515**, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Date 🕨

Nonresident alien who becomes a resident alien.

Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the recipient has otherwise become a U.S. resident alien for tax purposes.

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If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.

2. The treaty article addressing the income.

3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.

4. The type and amount of income that qualifies for the exemption from tax.

5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a **nonresident alien or a foreign entity** not subject to backup withholding, give the requester the appropriate completed Form W-8.

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 30% of such payments (29% after December 31, 2003; 28% after December 31, 2005). This is called "backup withholding." Payments that may be subject to backup withholding include interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will **not** be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester, or

2. You do not certify your TIN when required (see the Part II instructions on page 4 for details), or

3. The IRS tells the requester that you furnished an incorrect TIN, or

4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or

5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See the instructions below and the separate **Instructions for the Requester of Form W-9**.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of Federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Name

If you are an individual, you must generally enter the name shown on your social security card. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name.

If the account is in joint names, list first, and then circle, the name of the person or entity whose number you entered in Part I of the form.

Sole proprietor. Enter your **individual** name as shown on your social security card on the "Name" line. You may enter your business, trade, or "doing business as (DBA)" name on the "Business name" line.

Limited liability company (LLC). If you are a single-member LLC (including a foreign LLC with a domestic owner) that is disregarded as an entity separate from its owner under Treasury regulations section 301.7701-3, enter the owner's name on the "Name" line. Enter the LLC's name on the "Business name" line.

Other entities. Enter your business name as shown on required Federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the "Business name" line.

Note: You are requested to check the appropriate box for your status (individual/sole proprietor, corporation, etc.).

Exempt From Backup Withholding

If you are exempt, enter your name as described above and check the appropriate box for your status, then check the "Exempt from backup withholding" box in the line following the business name, sign and date the form.

Generally, individuals (including sole proprietors) are not exempt from backup withholding. Corporations are exempt from backup withholding for certain payments, such as interest and dividends.

Note: If you are exempt from backup withholding, you should still complete this form to avoid possible erroneous backup withholding.

Exempt payees. Backup withholding is **not required** on any payments made to the following payees:

1. An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2);

2. The United States or any of its agencies or instrumentalities;

3. A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities;

4. A foreign government or any of its political subdivisions, agencies, or instrumentalities; or

5. An international organization or any of its agencies or instrumentalities.

Other payees that **may be exempt** from backup withholding include:

6. A corporation;

7. A foreign central bank of issue;

8. A dealer in securities or commodities required to register in the United States, the District of Columbia, or a possession of the United States;

9. A futures commission merchant registered with the Commodity Futures Trading Commission;

10. A real estate investment trust;

11. An entity registered at all times during the tax year under the Investment Company Act of 1940;

12. A common trust fund operated by a bank under section 584(a);

13. A financial institution;

14. A middleman known in the investment community as a nominee or custodian; or

15. A trust exempt from tax under section 664 or described in section 4947.

The chart below shows types of payments that may be exempt from backup withholding. The chart applies to the exempt recipients listed above, **1** through **15**.

If the payment is for	THEN the payment is exempt for
Interest and dividend payments	All exempt recipients except for 9
Broker transactions	Exempt recipients 1 through 13. Also, a person registered under the Investment Advisers Act of 1940 who regularly acts as a broker
Barter exchange transactions and patronage dividends	Exempt recipients 1 through 5
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt recipients 1 through 7 ²

¹ See Form 1099-MISC, Miscellaneous Income, and its instructions.

² However, the following payments made to a corporation (including gross proceeds paid to an attorney under section 6045(f), even if the attorney is a corporation) and reportable on Form 1099-MISC are **not exempt** from backup withholding: medical and health care payments, attorneys' fees; and payments for services paid by a Federal executive agency.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see How to get a TIN below.

If you are a **sole proprietor** and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-owner LLC that is disregarded as an entity separate from its owner (see Limited liability company (LLC) on page 2), enter your SSN (or EIN, if you have one). If the LLC is a corporation, partnership, etc., enter the entity's EIN.

Note: See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local Social Security Administration office or get this form on-line at www.ssa.gov/online/ss5.html. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can get Forms W-7 and SS-4 from the IRS by calling 1-800-TAX-FORM (1-800-829-3676) or from the IRS Web Site at www.irs.gov.

If you are asked to complete Form W-9 but do not have a TIN, write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note: Writing "Applied For" means that you have already applied for a TIN **or** that you intend to apply for one soon.

Caution: A disregarded domestic entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if items 1, 3, and 5 below indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). Exempt recipients, see **Exempt from backup withholding** on page 2.

Signature requirements. Complete the certification as indicated in 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item **2** of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA or Archer MSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
 Two or more individuals (joint account) 	The actual owner of the account or, if combined funds, the first individual on the account ¹
 Custodian account of a minor (Uniform Gift to Minors Act) a. The usual revocable savings trust (grantor is also trustee) 	The minor ² The grantor-trustee ¹
 b. So-called trust account that is not a legal or valid trust under state law 	The actual owner 1
5. Sole proprietorship or single-owner LLC	The owner ³
For this type of account:	Give name and EIN of:
6. Sole proprietorship or single-owner LLC	The owner ³
 A valid trust, estate, or pension trust 	Legal entity ⁴
 Corporate or LLC electing corporate status on Form 8832 	The corporation
 Association, club, religious, charitable, educational, or other tax-exempt organization 	The organization
10. Partnership or multi-member LLC	The partnership
11. A broker or registered nominee	The broker or nominee
12. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name, but you may also enter your business or "DBA" name. You may use either your SSN or EIN (if you have one).

⁴ List first and circle the name of the legal trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.)

Note: If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons who must file information returns with the IRS to report interest, dividends, and certain other income paid to you, mortgage interest you paid, the acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA or Archer MSA. The IRS uses the numbers for identification purposes and to help verify the accuracy of your tax return. The IRS may also provide this information to the Department of Justice for civil and criminal litigation, and to cities, states, and the District of Columbia to carry out their tax laws. We may also disclose this information to other countries under a tax treaty, or to Federal and state agencies to enforce Federal nontax criminal laws and to combat terrorism.

You must provide your TIN whether or not you are required to file a tax return. Payers must generally withhold 30% of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to a payer. Certain penalties may also apply.

DOCUMENT 00 0105

CERTIFICATIONS PAGE

PROJECT TITLE:

CLIENT DEPARTMENT:

LOCATION:

PROJECT NUMBER:

OWNER:

BVARA RPP

General Services

13601 Ironbark RD., Bakersfield, CA 93311

1650.7087-23

COUNTY OF KERN 1115 TRUXTUN AVE., 3RD FLOOR BAKERSFIELD, CA 93301 TEL: 661-868-3000 FAX: 661-868-3109

OWNER PROJECT MANAGER:

Brennan Nettleton 1115 Truxtun Ave. 3rd floor, General Services Dept Bakersfield, CA 93301 Tel: 661-868-3067

CONSULTANT:

Standard Signature OZZBIZQZT Reference Can OF CALLFORNIT	C-35802 REN. 07/31/25 OF CAL IFORM	PROFESSIONAL OBERIO OBERIO No. C87118 No. C87118 CIVIL OF CALIFORN 04/28/25
LANDSCAPE ARCHITECT	ARCHITECT	CIVIL ENGINEER
KTUA 3916 Normal St San Diego, CA 92103	Aquatic Design Group 2226 Faraday Ave. Carlsbad, CA 922008	ANACAPA Engineering and Design 9100 Ming Ave ste. 110 Bakersfield, CA 93311
No. E22957 No. E22957 No. E22957 No. E22957 CIRICA	No. M37567 exp. 9/30/25 PROFESS / 0/44/ CALLED NO. M37567 exp. 9/30/25	
ELECTRICAL ENGINEER	Mechanical Engineer	
ANACAPA Engineering and Design 9100 Ming Ave ste. 110 Bakersfield, CA 93311	Turpin & Rattan Engineering Inc. 4719 Palm Ave. La Mesa, CA 91941	

MASTER SPECIFICATIONS INDEX

BVARA RPP Bakersfield, California

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31 1000 SITE CLEARING	2
312000 EARTH MOVING	. 14

DIVISION 32 - EXTERIOR IMPROVEMENTS

32 1000 BASES AND PAVING632 1123 AGGREGATE BASE COURSES732 1216 ASPHALT PAVING532 1313 CONCRETE PAVING232 1314 SPECIAL CONCRETE FINISHES432 1413.19 PERMEABLE INTERLOCKING UNIT PAVERS932 1723 PAVEMENT MARKINGS332 8000 LANDSCAPE IRRIGATION2032 9000 LANDSCAPE PLANTING30
DIVISION 33 - UTILITIES
33 1000 WATER UTILITIES
DIVISION 34 - TRANSPORTATION
NOT USED
DIVISION 35 - WATERWAY AND MARINE CONSTRUCTION
35 3100 PRE-MANUFACTURED SLOPE PROTECTION
DIVISION 40 - PROCESS INTEGRATION
NOT USED
DIVISION 41 - MATERIAL PROCESSING AND HANDLING EQUIPMENT
NOT USED
DIVISION 42 - PROCESS HEATING, COOLING, AND DRYING EQUIPMENT
NOT USED
DIVISION 43 - PROCESS GAS AND LIQUID HANDLING, PURIFICATION AND STORAGE EQUIPMENT
NOT USED
DIVISION 44 - POLLUTION AND WASTE CONTROL EQUIPMENT

NOT USED

DIVISION 45 - INDUSTRY-SPECIFIC MANUFACTURING EQUIPMENT

NOT USED

DIVISION 46 - WATER AND WASTEWATER EQUIPMENT

NOT USED

DIVISION 48 - ELECTRICAL POWER GENERATION NOT USED

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 1000

SUMMARY OF THE WORK

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes Summary of Work and Work Restrictions including:
 - 1. Work Covered By Contract Documents
 - 2. Deferred Approval Items
 - 3. Base Bid, Alternates, and Allowances
 - 4. Work Under Other Contracts
 - 5. Future Work
 - 6. Work Sequence
 - 7. Work Days and Hours
 - 8. Shutdown for Discovery of Cultural Resources
 - 9. Cooperation of Contractor and Coordination with Other Work
 - 10. Partial Occupancy/Utilization Requirements
 - 11. Contractor Use of Site
 - 12. Air Quality Standards
 - 13. Construction Staking and Monument Protection
 - 14. Protection of Existing Structures and Underground Facilities
 - 15. Permits
 - 16. Owner-Furnished Products

1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work comprises of the construction of the County of Kern's (hereinafter "Owner") BVARA RPP located at 13601 Ironbark RD., Bakersfield, CA 93311. The Work includes, without limitation, This project, in general consists of, but is not limited to, the construction of site utilities, site electrical, picnic area, splashpad, shoreline Improvements, floating docks, dog park, and multi-use trail. Contract Documents fully describe the Work.
- B. The Work of this Contract comprises construction of all the Work indicated, described in the Specifications, or otherwise required by the Contract Documents. Unless provided otherwise in the Contract Documents, all risk of loss to Work covered by Contract Documents shall rest with Contractor until Final Acceptance of the Work. Cost of maintenance of systems and equipment prior to Final Acceptance will be considered as included in prices Bid and no direct or additional payment will be made therefore.
- C. For all Bid items, furnish and install all Work, including connections to existing systems, indicated and described in Specifications and all other Contract Documents. Work and requirements applicable to each individual Bid item, or unit of Work, shall be deemed incorporated into the description of each Bid item (whether Lump Sum or Unit Price). Any Bid item may be deleted from the Work and Contract Sum, in total or in part, prior to or after award of Contract without compensation in any form or adjustment of other Bid items or prices therefore.
- D. Modifications to allowance Work dollar values shall be done as Change Orders and as specified in Section 00 2050 (Modification Procedures). Identify Allowance Items (See Document 00 4100 Bid Form) work on the Progress Schedules and on Applications for Payment. The Amount given on Document 00 4100 (Bid Form) under each Allowance Item is the sum of money set aside for each Allowance Item. These amounts shall be included in the Contract Sum on the Bid Form. If the cost of Work done under any Allowance Item is less than the amount given on the Bid Form under that Allowance Item, the Contract Sum shall be reduced by the difference between the amount given in the Bid Form and the cost of Work actually done.

1.03 DEFERRED APPROVAL ITEMS

- A. Contractor shall coordinate deferred submittal to obtain Shade Structure and Mechanical Room building permit.
- B. Documents for deferred submittal items shall be submitted to the registered design professional in responsible charge who shall review them and forward them to the building official with a notation indicating that the deferred submittal documents have been reviewed and found to be in general conformance to the design of the building.
- C. The deferred submittal items shall not be installed until the deferred submittal documents have been approved by the building official.
- D. Both Shade Structure and Mechanical Room building is under it's own separate permit.

1.04 BASE BID, ALTERNATES, AND ALLOWANCES

- A. Descriptions of Base Bid Item: Provide all necessary machinery, tools, apparatus and other means of construction, and to do all the work and furnish all the materials specified in the contract, in the manner and time therein prescribed, and according to the requirements as therein set forth.
- B. Bid Alternates:
 - a. Add Alternate No. 1: Alternately bid improvement consists of, but are not limited to, the extension of multi-use trail
 - b. Add Alternate No. 2: Alternately bid improvement consists of, but are not limited to, the extension of shoreline improvements
 - c. Add Alternate No. 3: Alternately bid improvement consists of, but are not limited to, the construction of shade structure

1.05 WORK SEQUENCE

- A. Construct Work in stages and at times to accommodate Owner operation requirements during the construction period; coordinate construction schedule and operations with Owner.
- B. Special operational constraints include the following:
 - 1. Coordinate closure of a portion of campground lots and roads during construction with County Project Manager.

1.06 WORK DAYS AND HOURS

- A. Work Days and hours: Monday-Friday inclusive, **7:00 a.m.-5:00 p.m.** local time.
- B. Work at the Site on weekends or holidays is not permitted, unless Contractor requests otherwise from Owner in writing at least 48 hours in advance and Owner approves in its sole discretion. Any work performed outside normal work days and hours will cause the contractor to pay all overtime inspection and testing costs, as determined by the County.
- C. Due to the previously scheduled events at BVARA, the Site will not accessible to contractor between the dates of April 15th 2026 to June 15th 2026. All construction to end prior to April 14th 2026, If for some unforeseen situation this date cannot be met, contractor will demobilize all construction equipment and leave site in clean and usable condition at no additional cost to the County. Site shall be safe for use by the general public. All temp fencing shall be removed. If necessary, construction can be resumed after June 16th 2026

1.07 SHUTDOWN FOR DISCOVERY OF CULTURAL RESOURCES

A. If discovery is made of items of historical archaeological or paleontological interest, immediately cease all Work in the area of discovery. Archaeological indicators may include, but are not limited to, dwelling sites, locally darkened soils, stone implements or other artifacts, fragments of glass or ceramics, animal bones, human bones, and fossils. After cessation of excavation,

immediately contact Owner. Do not resume Work until authorization is received from Owner. When resumed, excavation or other activities shall be as directed by Owner.

1.08 COOPERATION OF CONTRACTOR AND COORDINATION WITH OTHER WORK

- A. Coordinate with Owner and any Owner forces, or other contractors and forces, as required by 00 7200 (General Conditions).
- B. Contractor shall review Contract Documents, submittals, changes, and prepare overlay drawings as necessary to avoid conflicts, errors, omissions and untimely construction.

1.9 PARTIAL OCCUPANCY/UTILIZATION REQUIREMENTS

- A. Allow Owner to take possession of and use any completed or partially completed portion of the Work during the progress of the Work as soon as is possible without interference to the Work.
- B. Possession, use of Work, and placement and installation of equipment by Owner shall not in any way evidence the completion of the Work or any part of it.
- C. Contractor shall not be held responsible for damage to the occupied part of the Work resulting from Owner occupancy.
- D. Make available, in areas occupied, on a 24 hour per day and 7 day per week basis if required, any utility services, Heating, Ventilation, Air Conditioning (HVAC), fire and alarm systems to be put in operation at the time of occupancy.
 - 1. Responsibility for operation and maintenance of said equipment shall remain with Contractor for the duration of the project.
 - 2. Make an itemized list of each piece of equipment so operated with the date operation commences for Owner certification.
 - 3. Itemized list noted above shall be basis for commencement of warranty period for equipment.
 - 4. Owner shall pay for utility cost arising out of occupancy by Owner during construction.
- E. Use and occupancy by Owner prior to acceptance of Work does not relieve Contractor of its responsibility to maintain insurance and bonds required under the Contract until entire Work is completed and accepted by Owner.
- F. Prior to date of recordation of the Notice of Completion, all necessary repairs or renewals in Work or part thereof so used, not due to ordinary wear and tear, but due to Defective materials or workmanship or to operations of Contractor, shall be made at expense of Contractor, as required in Document 00 7200 (General Conditions).
- G. Use by Owner of Work or part thereof as contemplated by this Section 01 1000 shall in no case be construed as constituting acceptance of Work or any part thereof. Such use shall neither relieve Contractor of any responsibilities under Contract, nor act as waiver by Owner of any of the conditions thereof.
- H. Owner may specify in the Contract Documents that portions of the Work, including electrical and mechanical systems or separate structures, shall be completed on dates described in this Section 01 1000, if any, prior to completion of all of the Work. Notify Owner in writing when Contractor considers any such part of the Work ready for its intended use and complete and request Owner to document completion for that part of the Work.

1.10 CONTRACTOR USE OF SITE

- A. Project Site Boundaries: 13601 Ironbark Road, Bakersfield CA, at Campgrounds area. Refer to plans for additional site information. The contractor shall coordinate project fencing, staging and material lay-down areas with County Project Manager.
- B. Confine operations at Site to areas permitted by Contract Documents, permits, ordinances, and laws. Do not unreasonably encumber Site with materials or equipment.
- C. Assume full responsibility for protection and safekeeping of products stored on premises. Move any stored products that interfere with operations of Owner or other contractor.

- D. Coordinate parking, storage, staging, and Work areas with Owner. Owner will designate a storage area for Contractor's equipment and materials. Do not store construction materials within the dripline of any tree.
- E. Prior to commencement of Work or excavation, Contractor and Owner shall jointly survey the area adjacent to the Project area making permanent note and record of such existing damage such as cracks, sags or other similar damage. Contractor shall supplement record with photographs indexed on a key map or drawing. This record and photographs shall serve as a basis for determination of subsequent damage to structures, conditions or other existing improvements due to Contractor's operations. All parties making the survey shall sign the official record of existing damage. Cracks, sags or damage of any nature to the adjacent Project area, not noted in the original survey but subsequently noted, shall be reported immediately to Owner.
- F. The Contractor shall follow all applicable County and local jurisdictional ordinances in force during the duration of this Contract.
- G. It is essential that the Contractor perform the Work with as little interference and disturbance as possible to the surrounding neighborhood.
- H. When suspect materials, outside the scope of Work, are encountered during the Work or restoration process, the Contractor shall immediately contact the Project Manager for evaluation and approval of the methods for dealing with the material.

1.11 AIR QUALITY STANDARDS

- A. Ensure that idling time for all heavy equipment is minimized to reduce on-Site emissions.
- B. Maintain equipment in good mechanical condition.
- C. Cover the loads of trucks hauling dirt.
- D. Limit work generating dust emissions during periods of high winds (greater than 15 miles per hour).
- E. Replace ground cover in disturbed areas as soon as possible.
- F. Enclose, cover, water, or apply soil binders to exposed stockpiles.
- G. Remove earth tracked onto neighboring paved roads at least once daily.
- H. Limit equipment speed to 10 miles per hour in unpaved areas.
- I. Implement SWPPP as required
- J. Follow applicable air district requirements.

1.12 CONSTRUCTION STAKING AND MONUMENT PROTECTION

- A. Contractor shall provide engineering surveys to establish construction stakes that in Owner's judgment are necessary to enable Contractor to proceed with the Work.
- B. Contractor shall be responsible for laying out the Work, shall protect and preserve the established construction stakes and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Whenever Contractor knows or reasonably should know that any Work activity is likely to damage or destroy any construction stakes or property monuments, or require relocation because of necessary changes in grades or locations, provide at least 2 Business Days advance notice to Owner. In any event, notify Owner whenever any construction stakes or property monuments are lost or destroyed or require relocation because of necessary changes in grades or locations. Contractor shall employ a registered professional to replace or repair construction stakes or property monuments at Contractor's expense.
- C. Provide Owner with Contractor's survey staking information in writing within 3 Working Days after it becomes available to Contractor.

1.13 GEOTECHNICAL DATA AND EXISTING CONDITIONS

A. <u>Available Documentation</u>: In accordance with, and subject to, the provisions of Document 00 3100 (Geotechnical Data and Existing Conditions), the following documentation is available for review. This information is not part of the Contract Documents.

1. Geotechnical Investigation FOR THE BUENA VISTA AQUATIC RECREATIONAL AREA 35.238589, -119.303594 DUSTIN ACRES, CA SOILS ENGINEERING, INC. File 23-18994 Dated: August 16, 2023 by Soils Engineering, INC (SEI)

1.14 PROTECTION OF EXISTING STRUCTURES AND UNDERGROUND FACILITIES

A. The Drawings may indicate existing above- and below-grade structures, drainage lines, storm drains, sewers, water lines, gas lines, electrical lines, hot water lines, and other similar items and Underground Facilities that are known to Owner. At least 2 Business Days, or as otherwise noted, prior to commencement of excavation, notify the owners of the following Underground Facilities in addition to contacting Underground Service Alert.:

1. Power: PG&E

Account Rep: Anita Maxie 661-398-5965 661-342-8138 amj3@pge.com

2. Water: West Kern Water District

Address: 800 Kern St, Taft, CA 93268 Office: 661-763-3151

- B. Attention is directed to power and telephone lines where overhead service to a structure, known to receive service, does not exist, then underground service shall be assumed to exist.
- C. Perform pot-holing by hand within 24 inches (in any direction) of the Underground Facilities. This may be done on an area-by-area basis, but shall be accomplished at least 7 Days in advance of the date of construction within such area.
- D. No attempt has been made to locate private utilities on private property such as sprinkler irrigation systems or electrical conduits. Verify with the facility operator prior to construction.
- E. In addition to reporting, if a utility is damaged, Contractor must take appropriate action as provided in Document 00 7200 (General Conditions).
- F. Additional compensation or extension of time on account of utilities not indicated or otherwise brought to Contractor's attention including reasonable action taken to protect or repair damage shall be determined as provided in 00 7200 (General Conditions).

1.15 PERMITS

- A. The Building Permit has been applied for or obtained by Owner.
- B. Permits, agreements, or written authorizations that may apply to this project include, but are not limited to the following:
 - 1. BVARA RPP #K202500899 (site utilities, site electrical, picnic area, splashpad, shoreline Improvements, floating docks, dog park, and multi-use trail)
 - 2. BVARA RPP #K202501273 (Shade Structure & Mechanical Room)
- C. All other permits that may be required, such as air district, encroachment, electrical, mechanical, fire prevention, irrigation, grading, slope protection, tree cutting, etc., have not been applied for and shall be obtained by Contractor. Applicable permit fees will be paid by the Owner upon receipt of invoice from the permit issuer and as specified in Document 00 7200 (General Conditions).

1.16 ACTUAL DAMAGES FOR PERMIT VIOLATIONS

A. Contractor shall be liable for and shall pay Owner the amount of any actual losses due to permit violations, in addition to liquidated damages or other remedies provided by the Contract Documents.

B. The amount of liquidated damages provided in Document 00 5200 (Agreement) and Document 00 7200 (General Conditions) is not intended to include, nor does the amount include, any damages incurred by Owner for reasons other than those listed in that paragraph. Any money due or to become due to Contractor may be retained by Owner to cover both the liquidated and the actual damages described above and, should such money not be sufficient to cover such damages, Owner shall have the right to recover the balance from Contractor or its sureties.

PART 2 – PRODUCTS

2.01 OWNER-FURNISHED PRODUCTS

- A. Owner's Responsibilities:
 - 1. Arrange for and deliver Owner-reviewed Shop Drawings, Product Data, and Samples, to Contractor.
 - 2. Arrange and pay for delivery to Site.
 - 3. On delivery, inspect products jointly with Contractor.
 - 4. Submit claims for transportation damage and replace damaged, Defective, or deficient items.
 - 5. Arrange for manufacturers' warranties, inspections, and service.
- B. Contractor's Responsibilities:
 - 1. Review Owner-reviewed Shop Drawings, and Product Data, and Samples.
 - 2. Receive products at Site; inspect for completeness or damage jointly with Owner.
 - 3. Install and finish products.
 - 4. Repair or replace items damaged after receipt.
 - 5. Install into Project per Contract Documents.

PART 3 – EXECUTION – NOT USED

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 2000

PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes description of requirements and procedures for determining amount of Work performed and for obtaining payment for Work performed.

1.02 REFERENCES

- A. A current version of the following shall be used:
 - 1. California Public Contract Code
 - 2. Code of Civil Procedures
 - 3. Government Code

1.03 COMPOSITION AND SCOPE OF CONTRACT SUM

A. Scope of Contract Sum

- 1. The Contract Sum for performance of the Work under Contract Documents, or under any Bid item, allowance, or Alternate, shall include full compensation for all Work required under the Contract Documents, including without limitation, all labor, materials, taxes, transport, handling, storage, supervision, administration, and all other items necessary for the satisfactory completion of the Work, whether or not expressly specified or indicated, incidental work and expenses, and all terms, conditions, requirements and limitations set forth in the Contract Documents.
- 2. Contract Sum may be expressed as lump sum, unit price, allowance, or combination thereof.

B. Unit Price items

 Quantity of Work to be paid for under any item for which a unit price is fixed in Contract Documents shall be determined by Owner based on, so far as practicable, actual number of units satisfactorily completed, as certified by Contractor, and reviewed by Owner, within prescribed or ordered limits, and no payment will be made for Work unsatisfactorily performed or done outside of limits.

C. Lump Sum Items

- 1. When estimated quantity for specific portion of Work is not indicated and/or Work is designated as lump sum, payment will be on a lump sum basis for Work satisfactorily completed in accordance with Contract Documents.
- 2. Payment for lump sum Work, or items of Work subject to a lump sum (e.g. without limitation, change order work), shall be made on the basis of satisfactory completion of such Work or work item, earned in progressive stages in accordance with the Contract Documents, up to but not exceeding 95% of the Contractor's percentage completion of the Work or item.
- 3. Lump sum items shall be paid based upon the approved Schedule of Values, which shall be used to measure progressive payments based upon satisfactory progress towards completion of the item.

1.04 PAYMENT PROCEDURES

A. Schedule of Values:

- 1. Within ten Days from issuance of Notice of Award and prior to the Contractor's first Application for Payment, Contractor shall submit a detailed breakdown of its Bid by scheduled Work items and/or activities, in the accepted Owner format, including coordination responsibilities and Project Record Documents responsibilities. Where more than one Subcontractor comprises the work of a Work item or activity, the Schedule of Values shall show a separate line item for each subcontract. Contractor shall furnish such breakdown of the total Contract Sum by assigning dollar values (cost estimates) to each applicable Progress Schedule network activity, which cumulative sum equals the total Contract Sum. This breakdown shall be referred to as the Schedule of Values.
- 2. Along with each applicable Progress Schedule network activities, General Conditions, scheduling, record documents and quality assurance control shall be separate line items in the Schedule of Values, which cumulative sum equals the total Contract value. Owner will review the breakdown in conjunction with the Progress Schedule to ensure that the dollar amounts of this Schedule of Values are, in fact, reasonable cost allocations for the Work items listed. Upon favorable review by Owner, Owner will accept this Schedule of Values for use. Owner shall be the sole judge of fair market cost allocations.
- 3. Owner will reject any attempt to increase the cost of early activities, i.e., "front loading," resulting in a complete reallocation of moneys until such "front loading" is corrected. Repeated attempts at "front loading" may result in suspension or termination of the Work for default, or refusal to process progress payments until such time as the Schedule of Values is acceptable to Owner.
- 4. The following are typical line items to be incorporated into the Schedule of Values document:

GENERAL REQUIREMENTS

Supervision/General Administration Expenses Site survey Expense Mobilization (Trailers/ Trash Bins/ Toilets) Safety/ Photos/ Printing/ supplies/ Equipment Rental SWPPP Clean-up/Maintenance Bonds Insurance Allowances Temporary Utilities Temporary Facilities

OFF-SITE ITEMS (if applicable)

AC Paving and Base Formed Concrete (Curbs and Gutters) Concrete Flatwork Storm Drainage Street Lighting Utility Lines Fire Hydrant Landscaping Irrigation Signage

SITE ITEMS

Survey

Electric Service: (conduit & connectors from utility co. connection to meter plus meter installation).

Gas Service: (main supply line from utility co. connection to meter plus installation of all meters).

Water Lateral: (main supply & fire hydrant from utility co. connection to meter plus installation of all meters).

Sewer Lateral: (main sewage line from utility co. connection to first lateral or building).

Telephone Service: (conduit & conductors from utility co. connection to nearest building).

Demolition Clearing Plant and Tree Protection Rough Grading Soil Compaction Erosions Control Devices (>2:1 slope banks over 6' high) Termite Control Finish Grading

Fire Lane Paving and Base AC Paving and Base Pavement Marking Parking Bumpers Formed Concrete (Street Walks/ Equipment Pads/ Ramps) Concrete Flatwork Water Distribution Sanitary Sewer Drainage & Storm Sewer Septic System

Landscaping Irrigation Outdoor Facilities and Furniture Chain Link Fences & Gates Wrought Iron Fences and Gates

Masonry Walls Waterproofing Water Repellent/ Anti-Graffiti Sealer

Flagpole Monument Signs Exterior Signs

Site Fire System Drinking Fountains

Site Lighting

TYPICAL BUILDING ITEMS (SUMMARY + INDIVIDUAL BUILDINGS)

Clearing and Grubbing Excavation & Compaction Footings & Foundations Termite Control Footing Excavation Forming of Footings Coarse Base/ Sand/ Membrane Slab on Grade Concrete and Masonry Reinforcement Concrete Steps and Ramps Concrete Columns Special Finish Concrete Concrete Sealer Precast Concrete Panels Cementitious Decks

Unit Masonry Glass Unit Masonry Stone Masonry Simulated Stone

Structural Steel Metal Joists Metal Decking Lightgage Metal Framing Steel Connectors Steel Stairs, Handrails & Railings Ornamental Handrails & Railings Metal Grates- Drainage/ Bollards Expansion Control

Lumber Rough Carpentry/Grout Plywood Web Joists Heavy Timber Glulam Beams Finish Carpentry / Millwork Installation of Doors/Frames/Hardware Architectural Woodwork Plastic Fabrications

Waterproofing Dampproofing Attic Insulation Exterior Wall Insulation Interior Wall Insulation Acoustical Insulation Fire Safing Floor Insulation

Fiberglass Shingles Wood Shingles Roofing Tiles Preformed Roofing/Siding Built-up Roofing Sheet Roofing Opaque Insulated Panels Flashing & Sheet Metal Roof Accessories Skylights Hatches Sealants

Steel Doors & Frames Aluminum Doors & Frames Wood & Plastic Doors Access Doors Four-Fold Doors Bi-parting Teleslide Door Overhead Coiling Doors Entrances and Storefronts Steel Windows Aluminum Windows Clad Wood Windows Finish Hardware Exterior Glass and Glazing Interior glass and Glazing Window/Curtain Walls

Exterior/ Interior Lath Exterior Scratch Coat Exterior Brown Coat Exterior Finish Coat Exterior Insulation Finish System (EIFS) Gypsum Wallboard- Ceiling Gypsum Wallboard- Wall Ceramic Tile Walls **Ceramic Tile Floors** Quarry Tile Floors Acoustical Ceilings- Glued Acoustical Suspended Ceiling Panels Acoustical Walls Panels Ceiling Suspension Systems Wood Flooring/Base **Resilient Flooring/Base** VCT Flooring Carpet Tiles Rolled Carpet Special Flooring (Rubber/ Stone/ Terrazzo) **Special Coatings** Exterior Painting Interior Painting Wall Covering

Tack & Marker boards Toilet Partitions (Steel/ Polymer) Cubical Curtains Louvers/Vents Wall/ Corner Guards Fireplaces Directories/Bulletin Boards Specialty Signs Detection Specialties Metal Lockers Car/ Walkway Shelter Postal Specialties Fire Extinguishers and Cabinets Operable Partitions Storage Shelving Toilet Accessories T.V. Monitor & brackets Wire Mesh Storage Doors Misc. Specialties

Safes **Stage Curtains Projection Screens** Shop Equipment **Dock Bumpers** Food Service Equipment/Stainless Steel Tops **Residential Equipment/ Appliances BBQ** Patio Equipment Laundry Equipment Library Equipment Photolab Equipment Sports Equipment Laboratory Equipment Parking Equipment Loading Dock Equipment **Detention Equipment** Theater/Stage Equipment

Artwork Window Treatments Furniture Instrument Cabinets Clocks Accessories Entry Mats Auditorium Seating Telescoping Bleachers

Instrumentation Prefabricated Buildings Special Purpose Rooms/Buildings

Dumbwaiters Elevators Hoists & Cranes Lifts Wheelchair Lifts Pneumatic Tube Systems

Waste Water Treatment /Disposal Fire Sprinkler Systems Plumbing- Rough Plumbing- Finish HVAC- Rough HVAC- Finish HVAC- Balance Energy Management System Electrical Switchgear Electrical Sub Panels Electrical- Rough Electrical- Finish Trim Exterior Building Lighting Interior Lighting Fire Alarm Data/ Communications/ Information Technology

B. Contractor's Requests for Progress Payments

- 1. If requested by Contractor, progress payments will be made monthly, under the following conditions:
- 2. On or before the 25th Day of each monthly billing cycle, Contractor shall submit to Owner an Application for Payment for the cost of the Work put in place during the period from the last Day of the previous month to the end of the current month, along with one copy of an updated Progress Schedule. Such Applications for Payment shall be for the expected total value of activities completed or partially completed, based upon Schedule of Values prices (or Bid item prices if unit price) of all labor and materials incorporated in the Work up until midnight of the last Day of that one month period, less the aggregate of previous payments. Accumulated retainage shall be shown as separate item in payment summary. Owner and Contractor will reconcile any differences in the field, based on the reconciled monthly report sheets. Except as otherwise provided in a labor compliance program applicable to the Work (if any) or as otherwise required by Owner, concurrently with each Application for Payment, Contractor shall submit to the Owner the Contractor's and its Subcontractors' certified payroll records required to be maintained pursuant to Labor Code Section 1776 for all labor performed during pay periods ending during the period covered by the Application for Payment.
- 3. No progress payment will be processed prior to Owner receiving all requested, acceptable schedule update information, updated as-built drawings, and certified payrolls, and in Owner's sole and absolute discretion, Owner may deny the entire Application for Payment for noncompliance.
- 4. Each Application for Payment shall list each Change Order executed prior to date of submission, including the Change Order Number, and a description of the Work activities, consistent with the descriptions of original Work activities. Contractor shall submit a monthly Change Order status log to Owner.
- 5. If Owner requires substantiating data, Contractor shall submit information requested by Owner, with cover letter identifying Project, Application for Payment number and date, and detailed list of enclosures. Contractor shall submit one copy of substantiating data and cover letter for each copy of Application for Payment submitted.
- 6. If Contractor fails or refuses to participate in monthly Work reconciliations or other construction progress evaluation with Owner, Contractor shall not receive current payment until Contractor has participated fully in providing construction progress information and schedule update information to Owner.

C. Owner's Review of Progress Payment Applications

- Owner will review Contractor's Application for Payment following receipt and during the Progress Schedule and Billing Meeting. If adjustments need to be made to percent of completion of each activity, Owner will make appropriate notations and return to Contractor. Contractor shall revise and resubmit. All parties shall update percentage of completion values in the same manner, i.e., express value of an accumulated percentage of completion to date.
- 2. If Owner determines that portions of the Application for Payment are not proper or not due

under the Contract Documents, then Owner may approve the other portions of the Application for Payment, and in the case of disputed items or Defective Work not remedied, may withhold up to 150 percent of the disputed amount from the progress payment.

- 3. Pursuant to California Public Contract Code §20104.50, if Owner fails to make any progress payment within 30 Days after receipt of an undisputed and properly submitted Application for Payment from Contractor, Owner shall pay interest to the Contractor equivalent to the legal rates set forth in subdivision (a) of Section 685.010 of the California Code of Civil Procedure. The 30-Day period shall be reduced by the number of Days by which Owner exceeds the seven-Day return requirement set forth herein.
- 4. As soon as practicable after approval of each Application for Payment for progress payments, Owner will pay to Contractor in manner provided by law, an amount equal to 95 percent of the amounts otherwise due as provided in the Contract Documents, or a lesser amount if so provided in Contract Documents and by law, provided that payments may at any time be withheld if, in judgment of Owner, Work is not proceeding in accordance with Contract, or Contractor is not complying with requirements of Contract, or to comply with stop notices or to offset liquidated damages accruing or expected.
- 5. Before any progress payment or final payment is due or made, Contractor shall submit satisfactory evidence that Contractor is not delinquent in payments to employees, Subcontractors, suppliers, or creditors for labor and materials incorporated into Work. This specifically includes, without limitation, conditional lien release forms for the current progress payment and unconditional release forms for past progress payments. This also includes copies of certified payroll from contractor and subcontractors for the current payment period.

D. Payment for Material and Equipment Not Yet Incorporated Into the Work

- 1. No payment shall be made for materials or equipment not yet incorporated into the Work, except as specified elsewhere in the Contract Documents or as may be agreed to by Owner in its sole discretion. Where Contractor requests payment on the basis of materials and equipment not incorporated in the Work, Contractor must satisfy the following conditions:
- 2. The materials and/or equipment shall be delivered and suitably stored at the Site or at another local location agreed to in writing, for example, a mutually acceptable bonded and insured warehouse.
- 3. Full title to the materials and/or equipment shall vest in Owner at the time of delivery to the Site, warehouse or other storage location. Obtain a negotiable warehouse receipt, endorsed over to Owner for materials and/or equipment stored in an off-site warehouse. No payment will be made until such endorsed receipts are delivered to Owner.
- 4. Stockpiled materials and/or equipment shall be available for Owner inspection, but Owner shall have no obligation to inspect them and its inspection or failure to inspect shall not relieve Contractor of any obligations under the Contract Documents. Materials and/or equipment shall be segregated and labeled or tagged to identify these specific Contract Documents.
- 5. After delivery of materials and/or equipment, if any inherent or acquired defects are discovered, defective materials and/or equipment shall be removed and replaced with suitable materials and/or equipment at Contractor's expense.
- 6. At Contractor's expense, insure the materials and/or equipment against theft, fire, flood, vandalism, and malicious mischief, as well as any other coverages required under the Contract Documents.
- 7. Contractor's Application for Payment shall be accompanied by a bill of sale, invoice or other documentation warranting that Owner has received the materials and equipment free and clear of all liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect Owner interest therein, all of which must be satisfactory to Owner. This documentation shall include, but not be limited to, conditional releases of mechanics' liens and stop notices from all those providing materials and equipment as to which the Application for Payment relates, as well as

unconditional releases of the same from the same as to the previous Application for Payment for which they have not already been provided. Amounts previously paid for materials and equipment prior to incorporation into the Work shall be deducted from amounts otherwise due Contractor as they are incorporated.

1.05 FINAL PAYMENT

A. Final Payment

- 1. As soon as practicable after all required Work is completed in accordance with Contract Documents, including punchlist, testing, record documents and Contractor maintenance after Final Acceptance, Contractor shall submit its Application for Final Payment.
- 2. Provided Contractor has met all conditions required for Final payment, Owner will pay to Contractor, in manner provided by law, unpaid balance of Contract Sum of Work (including, without limitation, retentions), or whole Contract Sum of Work if no progress payment has been made, determined in accordance with terms of Contract Documents, less sums as may be lawfully retained under any provisions of Contract Documents or by law.

B. Final Accounting

- 1. Prior progress payments and change orders shall be subject to audit and correction in the final payment.
- 2. Contractor and each assignee under an assignment in effect at time of final payment shall execute and deliver at time of final payment, and as a condition precedent to final payment, Document 00590 (Agreement and Release of Claims).

1.06 SUBSTITUTION OF SECURITIES

- A. **Public Contract Code Section 22300.** In accordance with the provisions of Public Contract Code Section 22300, substitution of securities for any moneys withheld under Contract Documents to ensure performance is permitted under following conditions:
 - 1. At request and expense of Contractor, securities listed in Section 16430 of the Government Code, bank or savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by Contractor and Owner which are equivalent to the amount withheld under retention provisions of Contract shall be deposited with Controller or with a state or federally chartered bank in California, as the escrow agent, who shall then pay such moneys to Contractor. Upon satisfactory completion of Contract, securities shall be returned to Contractor.
 - 2. Alternatively, Contractor may request and Owner shall make payment of retentions earned directly to the escrow agent at the expense of Contractor. At the expense of Contractor, Contractor may direct the investment of the payments into securities and receive the interest earned on the investments upon the same terms provided for securities deposited by Contractor. Upon satisfactory completion of the work of the Contract Documents, Contractor shall receive from escrow agent all securities, interest, and payments received by the escrow agent from Owner. Contractor shall then pay to each Subcontractor, not later than seven (7) Days after receipt of the payment, the respective amount of interest earned, net of costs attributed to retention withheld from each Subcontractor, on the amount of retention withheld to insure the performance of Contractor.
 - 3. Contractor shall be beneficial owner of securities substituted for moneys withheld and shall receive any interest thereon.
 - 4. Contractor may enter into an escrow agreement, form included in Contract Documents, as authorized under Public Contract Code Section 22300, specifying amount of securities to be deposited, terms and conditions of conversion to cash in case of default of Contractor, and termination of escrow upon completion of Contract Documents.
 - 5. Public Contract Code Section 22300, in effect on Bid Day, is hereby incorporated in full by this reference and shall supersede anything inconsistent therewith.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

Attachment 01027-A PERIODIC ESTIMATE FOR PARTIAL PAYMENT

CT:				Invoice or Estimate No.	
RACTOR:				-	
CT NO:	PERIOD:		TO:		
DESCRIPTION	SCHEDULED VALUE	PREVIOUS ESTIMATE	COMPLETED THIS PERIOD	TOTAL TO DATE	%
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
SUBTOTAL ORIGINAL CONTRACT	\$0.00	\$0.00	\$0.00	\$0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
	0.00	0.00	0.00	0.00	
TOTAL ADJUSTED CONTRACT	\$0.00	\$0.00	\$0.00	\$0.00	
A. Notice to Proceed Date (Enter as text, i.e.: January 1, 2022)					
B. Original Contract Time (Working Days) (Enter as number)					Days
C. Additional Contract Lime due to Change Orders (Working Days) (Enter number)					Jays
	CT:	CT:	CT:	CT:	Invoice of Estimate No

SUMMARY OF VALUE OF COMPLETED WORK

1.	Value of work completed to date	\$0.00
2.	Less: Retention - 5%	\$0.00
3.	Less: Deductions/Labor Non-Compliance	\$0.00
4.	Net amount payable on work performed to date	\$0.00
5.	Less: Amount of previous payment requests	\$0.00
6.	Amount due this payment	\$0.00
Approv	ved by Contractor:	Date:
Approv	ved by County Construction Inspector:	Date:

REQUEST FOR PAYMENT CERTIFICATION

1. **CERTIFICATION BY CONTRACTOR:**

According to the best of my knowledge and belief, I certify that all items and amounts shown on the attached Periodic Estimate for Partial Payment are correct; that all work has been performed in accordance with the terms and conditions of the contract between the County of Kern and _____, dated _____

I further certify that all just and lawful bills against the undersigned have been paid, or will be paid from funds received from this payment, in full accordance with the terms and conditions of said contract.

By		By	
·	Contractor (Name of Company)		Authorized Agent (Signature)
Date _		Title _	

2. **CERTIFICATION BY COUNTY:**

I certify that I have reviewed the attached Periodic Estimate for Partial Payment No. ______for the period ending ; that to the best of my knowledge and belief it is a true statement of value of work performed to date and that such work has been performed in full accordance with Plans and Specifications and the terms and conditions of the construction contract. I further certify that all work included in the Periodic Estimate for Partial Payment has been inspected by a duly authorized representative and/or qualified County staff. I therefore approved the amount of _____as the balance due this payment. \$

Kern County Construction Services Bv: Title: Supervising Engineer Date

THIS SECTION FOR USE WITH FEDERALLY FUNDED PROJECTS

3. CERTIFIED PAYROLL AUDIT CERTIFICATION

I hereby certify that I have reviewed the weekly payroll forms and related material for this project and find them to be up-to-date, satisfactory and in compliance with the monitoring regulations included in OMB A-87, A-102 and CRF24.

I hereby certify that I have reviewed the weekly payroll forms and related material for this project and find them to contain discrepancies. A sufficient amount has been withheld to cover any problems that may arise. In addition, the final retention will be held until all discrepancies are resolved.

I hereby certify that weekly payroll forms for the subject project are not required to be submitted.

By:		Signature _				
Title:	Fiscal Support Specialist	Date				
Attachment 01200-B						

Allachment UTZUU-B

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 2050

MODIFICATION PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes requirements that supplement the paragraphs of Document 00 7200 (General Conditions).
- B. Description of procedures for modifying the Contract Documents and determining costs for changes in contract amounts.
- C. Contractor shall submit construction related documentation through Construction Management Software in accordance with Section 01 3000.

1.02 PROCEDURES FOR CONTRACTOR INITIATED CHANGES

- A. Contractor-Initiated Request for Information ("RFI") Procedures, Requirements and Limitations:
 - 1. Contractor may submit RFIs for clarifications in Owner-prepared Contract Documents, which may result in a change in Work, Contract Price, or Contract Time.
 - 2. Whenever Contractor requires information regarding the Project or Owner-prepared Contract Documents, or receives a request for such information from a Subcontractor, Contractor may prepare and deliver an RFI to Owner. Contractor shall use the RFI format provided by Owner. Contractor shall not issue an RFI to Owner solely to clarify Contractor-prepared Construction Documents. Contractor must submit time critical RFIs at least 30 days before scheduled start date of the affected Work activity. Contractor shall reference each RFI to an activity of Progress Schedule and shall note time criticality of the RFI, indicating time within which a response is required. Contractor's failure to reference RFI to an activity on the Progress Schedule and note time criticality on the RFI shall constitute Contractor's waiver of any claim for time delay or interruption to the Work resulting from any delay in responding to the RFI.
 - 3. Contractor shall be responsible for its costs to implement and administer RFIs throughout the Contract duration. Regardless of the number of RFIs submitted, Contractor shall not be entitled to additional compensation for the effort required to submit the RFIs. Contractor shall be responsible for Owner's administrative costs for answering RFIs where the answer could reasonably be found by reviewing the Contract Documents, as determined by Owner; at Owner's discretion, such costs may be deducted from progress payments or final payment.
 - 4. Owner will provide a written response in the form of an Instruction Bulletin ("**IB**") to Contractor within 14 days from receipt of RFI. Contractor shall distribute the response to all appropriate Subcontractors.
 - 5. If Contractor is satisfied with the response and does not request a change in Contract Sum or Contract Time, then the response shall be executed without a change.
 - 6. If Contractor believes the response is incomplete, Contractor shall issue another RFI (with the same RFI number with the letter "A" indicating it is a follow-up RFI) to Owner clarifying original RFI. Contractor shall reference the IB issued by the Owner. Additionally, Owner may return the RFI requesting additional information if the original RFI is inadequate in describing the condition.
- B. Contractor Cost Proposal:
 - 1. Contractor may initiate changes by submitting a Cost Proposal ("**CP**") in response to an Instruction Bulletin.
- 2. Whenever Contractor elects or is entitled to submit a CP, Contractor shall prepare and submit to Owner for consideration a CP using the form included in this Project Manual. All CPs must contain a complete breakdown of costs or credits, deducts and extras; itemizing materials, labor, taxes, Markup and any requested changes to Contract Time. All Subcontractor Work shall be so indicated. Individual entries on the CP form shall include applicable Schedule of Values code, with all amounts determined as provided herein. After receipt of a CP with a detailed breakdown, Owner will act promptly through issuance of an Instruction Bulletin.
- 3. If Owner accepts a CP, Owner will prepare a Change Order for Owner and Contractor signatures.
- 4. If CP is not acceptable to Owner because Owner does not agree with Contractor's proposed cost and/or time, Owner will provide comments. Contractor will then, within seven Days (except as otherwise provided herein), submit a revised CP.
- 5. The Contractor will forfeit compensation for costs and/or time for proceeding with changes to the Work without written authorization from the County. The Contractor shall notify the County in writing, and request an evaluation whenever it appears a change is necessary. The written notice shall be made within 24 hours of such discovery. If the County concurs with the Contractor's request for a change to the Work, the County will follow the procedures described above
- C. Time Requirements:
 - 1. If Contractor believes that an Owner response to an RFI, submittal, or other Owner direction, results in change in Contract Sum or Contract Time, Contractor shall notify Owner with the issuance of a preliminary CP within seven Days after receiving Owner's response or direction, and in no event after starting the disputed work or later than the time allowed under Article 12 of Document 00 7200 (General Conditions). If Contractor also requests a work time extension, or has issued a notice of delay or otherwise requests a time extension with a CP, then Contractor shall submit the TIE as described in Section 01 3216 concurrently with the CP and in no event later than ten Days after providing the notice of delay.
 - 2. If Contractor requires more time to accurately identify the required changes to the Contract Sum or Contract Time, Contractor may submit an updated and final CP and TIE within 14 Days of submitting the preliminary CP.
 - 3. If Owner agrees with Contractor's CP and/or TIE, then Owner will prepare a Change Order. If Owner disagrees with Contractor, then Contractor may give notice of potential claim as provided in Article 12 of Document 00 7200 (General Conditions), and proceed thereunder.
 - 4. Contractor must submit CPs, notices of potential claim, or Claims within the required time periods. Any failure to do so waives Contractor's right to submit a CP or file a Claim.
- D. Cost Estimate Information:
 - 1. Contractor and subcontractors shall, upon Owner's request, permit inspection of the original unaltered cost estimates, subcontract agreements, purchase orders relating to the change, and documents substantiating all costs associated with its CP or Claims arising from changes in the Work.

1.03 **PROCEDURES FOR OWNER INITIATED CHANGE ORDERS**

- A. Owner Initiated Changes
 - 1. Owner may initiate changes in the Work or Contract Time by issuing an Instruction Bulletin. Owner may issue an IB to Contractor. Any IB will detail all proposed changes in the Work and may request a quotation of changes in Contract Sum and Contract Time from Contractor.
 - 2. In response to an IB, Contractor shall furnish a CP within 21 Days. For time sensitive changes and upon Owner's approval of CP, Owner may direct contractor to proceed with extra work via a Prior Approval Document. Upon approval of CP, Owner may issue an Instruction Bulletin directing Contractor to proceed with extra Work.

- 3. If the parties agree on price and time for the Work, the Owner will issue a Contract Change Order. If the parties do not agree on the price or time for a CP, Owner may either issue an Instruction Bulletin, order the work done by force account or decide the issue per Article 12 of Document 00 7200 (General Conditions). Contractor shall perform the changed Work notwithstanding any claims or disagreements of any nature.
- B. Force Account
 - 1. The Contractor, provided he received an order for force account work, shall proceed with the work on a force account basis as defined in Section 9 of the Standard Specifications and as modified by this Section 01 2050.
 - 2. A daily time and material record of all force account work shall be kept by the Contractor, as directed by the Owner. The daily record shall be signed by the Contractor and submitted daily to the Owner.
 - 3. In any case, the Owner shall certify to the amount, including markup, due to the Contractor and any subcontractor submitting for extra under the proposed change. For this purpose, markup shall include, but not be limited to overhead, profit, home office overhead, bonds, insurance, labor pool, remobilization, and escalation. In no instance shall mark up to Contractor be more than 15%. Pending final determination of value, payments on account of changes shall be made on the Contractor's estimate.

1.04 PROCEDURES THAT APPLY TO CONTRACTOR- AND OWNER-INITIATED CHANGES

- A. Adjustment of Schedules to Reflect Change Orders:
 - 1. Contractor shall revise Schedule of Values and Application for Payment forms to record each authorized Change Order ("**CO**") as a separate line item and adjust the Contract Sum as shown thereon prior to the next monthly pay period.
 - 2. Contractor shall revise the Progress Schedules prior to the next monthly pay period, to reflect CO.
 - 3. Contractor shall enter changes in Project Record Documents prior to the next monthly pay period.
- B. Required Documentation for Adjustments to Contract Amounts:
 - 1. For all changes and cost adjustments requested, Contractor shall provide documentation of change in Contract Amounts asserted, with sufficient data to allow evaluation of the proposal.
 - 2. In all requests for compensation, cost proposals, estimates, claims, and any other calculation of costs made under the Contract Documents, Contractor shall break out and quantify costs of labor, equipment and materials identified herein, for Contractor and subcontractors of any tier.
 - 3. Contractor shall, on request, provide additional data to support computations for:
 - a. Quantities of products, materials, labor, and equipment.
 - b. Taxes, insurance, and bonds.
 - c. Justification for any change in Contract Time and new Progress Schedule showing revision due, if any.
 - d. Credit for deletions from Contract, similarly documented.
 - 4. Contractor shall support each claim or computation for additional cost, with additional information including:
 - a. Origin and date of claim or request for additional compensation.
 - b. Dates and times Work was performed and by whom.
 - c. Time records and wage rates paid.
 - d. Invoices and receipts for products, materials, equipment and subcontracts, similarly documented.
 - e. Credit for deletions from Contract, similarly documented.
- C. Responses and Disputes:

- 1. For all responses for which the Contract Documents do not provide a specific time period, recipients shall respond within a reasonable time.
- 2. For all disputes arising from the procedures herein, Contractor shall follow Article 12 of Document 00 7200 (General Conditions).

1.05 COST DETERMINATION FOR CHANGES IN CONTRACT AMOUNTS

- A. Calculation of Total Cost of Extra Work:
 - 1. Total cost of changed Work, extra Work, or of Work omitted shall be the sum of three components defined immediately below as: Component 1 (Direct Cost(s)); Component 2 (Markup); and, Component 3 (bonds, insurance, taxes)
 - 2. Component 1: Direct Cost(s) of labor, equipment and materials, is calculated based upon actually incurred (or omitted) labor costs, material costs and equipment rental costs, as defined herein;
 - 3. Component 2: Markup on such actually incurred Direct Costs, is applied in the percentages identified below; and
 - 4. Component 3: Actual additional costs for any additionally required insurance, bonds, and/or taxes, defined herein, is calculated without Markup.

1.06 **MEASUREMENT OF DIRECT COST OF CONSTRUCTION (COST COMPONENT NO. 1)**

- A. Composition of Component 1 (Direct Cost of Construction):
 - 1. Component 1 has four subcomponents, also referred to as "LEMS":
 - a. Labor (Component 1A)
 - b. Equipment (Component 1B)
 - c. Materials (Component 1C)
 - d. Subcontractors (Component 1D)
- B. Measurement of Cost of Labor (Component 1A):
 - 1. Cost of Labor shall be calculated as: Cost of labor for workers (including forepersons when authorized by Owner) used in actual and direct performance of the subject work, whether employer is Contractor, Subcontractor, or other forces, in the sum of the following:
 - a. Actual Wages: Actual wages paid shall include any employer payments to or on behalf of workers for health and welfare, pension, vacation, and similar purposes.
 - b. Labor surcharge: Payments imposed by local, county, state, and federal laws and ordinances, and other payments made to, or on behalf of, workers, other than actual wages as defined, such as worker's compensation insurance. Such labor surcharge shall not exceed generally accepted standards in the State for labor rates in effect on date upon which extra Work is accomplished.
 - c. Cost of Labor shall include no other costs, fees or charges.
 - 2. Labor cost for operators of equipment owned and operated by Contractor or any Subcontractor, shall be no more than rates of such labor established by collective bargaining agreements for type of worker and location of Work, whether or not owner-operator (i.e., Contractor or Subcontractor) is actually covered by such an agreement.
 - 3. Cost of Labor shall be recorded and documented in certified payroll records, maintained in the form customary and/or required in the State, delivered to Owner weekly.
- C. Measurement of Cost of Equipment (Component 1B):
 - 1. Measurement of Component 1B (Cost of Equipment). Cost of Equipment shall be calculated as: Cost of Equipment used in actual and direct performance of the subject Work, whether by Contractor, Subcontractor, or other forces. Cost of Equipment shall be calculated as herein described.
 - For rented equipment, cost will be based on actual rental invoices, appropriate for the use and duration of the Work. Equipment used on extra Work shall be of proper size and type. If, however, equipment of unwarranted size or type and cost is used, cost of use of

equipment shall be calculated at rental rate for equipment of proper size and type, as determined by Owner.

- 3. Equipment rental cost for Contractor or Subcontractor-owned equipment, shall be determined by reference to, and not in excess of, the generally accepted standards in the State for equipment rental rates in effect on the date upon which extra Work is accomplished. If there is no applicable rate for an item of equipment, then payment shall be made for Contractor- or Subcontractor-owned equipment at the rental rate listed in the most recent edition of the CalTrans Standard Schedules and Specifications, and absent a rental rate therein, then the Association of Equipment Distributors (AED) book.
- 4. In all cases, rental rates paid shall be deemed to cover cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals.
- 5. Unless otherwise specified, manufacturer's ratings, and manufacturer-approved modifications, shall be used to classify equipment for determination of applicable rental rates. Individual pieces of equipment or tools not listed in said publication and having a replacement value of \$100 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefor as payment is included in payment for labor. Rental time will not be allowed while equipment is inoperative due to breakdowns.
- 6. For equipment on Site, rental time to be paid for equipment shall be the time that equipment is in operation on extra Work being performed or on standby as approved by Owner. The following shall be used in computing rental time of equipment:
 - a. When hourly rates are listed, less than 30 minutes of operation shall be considered to be $\frac{1}{2}$ hour of operation.
 - b. When daily rates are listed, less than four hours of operation shall be considered to be ½ Day of operation.
 - c. Rates shall correspond to actual rates paid by Contractor, i.e., if Contractor pays lower weekly or monthly rates, then same shall be charged to Owner.
- 7. For equipment that must be brought to Site to be used exclusively on extra Work, cost of transporting equipment to Site and its return to its original location shall be determined as follows:
 - a. Owner will pay for costs of loading and unloading equipment.
 - b. Cost of transporting equipment in low bed trailers shall not exceed hourly rates charged by established haulers.
 - c. Cost of transporting equipment shall not exceed applicable minimum established rates of California Public Utilities Commission or appropriate State Dept. of Transportation.
 - d. Owner will not make any payment for transporting and loading and unloading equipment if equipment is used on Work in any other way than upon extra Work.
 - e. Rental period may begin at time equipment is unloaded at Site of extra Work and terminate at end of the performance of the extra Work or Day on which Owner directs Contractor to discontinue use of equipment, whichever first occurs. Excluding Saturdays, Sundays, and Owner legal holidays, unless equipment is used to perform extra Work on such Days, rental time to be paid per Day shall be four hours for zero hours of operation, six hours for four hours of operation and eight hours for eight hours of operation, time being prorated between these parameters. Hours to be paid for equipment that is operated less than eight hours due to breakdowns, shall not exceed eight less number of hours equipment is inoperative due to breakdowns.
- 8. Employee vehicles are not part of Component 1A, rather, are included within Component 2 (Markup).
- 9. Equipment costs shall include no other costs, fees, or charges.
- D. Measurement of Cost of Material (Component 1C):

- 1. Cost of material shall be calculated as herein described. Cost of such materials will be cost to purchaser (Contractor, Subcontractor, or other forces) from supplier thereof, except as the following are applicable:
- 2. If cash or trade discount by actual supplier is offered or available to purchaser, it shall be credited to Owner notwithstanding fact that such discount may not have been taken.
- 3. For materials salvaged upon completion of Work, salvage value of materials shall be deducted from cost, less discounts, of materials.
- 4. If cost of a material is, in opinion of Owner, excessive, then cost of material shall be deemed to be lowest current wholesale price at which the material is available in quantities concerned delivered to Site, less any discounts as provided in **this Paragraph 1.06**.
- 5. Material costs shall include no other costs, fees, or charges.
- E. Measurement of Cost of Subcontractors (Component 1D):
 - 1. Where reimbursed or calculated per the terms of the Contract Documents, Change Order, , cost of Subcontractors shall be calculated as amounts earned by Subcontractors procured in compliance with the Contract Documents and approved by the Owner, provided such subcontractor-earned amounts meet the following requirements:
 - a. Such amounts are earned under the terms of the Subcontracts and the Work complies with the terms of the Contract Documents;
 - b. Such amounts are properly requested, documented and permitted under the terms of the Subcontract(s) and the Contract Documents.
 - c. Total cost to Owner of Direct Costs of Construction (labor, equipment, materials), Markup, and costs of bonds, insurance, and taxes, conform to contract limitations (i.e., totals paid by Owner do not exceed the 20% Markup limitation.).

1.07 **MEASUREMENT AND PAYMENT OF MARKUP (COST COMPONENT 2)**

- A. Markup Percentages for Changed Work (Component 2):
 - 1. Markup on Direct Cost of labor and materials for extra Work shall be 15%. Markup on Direct Cost of equipment for extra Work shall be 15%.
 - 2. When extra Work is performed by Subcontractors, regardless of the number of tiers, total Markup on "Component 1" Direct Costs shall not exceed 20%. Contractor and its Subcontractors shall divide the 20% as they may agree.
 - 3. Under no circumstances shall the total Markup on any extra Work exceed 20 percent, stated as a percent of the Direct Cost of labor, equipment, and materials. This limitation shall apply regardless of the actual number of subcontract tiers.
 - 4. On proposals covering both increases and decreases in Contract Sum, Markup shall be allowed on the net increase only as determined above. When the net difference is a deletion, no percentage for Markup shall be allowed, but rather an appropriate percentage deduction shall be issued in the amount of the net difference.
- B. Measurement and Payment of MarkUp (Component 2):
 - 1. Mark Up (Component 2) provides complete compensation to Contractor for:
 - a. All Contractor profit;
 - b. All Contractor home-office overhead;
 - c. All Contractor assumption of risk assigned to Contractor under the Contract Documents;
 - d. Subject to the qualifications below regarding self-performed work, all General Conditions and General Requirements.
 - 2. <u>Profit.</u> Compensation for profit included within Component 2 (Mark Up), includes without limitation: Fees of all types, nature and description; and Profit and margins of all types, nature and description.
 - 3. <u>Home Office Expenses.</u> Compensation for home office expenses included within Component 2 (Mark Up), includes without limitation: Salaries and other compensation of any type of Contractor's personnel (management, administrative, and clerical), and all direct and indirect operating, travel, payroll, safety, storage, quality control, maintenance,

and overhead costs of any nature whatsoever, incurred by Contractor at any location other than the Project-specific site office, including without limitation, Contractor's principal or branch offices; insurance premiums other than those for Project-specific insurance directed by the Owner in a change order; all hardware, software, supplies and support personnel necessary or convenient for Contractor's capture, documentation and maintenance of its costs and cost accounting data and cost accounting and control systems and work progress reporting.

- 4. <u>Assumption of Risk.</u> Compensation for Contractor's assumption of risk under the Contract Documents, included within Component 2 (Mark Up), includes without limitation loss, cost, damage, expense, or liability resulting directly or indirectly from any of the following causes ("**Unallowable Costs**"), for Contractor and subcontractors of any tier: noncompliance with the Contract Documents, fault or negligence, defective or non-comforming Work, by Contractor or any Subcontractor or Vendor of any tier or anyone directly or indirectly employed by any of them, or for whose acts or omissions any of them are responsible or liable at law or under the Contract Documents; cost overruns of any type; costs in excess of any lump sum, not to exceed amount or Guaranteed Maximum Price (GMP); costs resulting from bid or "buy out" errors, unallocated scope, or incomplete transfer of scope or contract terms to subcontractors; any costs incurred by Contractor relating to a Change in the Work without a Change Order in accordance with the Contract Documents; costs for work or materials for which no price is fixed in the Contract Documents, unless it is expressly specified that such work or material is to be paid for as extra Work.
- General Conditions and Division 01 General Requirements. 5. Compensation for Contractor's General Conditions and General Requirements Costs included within Component 2 (Mark Up), includes compensation to Contractor for: Contractor's direct costs, without overhead or profit, for salaries and related forms of compensation and employer's costs for labor and personnel costs, of Contractor's employees and Subconsultant's employees (if any), while and only to the extent they are performing Work at the Project Site. Personnel and Work compensated by this Component include without limitation: All required Project management responsibilities; all on-site services; monthly reporting and scheduling; routine field inspection of Work; general superintendence; general administration and preparation of cost proposals, schedule analysis, change orders and other supporting documentation as necessary; salaries of project superintendent, project engineers, project managers, safety manager, other manager, timekeeper, and secretaries; all cost estimates and updates; development, validation, and updates to the project schedule; surveying; and estimating. Compensation for Contractor's General Requirements Costs included within Component 2 (Mark Up), compensates Contractor for its "General Requirements" Costs, including without limitation: all scheduling hardware, software, licenses, equipment, materials, and supplies; purchase, lease or rental, build out, procurement, supporting equipment and maintenance of temporary on-Site facilities, Project field and office trailers and other temporary facilities, office equipment and supporting utilities; platforms, fencing, cleanup and jobsite security; temporary roads, parking areas, temporary security or safety fencing and barricades; all Contractor's motor vehicles used by any Contractor's personnel, and all costs thereof; all health and safety requirements, required by law or Owner procedures; all surveying; all protection of Work; handling and disposal fees; final cleanup; repair or maintenance; other incidental Work; all items, activities and function similar to any of those described above; all travel, entertainment, lodging, board,
- 6. Personnel compensated by the Markup Component do not include workers of foreman level or below in the case of self-performed work; rather, such personnel shall be treated as a Direct Cost of Construction. Costs compensated by the Markup component do not include temporary measures specifically required by the changed work, not otherwise required or ongoing in the prosecution of the Work, that commence specifically to support the changed work and conclude with the completion of the changed work. Such costs shall be treated as Direct Costs of Construction. Examples of General Requirements costs that this component may not cover are the following: temporary barricades or fencing of specific areas required specifically for the changed work; cranes required specifically for the changed work.

1.08 **MEASUREMENT AND PAYMENT OF BONDS INSURANCE TAXES (COMPONENT 3)**

- A. Measurement of Bonds, Insurance, Taxes (Component 3):
 - Component 3 (Bonds, Insurance, Taxes) consists of the cost of bonds, insurance and taxes, also referred to as "BIT". All State sales and use taxes, applicable County and applicable City sales taxes, shall be included. Federal and Excise tax shall not be included.
 There is no mark up on BIT.

1.09 **EFFECT OF PAYMENT**

- A. Change Order Compensation is All Inclusive.
 - 1. Except as provided expressly below regarding changes that extend the Contract Time, payment of calculated cost of extra work constitutes full and complete compensation for costs or expense arising from the extra Work, and is intended to be all inclusive.
 - 2. Payment for Direct Cost of Construction (Component 1 or LEMS) is intended to be allinclusive. Any costs or risks not delineated within cost of labor, equipment, or materials herein, shall be deemed to be within the costs and risks encompassed by the applicable Markups and unallowable in any separate amount.
 - 3. Payment of Markup (Component 2) is intended to be all-inclusive. Contractor waives claims for any further or different payment of cost and risk items delineated herein, other than the allowable percentage markup on costs set forth in the Contract Documents; such separate, further or different cost or risk items shall be unallowable, waived and liquidated within the allowable percentage markup.
 - 4. Contractor shall recover no other costs or markups on extra work of any type, nature or description.
- B. Exception for Changes Extending the Contract Time.
 - 1. Where a change in the Work extends the Contract Time, Contractor may request and recover additional, actual direct costs, provided Contractor can demonstrate such additional costs are (i.) actually incurred performing the Work, (ii.) not compensated by the Markup allowed, and (iii) directly result from the extended Contract Time. Contractor shall make such request and provide such documentation following all required procedures, documentation and time requirements in the Contract Documents, and subject to all contract limitations of liability. Contractor may not seek or recover such costs using formulas (e.g., Eichleay).
- C. Limits of Liability / Accord and Satisfaction.
 - 1. The foregoing limits of compensation apply in all cases of claims for changed Work, whether calculating Cost Proposals or Change Orders, or calculating claims and/or damages of all types, and applies even in the event of fault, negligence, strict liability, or tort claims of all kinds, including strict liability or negligence. Contractor may recover no other costs arising out of or connected with the performance of extra Work, of any nature.
 - 2. Under no circumstances may Contractor claim or recover special, incidental, or consequential damages against Owner, its representatives or agents, whether arising from breach of contract, negligence, strict liability or other tort or legal theory, unless specifically and expressly authorized in the Contract Documents.
 - 3. No change in Work shall be considered a waiver of any other condition of Contract Documents. No claim shall be made for anticipated profit, for loss of profit, for damages, or for extra payment whatever, except as expressly provided for in Contract Documents.
 - 4. Accord and Satisfaction: Every Change Order and accepted CP shall constitute a full accord and satisfaction, and release, of all Contractor (and if applicable, Subcontractor) claims for additional time, money or other relief arising from or relating to the subject matter of the change including, without limitation, impacts of all types, cumulative impacts, inefficiency, overtime, delay and any other type of claim. Contractor may elect to reserve its rights to disputed claims arising from or relating to the changed Work at the time it signs a Change Order or approves a CP, but must do so expressly in a writing delivered concurrently with the executed Change Order or approved CP, and must also submit a

Claim for the reserved disputed items pursuant to Article 12 of Document 00 7200 (General Conditions) no later than 30 days after Contractor's first written notice of its intent to reserve rights. Execution of any Change Order or CP shall constitute Contractor's representation of its agreement with this provision.

1.010 MISCELLANEOUS REQUIREMENTS

- A. Owner-Furnished Materials.
 - 1. Owner reserves right to furnish materials as it deems advisable, and Contractor shall have no claims for costs and Markup on such materials.
- B. Records And Certification.
 - 1. All charges shall be recorded daily and summarized in Cost Proposal form attached hereto. Contractor or authorized representative shall complete and sign form each day. Contractor shall also provide with the form: the names and classifications of workers and hours worked by each; an itemization of all materials used; and a list by size type and identification number of equipment and hours operated.
 - 2. Owner shall have the right to audit all records in possession of Contractor relating to activities covered by Contractor's claims for modification of Contract, including CP Work. This right shall be specifically enforceable, and any failure of Contractor to voluntarily comply shall be deemed an irrevocable waiver and release of all claims then pending that were or could have been subject to Article 12 of Document 00 7200 (General Conditions).

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

COST PROPOSAL AND RFI FORMS INCLUDED ON FOLLOWING PAGES (Electronic forms are available upon request)

COST PROPOSAL (CP)

County of Kern	CP Number:
Contract Number	Date:
	In Response To
To: County of Kern	IB#, etc.
Attention: []	
General Services Division	
County Administrative Office Third Floor Diane	and One sitis at an Oswatan

Attention: [_____] General Services Division County Administrative Office, Third Floor, Plans and Specifications Counter 1115 Truxtun Avenue Bakersfield, California 93301-4639 Phone: (___) ___-Fax: (___) ___-

From: [Insert Contractor's Name/Address]

This Cost Proposal is in response to the above-referenced _____ [Insert RFP, etc. as applicable]. Brief description of change(s): _____

ITEM DESCRIPTION	PRIME CONTRACTOR	SUB 1	SUB 2	SUB 3	SUB 4	TOTAL
LABOR						
EQUIPMENT						
MATERIAL						
Other (Specify)						
TOTAL COST						
Subcontractor's Overhead & Profit 15 percent max.						
Contractor's Overhead & Profit 15 percent max.						
Overhead & Profit to Contractor for Subcontractor's Work						
(percent of Total Cost above not including any Overhead & Profit – may not exceed 20%)						
GRAND TOTAL						
REQUESTED CHANGE IN CONTRACT TIME (DAYS) (Time Impact Evaluation Enclosed)						

By Contractor:

Signature:

REQUEST FOR INFORMATION (RFI)

PROJECT:

RFI NO.:

DATE:

OWNER: County of Kern 1115 Truxtun Avenue, 3rd Floor Bakersfield, CA 93301

CONTRACTOR:

PROJECT NO.:

Send all RFI's to County Project Manager				
DRAWING	SPECIFICATION			
REFERENCE:	REFERENCE:			

BRIEF TITLE:

DESCRIPTION OF CLARIFICATION REQUIRED (attach sheets as necessary):

CONTRACTOR'S PROPOSED SOLUTION:

INITATOR:	SIGNATURE:			
DATE RESPONSE REQUIRED:				
COUNTY ACTIONS RECEIVED ON:				
FORWARDED TO: RESPONSE:	DATE:			
REFER TO INSTRUCTION BULLETIN NO ATTACHED.				

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 2300

ALTERNATES

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Add or subtract alternate in the Work, in the Contract Sum, in the Contract Time of Completion, or any combination thereof, as are described in This Section.
- B. Submission procedures. Includes Administrative and procedural requirements for Alternates.
- C. Identifies each Alternate by number and describes the basic changes to be incorporated into the Work when each Alternate is made a part of Work by specific provisions in the Agreement between the County and Contractor.
- D. Documentation of changes to Contract Sum/Price and Contract Time.

1.02 RELATED DOCUMENTS

Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 00 and Division 01 Specification Sections, apply to Work of this Section.

1.03 RELATED SECTIONS

- A. Document 00 5200 Agreement: Incorporating monetary value of accepted Alternates.
- B. Document 00 4323 Alternate Bid Form.
- C. Section 01 3000 Administrative Requirements, Submittals: Work schedule affected by Alternates.
- D. Section 01 6000 Product Requirements
- E. Section 01 6000A Substitution Warranty.

1.04 SUBMITTALS

- A. Submit Alternates identifying the effect on adjacent or related components.
- B. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at the County's option. Accepted Alternate(s) will be identified in the County-Contractor Agreement.
- C. Coordinate related Work and modify surrounding Work as required to integrate the various elements of the Alternates in the complete Work. Include as part of each Alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated or specified as part of the Alternate.
- D. Execute accepted Alternates under the same conditions as other Work of the Contract.
- E. Do not submit Alternates other than described in This Section except as provided for under the General and Supplementary Conditions of the Contract.

1.05 MODIFICATIONS

- A. Should the County elect to proceed on this basis of one or more of the Alternates, make all modifications to the Work required in the furnishing and installation of the selected alternate or alternates to the approval of the Engineer/Architect.
- B. No additional cost for modifications will be allowed except as proposed on the Bid Form.

1.06 SELECTION AND AWARD OF ALTERNATIVES

- A. Indicate variation of Bid Price for Alternates described below and list in Bid Form Document or any supplement to it which requests a 'difference' in Bid Price by adding or deducting from the base bid price
 - B. Bid will be evaluated on Base Bid.

1.07 SCHEDULE OF ADD ALTERNATES

- A. Add Alternate No. 1: Alternately bid improvement consists of, but are not limited to, the extension of multi-use trail
- B. Add Alternate No. 2: Alternately bid improvement consists of, but are not limited to, the extension of shoreline improvements
- C. Add Alternate No. 3: Alternately bid improvement consists of, but are not limited to, the construction of shade structure

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 3000

ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes description of requirements and procedures for the use of the County's construction management software, submittals and project meetings.

1.02 CONSTRUCTION MANAGEMENT SOFTWARE

A. Contractor shall utilize County-provided software (Procore) for all construction related communication including, but not limited to, submittals, requests for information, emails, construction photographs and other documents. County will provide Contractor needed access to comply with this requirement at no cost to Contractor.

1.03 SUBMITTALS

A. <u>Schedule of Submittals</u>.

- 1. Owner will prepare a schedule of submittals (also referred to as a submittal register) required to complete the Work through Construction Management Software. Schedule of submittals will include, for each submittal: the specification or drawing reference requiring the submittal, if applicable; the material, item, or process for which the submittal is required; the submittal number and identifying title of the submittal; and a preliminary submission schedule.
- 2. The technical specifications may list several individual items required to be submitted for Owner review. The Schedule of Submittals will list each individual item required to be submitted so that all required submittals can be tracked by Contractor and Owner.
- 3. Preparation by Owner of schedule of submittals does not excuse Contractor of obligation to supply, schedule and coordinate all submittals required by the Contract Documents.

B. <u>Contractor to Submit Shop Drawings, Product Data and Submittals</u>

- 1. Contractor shall review for compliance with Contract Documents, approve and submit to Owner Shop Drawings, Product Data, Samples and similar submittals required by Contract Documents. Contractor shall provide documents electronically, by providing an electronic copy in portable document format (pdf) for Owner for review, unless otherwise directed by Owner. Samples submitted for Owner's consideration shall be delivered to Owner in accordance with the individual Technical Specifications. Submittals and re-submittals shall be transmitted via electronic mail, unless otherwise directed by Owner.
- 2. Contractor's approval shall be indicated by a stamp or written statement on the cover sheet of the submittal with submittal identifying number clearly labeled: "This submittal is approved by <Contractor's Name> for conformance with the contract requirements for <project name>". Approval shall be signed and dated by Contractor's representative.
- 3. Contractor shall schedule and submit concurrently submittals covering component items forming a system or items that are interrelated. Contractor shall include certifications to be submitted with the pertinent drawings and product information at the same time.
- 4. Contractor shall coordinate scheduling, sequencing, preparing and processing of all submittals with performance of work so that work will not be delayed by submittal processing.

- 5. Submittals shall specifically identify any work depicted that does not conform to the Contract Documents with and explanation for the deviation on a separate sheet entitled "Submittal Exceptions to Contract Documents."
- C. <u>Owner Review of Shop Drawings, Product Data and Submittals</u>
 - Schedule submittals at least 3 weeks before dates reviewed submittals will be needed. Except as may be provided in other specification sections, a submittal will be returned in no more than 21 calendar days, as each is accepted or not accepted. When a submittal cannot be returned within that period, Owner will, within a reasonable time after receipt of submittal, give notice of the date by which that submittal will be returned.
 - 2. After review by Owner of each submittal, Owner will return an electronic scan in portable document format (pdf) of the reviewed submittal via electronic mail to Contractor with actions defined as follows:
 - a. NO EXCEPTIONS TAKEN Accepted subject to its compatibility with general design concept of the Work, future Submittals and additional partial Submittals for any portions of the Work not covered in this Submittal. Does not constitute acceptance or deletion of specified or required items not shown on the Submittal.
 - b. MAKE CORRECTIONS NOTED (NO RESUBMISSIONS REQUIRED) Same as item (a) above, except that minor corrections as noted shall be made by Contractor.
 - c. REVISE AS NOTED AND RESUBMIT Rejected because of major inconsistencies or errors that shall be resolved or corrected by Contractor prior to subsequent review by Owner.
 - d. REJECTED RESUBMIT Submitted material does not conform to drawings and/or specifications in major respect, i.e.: wrong size, model, capacity, or material.

Contractor shall print out and distribute reviewed submittals at his discretion. Contractor shall also provide a hard copy of submittals designated "NO EXCEPTIONS TAKEN" and "MAKE CORRECTIONS NOTED" to Inspector at the project site for reference.

- 3. Favorable review will not constitute acceptance by Owner of any responsibility for the accuracy, coordination, or completeness of the Submittals. Accuracy, coordination, and completeness of Submittals shall be sole responsibility of Contractor, including responsibility to back-check comments, corrections, and modifications from Owner's review before fabrication. Contractor, subcontractors, or suppliers may prepare submittals, but Contractor shall ascertain that submittals meet requirements of Contract Documents, while conforming to structural space and access conditions at point of installation. Owner's review will be only to assess if the items covered by the Submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed project as indicated by the Contract Documents. Favorable review of Submittal, method of work, or information regarding materials and equipment Contractor proposes to furnish shall not relieve Contractor of responsibility for errors therein and shall not be regarded as assumption of risks or liability by Owner, or any officer or employee thereof, and Contractor shall have no claim under Contract Documents on account of failure or partial failure or inefficiency or insufficiency of any plan or method of work or material and equipment so accepted. Favorable review shall be considered to mean merely that Owner has no objection to Contractor using, upon Contractor's own full responsibility, plan or method of work proposed, or furnishing materials and equipment proposed.
- 4. Unless otherwise specified, Owner's review will not extend to the means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

5. Contractor shall perform no portion of the Work for which the Contract Documents require Submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been favorably reviewed by the Owner; otherwise, any such work is at Contractor's sole risk."

1.04 PROJECT MEETINGS

- A. <u>Preconstruction Conference</u>. Owner will call for and administer Preconstruction Conference at time and place to be announced (usually the week prior to start of Work at the Site). Contractor shall attend Preconstruction Conference and shall invite Subcontractor's at Contractors discretion. Agenda may include, but not be limited to, the following items:
 - 1. Schedules
 - 2. Personnel and vehicle permit procedures
 - 3. Use of premises
 - 4. Location of the Contractor's on-Site facilities
 - 5. Security
 - 6. Housekeeping
 - 7. Submittal and RFI procedures
 - 8. Inspection and testing procedures, on-Site and off-Site
 - 9. Utility shutdown procedures
 - 10. Control and reference point survey procedures
 - 11. Injury and Illness Prevention Program
 - 12. Contractor's Initial Progress Schedule
 - 13. Contractor's Schedule of Values
 - 14. Contractor's Schedule of Submittals
 - 15. Jurisdictional agency requirements
 - 16. Owner will distribute copies of minutes to attendees. Attendees shall have 7 Days to submit comments or additions to minutes. Minutes will constitute final memorialization of results of Preconstruction Conference.
- B. <u>Biweekly Project Meetings</u>. Contractor shall coordinate and administer biweekly progress meetings throughout duration of Work unless otherwise directed by Owner. Meetings may be tracked through Construction Management Software at Owner's requirement. Meetings shall be held at the project site, unless otherwise specified in Contract Documents.
 - 1. Contractor shall prepare agenda and distribute it 4 Calendar Days in advance of meeting to Owner and anticipated meeting participants.
 - 2. Participants with agenda items shall present them.
 - 3. The Architect/Engineer and other responsible entities shall attend meetings unless otherwise specified in Contract Documents or provided by Owner.
 - 4. Contractor shall record and distribute the meeting minutes. Minutes shall be distributed by the Contractor to the Owner and attendees within 3 Working Days after the meeting. Contractor shall distribute the minutes to those affected by decisions made at meeting. Attendees shall have five (5) Working Days to submit comments or additions to the minutes.
 - 5. Progress meetings shall be attended by Contractor's personnel, Owner, and others as appropriate to agenda topics for each meeting.
 - 6. Agenda may contain, but not be limited to the following items, as appropriate:
 - a. Review, revise as necessary, and approve previous meeting minutes
 - b. Review of Work progress since last meeting
 - c. Status of Progress Schedule, delivery schedules, adjustments
 - d. Submittal, RFI, Instruction Bulletin and Change Order status
 - e. Review of the Contractor's safety program activities and results, including report on all serious injury and/or damage accidents
 - f. Other items affecting progress of Work

- C. <u>Progress Schedule And Billing Meetings</u>
 - 1. A meeting will be held on approximately the 20th of each month to review the schedule update submittal and progress payment application.
 - 2. At this meeting, at a minimum, the following items will be reviewed:
 - a. Percent complete of each activity;
 - b. Time impact evaluations for Change Orders and Time Extension Request;
 - c. Actual and anticipated activity sequence changes;
 - d. Actual and anticipated duration changes; and
 - e. Actual and anticipated Contractor delays.
 - 3. These meetings are considered a critical component of overall monthly schedule update submittal and Contractor shall have appropriate personnel attend. At a minimum, Contractor's General Superintendent and Scheduler shall attend these meetings.
- D. <u>Pre-Installation Conferences</u>
 - 1. When required by a Technical Specification Section, schedule an on-site meeting prior to the actual installation. Attending shall be the Contractor, Installers and others whose Work may be affected by the installation. The Owner will schedule attendees as appropriate.
 - 2. Notify Owner at least four (4) Working Days in advance of meeting date.
 - 3. Contractor shall prepare the agenda and conduct the meeting to cover the following topics:
 - a. Review in detail manufacturer's requirements, Specifications, Drawings, installation details, relationships with other components, and other related Work. Anticipated or discovered conflicts, incompatibilities, and inadequacies shall be reviewed and resolved at the meeting.
 - b. Review in detail job conditions, environmental requirements, schedule, construction sequence, coordination with other Work, requirements for installation and quality of completed Work, and protection of adjacent Work and property
 - c. Review in detail the means of protecting the completed Work during the remainder of the construction period
 - 4. The Contractor shall take meeting notes and distribute them within two (2) Working Days after the pre-installation conference to participants, with three (3) copies to the Owner, conference attendees and those affected by decisions made. Attendees taking exception to anything in the meeting notes shall state it in writing to Contractor within five (5) Working Days following receipt of meeting notes.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 3216

CONSTRUCTION AND PROGRESS SCHEDULES

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes description of requirements and procedures for submitting Critical Path Method ("**CPM**") progress schedules.
- B. Contractor shall follow the requirements of Section 8 of the Standard Specifications.

1.02 CONTRACTOR TO SUBMIT PROGRESS SCHEDULES

- A. Contractor shall submit proposed Baseline Progress Schedule within 14 days after execution of the Agreement. Within 28 days after execution of the Agreement Contractor shall submit Baseline Progress Scheduling addressing Owner provided comments.
- B. Baseline Progress Schedule shall show Contractor's construction and procurement activities, including but not limited to, equipment procurement and delivery (Contractor and Owner supplied), activities with Subcontractors and suppliers, major submittal reviews, commissioning of systems, use of major equipment on site, and necessary interface with Owner and third parties required to complete the Work in a timely manner and in accordance with Contract Time.

1.03 SCHEDULE REQUIREMENTS.

- A. Unless Owner agrees in writing otherwise, progress schedule shall be produced with Primavera P6 or software allowing import into Primavera P6, as Owner may specify, which Contractor shall prepare and supply to Owner, with all datapoint entries completed for start dates, necessary work activities, durations (not longer than 21 calendar days), and logic ties. There shall be no activities without predecessors, successors, and logic ties other than start of construction and completion.
- B. Contractor's progress schedule shall be in the form of a CPM Gantt diagram or, if Owner, in its sole discretion, agrees in writing, an arrow diagram. The hard copies of the schedule supplied to Owner shall indicate the critical path of the Work in red and shall show a logical progression of the Work through completion within Contract Time.
- C. Unless Owner agrees in writing otherwise, progress schedule shall also show early and late start and finish dates and total available float (float to the successor activity's late start date) for each activity. The contract completion date shall be shown as the final completion date on the Contractor's CPM schedule. Owner has no obligation to accept an early completion schedule.

1.04 MONTHLY UPDATES

- A. Contractor's progress schedule shall be updated monthly to reflect actual progress. The schedule shall be subject to Owner's review and acceptance for use in monitoring Contractor's Work and evaluating Applications for Payment.
- B. Contractor shall supply Owner with an electronic copy of the updated progress schedule with each monthly payment application. Contractor shall provide Owner with two-week lookahead schedules weekly, showing in detail any activities and resources scheduled for the immediate two-week period.

1.05 RECOVERY SCHEDULE

- A. Owner may request a recovery schedule if Contractor falls 21 or more Days behind any schedule Milestone. The recovery schedule shall show Contractor's plan and resources committed to retain Contract completion dates.
- B. The recovery schedule shall show the intended critical path. If Owner requests, Contractor shall also:
 - 1. Secure and demonstrate appropriate Subcontractor and supplier consent to the recovery

schedule.

C. Submit a narrative explaining trade flow and construction flow changes and man-hour loading assumptions for major Work activities and/or Subcontractors. All costs associated with development and implementation of the recovery schedule, including inspection outside of normal working hours, shall be at the Contractor's expense.

1.06 TIME IMPACT EVALUATION ("TIE") FOR CHANGE ORDERS, TIME EXTENSIONS AND DELAYS:

- A. When Contractor requests a time extension for any reason, Contractor shall submit a TIE that includes both a written narrative and a schedule diagram depicting how the changed Work or other impact affects other schedule activities. The schedule diagram shall show how Contractor proposes to incorporate the changed Work or other impact in the schedule and how it impacts the current Schedule update critical path or otherwise. Contractor is also responsible for requesting time extensions based on the TIE's impact on the critical path. The diagram shall be tied to the main sequence of scheduled activities to enable Owner to evaluate the impact of changed Work to the scheduled critical path.
- B. Contractor is responsible for all costs associated with the preparation of TIEs, and the process of incorporating TIEs into the current schedule update. Contractor shall provide Owner with four copies of each TIE.

PART 2 - PRODUCTS - NOT USED

PART 3 – EXECUTION – NOT USED

END OF SECTION

SECTION 01 4000

QUALITY REQUIREMENTS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section describes Testing and Inspecting to be provided by the Contractor, plus cooperation required from the Contractor with the County's selected testing agency and others responsible for testing and inspecting the Work.

1.02 SECTION INCLUDES

- A. Related documents.
- B. Quality Assurance.
- C. Related Work.
- D. References.
- E. Samples.
- F. Mock-up.
- G. Selection of testing laboratory.
- H. Contractor's convenience testing.
- I. Code compliance testing.
- J. Manufacturers' field services and reports.
- K. Submittals.
- L. Air Balance Contractor.
- M. Tests and Inspections.

1.03 RELATED DOCUMENTS

Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 00 and Division 01 Specification Sections, apply to Work of this Section.

1.04 QUALITY ASSURANCE – CONTROL OF INSTALLATION

- A. Contractor shall be present at the Project Site at all times during the execution of the Work.
- B. Contractor shall monitor the quality of Work performed by his own forces and subcontractors and shall monitor suppliers, manufacturers, products, services, and site conditions to produce Work of specified quality in accordance with the requirements of the Contract Documents.
- C. Work shall be performed by qualified, skilled, and experienced workers.
- D. Contractor shall be responsible for the coordination of the Work for all trades under this Contract and with other Contractors.

- E. Inspection: Inspect each items of materials or equipment immediately prior to installation. Reject damaged and defective items.
- F. Dimensions: Recheck measurements and dimensions of the Work, as an integral step of starting each installation.
- G. Manufacturers' Instructions: Unless specified otherwise, comply fully with Manufacturers' printed instructions, following each requirement and step in proper sequence. Do not omit any preparatory steps or installation procedures unless specifically modified or exempted in writing. Should manufacturer's instructions conflict with Contract Documents, request written interpretation of requirements from the Architect/Engineer before proceeding.
- H. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- I. Secure products in place with position anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.05 RELATED WORK

- A. Requirements for testing may be described in various Sections of these Specifications.
- B. Where no testing requirements are described, but the County decides that testing is required, the County may require such testing to be performed under current pertinent standards for testing. Payment for such testing will be made as described in this Section.

1.06 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the Reference Standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to the latest edition of Reference Standards as specified in the individual Specification Sections, except where a specific date is established by codes.
- C. Obtain copies of Reference Standards where required by product Specification Sections.
- D. No Contractual relationship, duty, or responsibility of the parties in Contract, nor those of the Architect/Engineer, shall be altered from the Contract Documents by mention or inference otherwise in any reference documents.

1.07 SAMPLES

- A. Take field Samples at the site as required by individual Specifications Sections for review.
- B. Acceptable Samples represent a quality level for the Work.
- C. Where field Samples are specified in individual Sections to be removed, clear area after field Sample has been accepted by Architect/Engineer.
- D. Report samples taken but not tested and special sampling operations as required.

1.08 MOCK-UP

A. Schedule construction and review of the Mock-ups so as not to delay the progress of the Work.

- B. Materials and finish shall be as specified in appropriate Sections and Divisions.
- C. Test will be performed under provisions identified in this Section and identified in the respective product Specification Section.
- D. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- E. Accepted Mock-ups are representative of the quality required for the Work.
- F. Where Mock-up has been accepted by the Architect/Engineer and is specified in product Specification Sections to be removed; remove mock-up and clear area when directed to do so.
- G. Protect and maintain Mock-ups in clean, undamaged condition until such time as it is incorporated in the Work or removed from the Site.

1.09 SELECTION OF TESTING LABORATORY

- A. County will appoint, employ and pay for specified initial services of an independent firm to perform inspecting and testing on earthwork, concrete, steel, welding, grout, anchors, bolts and any other items as deemed necessary.
- B. The independent firm will perform inspections, tests and other services specified in individual Specification Sections and as required by Architect/Engineer or the County.
- C. Inspecting, testing, and source quality control may occur on or off the project site. Perform off-site inspecting or testing as required by the Architect/Engineer or the County. Any off-site testing performed outside normal business hours, Saturday, Sunday or County Holidays (unless specified) will cause the Contractor to pay all overtime inspection and testing costs, as determined by the County.
- D. Reports will be submitted by the independent firm to the Architect/Engineer and Contractor, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- E. Cooperate with independent firm; furnish samples of materials, concrete design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Architect/Engineer and independent firm 48 hours prior to expected time for operations.
 - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
 - 3. Provide access to the Work at all times and at all locations where the Work is in progress.
 - 4. Provide facilities for access to enable the laboratory to perform its functions properly.
- F. Testing or inspecting does not relieve the Contractor of the responsibility to perform the Work to Contract requirements.
- G. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect/Engineer. Payment for retesting will be charged to Contractor by deducting inspecting or testing charges from the Contract Sum/Price.
- H. Unnecessary tests and inspections costs due to Contractor's poor scheduling will be deducted by the County from the Contract Sum.

- I. The County and Architect/Engineer reserve the right to demand for tests, or special examination, any material, item or workmanship or part thereof to assure compliance with specifications and my reject for satisfactory replacement any material, Work or part judged defective or nonconforming as a result thereof. If such tests or examinations indicate the Work does not comply, then the cost of these tests and examinations shall be paid by the Contractor.
- J. Limitations of authority of testing laboratory; Laboratory is not authorized to:
 - 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
 - 2. Approve or accept any portion of Work.
 - 3. Perform any duties of Contractor.

1.10 CONTRACTOR'S CONVENIENCE TESTING

A. Inspecting and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

1.11 CODE COMPLIANCE TESTING

A. Inspections and tests required by codes or ordinances and which are made by a legally constituted authority, shall be the responsibility of and shall be paid for by the Contractor, unless otherwise provided in the Contract Documents.

1.12 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual Specification Sections, require material or product suppliers of manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up equipment, test, and adjust and balance of equipment as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of Observer to the Architect/Engineer 15 days in advance of required observation. Observer is subject to approval of the Architect/Engineer.
- C. Report observations and site decisions or instructions given to applications or installers that are supplemental or contrary to manufacturers written instructions.
- D. Submit report in duplicate within 30 days of observation to the Architect/Engineer for information.

1.13 SUBMITTALS

- A. Furnish copies of licensed Civil Engineer signed test reports to Architect/Engineer, Contractor and County Inspector, indicating sampling and testing in accordance with Title 24 and stipulating whether results comply or do not comply with Contract Documents, noting actual results compared to specified design strength.
- B. Each testing agency shall submit to the Architect/Engineer a report in duplicate covering all tests required by that agency during the project. Report each time Work is suspended, covering tests up to that time, and at the completion of the project, covering all tests.
- C. Test Report Content:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address and telephone number of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making the inspection or test.
 - 6. Designation of the Work and test method.

- 7. Identification of product and Specification Section.
- 8. Complete inspection or test data.
- 9. Test results and interpretations of test results.
- 10. Ambient conditions at the time of sample taking and testing
- 11. Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements and the requirements CCR.T24.
- 12. Name and signature of laboratory Inspector
- 13. Recommendations on testing.

1.14 AIR BALANCE CONTRACTOR

- A. An air balance-testing agency acceptable to the Architect/Engineer on this project shall be hired by the Contractor to conduct air balance testing on the complete Work of the Contractor. Provide information to Architect/Engineer for his review concerning air balance testing agency credentials.
- B. HVAC Subcontractor on this project shall not perform or select that Air Balancing testing Contractor or be associated financially with Air Balance Contractor.

1.15 TEST AND INSPECTIONS

- A. Provide all tests and inspections required by government agencies having jurisdiction, required by provisions of the Contract Documents, and such other tests and inspections as are directed by the Architect/Engineer.
- B. Reports: Shall be executed immediately upon conclusion of each procedure and forwarded to Architect/Engineer, Job Inspector, Contractor, Sub-Contractor, Structural Engineer, and Governing Agency

PART 2 – PRODUCTS

(Not applicable)

PART 3 – EXECUTION

3.01 INSPECTION

A. The Work of construction in all stages of progress shall be subject to the personal observation of the County Inspector. The County Inspector shall have free access to any or all parts of the Work at any time. The Contractor shall furnish the County Inspector reasonable facilities for obtaining such information as may be necessary to keep the County Inspector fully informed respecting the progress and manner of the Work and the character of the material. County Inspection of the Work shall not relieve the Contractor from any obligations to fulfill this Contract.

3.02 TESTING

- A. Cooperation with Testing Laboratory: Representatives of the Testing Laboratory shall have access to the Work at all times. Provide facilities for such access in order that the laboratory may properly perform its functions.
- B. Schedules for Testing:
 - 1. Establishing schedule:
 - a. By advance discussion with Testing Laboratory selected by County, determine the time required for the laboratory to perform its tests and to issue each of its findings.
 - b. Provide all required time within the Construction schedule.

- 2. Revising Schedule: When changes of construction schedule are necessary during construction, coordinate all changes of schedule with Testing Laboratory as required.
- 3. Adherence to Schedule: When the Testing Laboratory is ready to test according to the

incompleteness of the Work, all extra costs for testing attributable to the delay will be deducted by County from the Contract Sum.

- C. Taking Specimens: All specimens and samples for testing, unless otherwise provided in these Contract Documents, will be taken by the Testing Laboratory or the County.
- D. Testing at the Source of Supply:
 - 1. Contractor shall notify the County a sufficient time in advance of the manufacture of material to be supplied by the Contractor under the Contract Documents, which by terms of Contract must be tested, so County may arrange for testing material at source of supply.
 - 2. Any material shipped by Contractor from the source of supply prior to having satisfactorily passed such testing and inspection or prior to the receipt of notice from said representative that such testing and inspection will not be required shall not be incorporated in the job.

3.03 SOIL INSPECTING AND TESTING

- A. Make required inspections and test include, but are not necessarily limited to:
 - 1. Visually inspect on-site and imported fill and backfill, making such tests and retests as necessary to determine compliance Contract requirement compliance and suitability.
 - 2. Make field density tests on samples from in-place material as required.
 - 3. Inspect and test the scarifying and recompacting of cleaned subgrade; inspect the progress of excavating, filling, and grading; make density tests and backfills; and verify compliance with provisions of the Contract Documents and governmental agencies having jurisdiction.
- B. Make and distribute necessary reports and certificates.

3.04 CONCRETE INSPECTING AND TESTING

- A. Portland cement:
 - 1. Secure from cement manufacturer Certificates of Compliance delivered to testing lab
 - 2. Require Certificates of Compliance to positively identify cement as to production lot, bin or silo number, dating and routing of shipment, and compliance with specified standards.
 - 3. If so required by the Architect/Engineer, promptly provide such other specific physical and chemical data as requested.
- B. Aggregate:
 - 1. Provide one test unless character of material changes, material is substituted, or additional test is requested by the Architect/Engineer.
 - 2. Sample from conveyor belts and batching gates at the ready-mix plant:
 - a. Sieve analysis to determine compliance with specified standards and grading;
 - b. Specific gravity test for compliance with specified standards.
- C. Laboratory design mix:
 - 1. After approval of aggregate, and whenever character or source of materials is changed, provide mix design in accordance with ACI 613.
 - 2. Provide designs for all mixes prepared by a licensed Civil Engineer.

- D. Molded concrete cylinders:
 - 1. Provide 3 test cylinders for each 50 cu. yds, or fraction thereof, of each class of concrete of each day's placement.
 - 2. Test 1 cylinder at 7 days, 1 at 28 days, and 1 when so directed.
 - 3. Report the mix, slump, gage, location of concrete in the structure, and test results.
 - 4. Take specimens and make tests in accordance with the applicable ASTM Standard Specifications.
- E. Core Tests:
 - 1. Provide only when specifically so directed by the Architect/Engineer because of low cylinder test results, per Section 2-2604, (d), Title 24.
 - 2. Cut from locations directed by the Architect/Engineer, securing in accordance with ASTM C42, and prepare and test in accordance with ASTM C39.
- F. Placement Inspections:
 - 1. On concrete over 2000 psi, provide continuous or other inspection as required by governmental agencies having jurisdiction.
 - 2. Throughout progress of concrete placements, make slump tests to verify conformance with specified slump.
 - 3. Using all required personnel and equipment, throughout progress of concrete placement verify that finished concrete surfaces will have the level of slope that is required by the Contract Documents.

3.05 CONCRETE REINFORCEMENT INSPECTING AND TESTING

- A. Prior to use, test all reinforcement steel bars for compliance with Specific Standards.
 - 1. Material identified by mill test report, and certified by the testing laboratory, does not require additional testing. Require the supplier to furnish mill test reports to the testing laboratory for certification.
 - 2. Tag identified steel at the supplier's shop. When steel arrives at the job site without such tags, test it as unidentified steel.
- B. Unidentified Steel:
 - 1. Testing laboratory shall select two samples, each 18 in. long of each size.
 - 2. Testing laboratory shall make one tensile test and one bend test for each 2-1/2 tons or fraction thereof of each size of unidentified steel.
- C. Provide continuous inspection for all welding of reinforcement steel.

3.06 STRUCTURAL STEEL INSPECTING AND TESTING

- A. Prior to use, test all structural steel for compliance with the specified standards.
 - 1. Material identified by mill test reports, and certified by the testing laboratory, does not require additional testing. Require the supplier to furnish mill test reports to the laboratory for certification.
 - 2. Tag identified steel at the suppliers shop. When steel arrives at the job site without such tags, test it as unidentified steel.
- B. Unidentified steel:

- 1. The testing laboratory shall make one tensile test and one bend test for each 5 tons of fraction thereof of each shape and size of unidentified structural steel.
- C. Shop Welding:
 - 1. Provide qualified testing laboratory inspector approved by County.
 - 2. On single pass welds, inspect after completion of welding and prior to painting.
 - 3. On multiple pass welds, and on butt welds with cover pass on the back side, provide continuous inspection.
- D. Field Welding: Provide continuous inspection by a qualified testing laboratory inspector approved by County.

3.07 POWDER DRIVEN CONCRETE FASTENERS

- A. Use of Powder Driven Concrete Fasteners for tension loads is limited is limited to support of minor loads like acoustical ceilings, duct work, conduit.
- B. Allowable loads:
 - 1. In general, loads should be limited to less than 100 pounds. Greater loads may be permitted for special cases when approved by the checking supervisor or field engineer.
- C. Testing:
 - 1. The operator, tool, and fastener shall be pre-qualified by the Project Inspector, who shall observe the testing of the first 10 fastener installations. A test "pull-out" load of not less than twice the design load, or 200 pounds, whichever is greater, shall be applied to the pin in such a manner as not to resist the spalling tendency of the concrete surrounding the pin. Thereafter, random test under the Project Inspectors supervision shall be made of approximately 1 in 10 pins, except that when the design load exceeds 100 pounds, one half of the pins shall be tested. Should failure occur on any pin tested, all installations must be tested and any pins failing shall be replaced and retested.

3.08 REJECTED WORK

- A. The County and its representatives shall at all times have access for the purpose of inspection to all parts of the Work and the shops wherein the Work is in preparation.
- B. The County and its representatives shall have the right to reject materials and workmanship which are defective or to require their correction.
- C. The County and its representatives, at any time prior to final acceptance of the entire Work, may make an examination of completed Work by requesting the Contractor to furnish all necessary facilities, labor and materials to remove or tear out completed Work.
- D. Work found meeting the requirements of the Contract after removal or tearing out, shall result in additional costs for labor and material being paid by the County.
- E. Rejected workmanship shall be removed for the project, without charge to the County, for examination, reconstruction, and removal.
- E. Rejected workmanship not corrected by the Contractor within a reasonable time, fixed by written notice, may be corrected by County and expense will be deducted by the County from the Contract Sum.

3.09 REPAIR AND PROTECTION

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- A. Comply with requirements of Section 01705 Cutting and Patching.
- B. Upon completion of inspection, testing, sample-taking and similar services repair damaged construction and restore substrates and finishes to eliminate deficiencies.
- C. Protect repaired construction and Work exposed by or for quality control service activities.
- D. Repair and protection is the Contractors responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.
- F. Work performed by the Contractor which is not in accordance with the Contract Documents and which requires remedial action or changing of the final locations of parts of the Work shall require the following action steps:
 - 1. Contractor confirms finding of County within seven days after receipt of County's notice.
 - 2. Contractor hires an independent Consultant to review the construction problem and propose an alternated solution within 14 days after step number 1.
 - 3. Contractor agrees to compensate the County for any expense the County incurs to evaluate the proposed solution.
 - 4. Contractor makes the correction or accepts a negotiated reduction in the Contract sum upon County's approval of non-conforming Work.

3.10 UNCOVERING AND CORRECTION OF WORK

- A. If a portion of the Work is covered contrary to the Architect/Engineer's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect/ Engineer, be uncovered for the Architect/Engineer's observation and be replaced at the Contractor's expense without change in the Contract sum or time.
- B. Contractor shall promptly correct Work rejected by the Architect/Engineer and bear costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect/Engineer's services and expenses made necessary due to the correction.

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 4100

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

- 1. Regulatory requirements applicable to Contract Documents
- 2. Required provisions under Local Agency Disputes Act
- 3. Required references under federal law

1.02 GENERAL

A. Compliance with Laws

- 1. Conform to all applicable codes, Laws, ordinances, rules, and regulations, which shall have full force and effect as though printed in full in these Specifications. Codes, laws, , rules, regulations, and ordinances ("**Regulatory Requirements**") are not furnished to Contractor, because Contractor is assumed to be familiar with these requirements.
- 2. Any listing of Regulatory Requirements for Work in the Contract Documents is supplied to Contractor as a courtesy and shall not limit Contractor's responsibility for complying with all applicable Regulatory Requirements having application to the Work. Where conflict among the Regulatory Requirements or with these Specifications occurs, the most stringent requirements shall be used.
- 3. Specific reference in the Specifications to applicable Laws and Regulatory Requirements shall mean the latest adopted edition by the regulatory agency in effect at the time of the opening of Bids, except as may be otherwise specifically stated in the Contract Documents.

B. Precedence

- 1. Where specified requirements differ from Regulatory Requirements, the more stringent requirements shall take precedence. Where Drawings or Specifications require or describe products or execution of better quality, higher standard, or greater size than required by Regulatory Requirements, then Drawings and Specifications shall take precedence so long as such increase is in compliance with Laws and Regulatory Requirements. Where no requirements are identified on Drawings or in Specifications, Contractor shall comply with all Regulatory Requirements of governing authorities having jurisdiction.
- 2. Should any conditions develop not covered by the Contract Documents wherein the finished Work will not comply with current codes, a Change Order detailing and specifying the required Work shall be submitted to and approved by Owner before proceeding with the Work.

1.03 REGULATORY REQUIREMENTS

A. Applicable Codes

- 1. Codes that apply to Contract Documents include all current Codes adopted by the County of Kern Building Inspection Department or authority having jurisdiction, applicable to construction, including, but not limited to, the following:
 - a. California Building Code (as amended by applicable local ordinances for all construction work.

- b. California Green Building Standards Code as amended by applicable local ordinances for all construction work.
- c. California Electrical Code as amended by applicable local ordinances for all construction work.
- d. California Plumbing Code as amended by applicable local ordinances for plumbing, sewage disposal, and health requirements.
- e. California Mechanical Code as amended by applicable local ordinances for all construction work.
- f. International Fire Code as amended by applicable local ordinances for all construction work.
- g. California Administrative Code Titles 15, 19 and 24 (with California amendments), and Americans with Disabilities Act (ADA) accessibility guidelines, whichever is more stringent.
- h. All State laws and City and County Ordinances, rules of the State or City or County Health Departments, rules of the National Board of Fire Underwriters and National Fire Protection Associations, and local utility company regulations for mechanical and electrical work.

B. Applicable Laws, Statutes, Ordinances, Rules, And Regulations

- 1. During prosecution of Work to be done under Contract Documents, Contractor shall comply with applicable codes, laws, orders, ordinances, rules, and regulations, including, but not limited to, the following:
 - a. <u>Federal:</u>
 - 1) Americans With Disabilities Act of 1990
 - 2) 29 CFR, Section 1910.1001, Asbestos
 - 3) 40 CFR, Subpart M, National Emission Standards for Asbestos
 - 4) Executive Order 11246
 - 5) Federal Endangered Species Act
 - 6) Clean Water Act
 - b. State of California:
 - 1) California Code of Regulations, Titles 5, 8, 17, 19, 21, 22, 24 and 25
 - 2) California Public Contract Code
 - 3) California Health and Safety Code
 - 4) California Government Code
 - 5) California Labor Code
 - 6) California Civil Code
 - 7) California Code of Civil Procedure
 - 8) CPUC General Order 95, Rules for Overhead Electric Line Construction
 - 9) CPUC General Order 128, Rules for Construction of Underground Electric Supply and Communications Systems
 - 10) Cal/OSHA
 - 11) OSHA: Hazard Communications Standards
 - 12) California Endangered Species Act
 - 13) Water Code
 - 14) Fish and Game Code
 - c. <u>State of California Agencies:</u>
 - 1) Regulatory Requirements of State and Consumer Services Agency
 - 2) Regulatory Requirements of Office of the State Fire Marshall
 - 3) Regulatory Requirements of Office of Statewide Health Planning and Development
 - 4) Regulatory Requirements of Department of Fish and Game

- 5) Regulatory Requirements of all Air Quality Management Districts with jurisdiction
- 6) Regulatory Requirements of Department of Water Resources (SWPPP)
- 7) Regulatory Requirements of all Regional Water Quality Control Boards with jurisdiction
- 8) Regulatory Requirements of the Division of the State Architect (if having jurisdiction)
- d. <u>Regulatory Requirements of all Local Agencies with jurisdiction (including, without limitation, cities, counties, and fire departments)</u>

C. Change Orders and Claims:

- 1. The California Public Contract Code, including but not limited to Section 7105(d)(2), and the California Government Code section 930.2 et seq., apply to all contract procedures for changes, time extensions, change orders (time or compensation), and claims. Federal law (*U.S. v. Holpuch* 326 U.S. 234) shall supplement California law on the enforceability of these requirements.
- 2. Any change, waiver, or omission to implement contract change order and claim procedures shall have no legal effect unless expressly permitted in a fully executed change order approved by Contractor and Owner and approved as to form by their respective legal counsel.

D. Required Provisions On Contract Claim Resolution

- 1. The California Public Contract Code specifies required provisions on resolving contract claims less than \$375,000, which are set forth below, and constitute a part of this Contract.
- 2. For the purposes of this Section 01 4100, "Claim" means a separate demand by Contractor of \$375,000 or less for (1) a time extension, (2) payment or money or damages arising from Work done by or on behalf of Contractor arising under the Contract Documents and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (3) an amount the payment of which is disputed by Owner. In order to qualify as a Claim, the written demand must state that it is a Claim submitted under paragraph 12 of Document 00 7200 (General Conditions) and be submitted in compliance with all requirements of Document 00 7200 (General Conditions), paragraph 12. Separate Claims which total more than \$375,000 do not qualify as a "separate demand of \$375,000 or less," as referenced above, and are not subject to this Section 01 4100,.
- 3. A voucher, invoice, payment application, or other routine or authorized form of request for payment is not a Claim for purposes of this Section 01 4100,. If such request is disputed as to liability or amount, then the disputed portion of the submission may be converted to a Claim under this Section 01 4100, by submitting a separate Claim in compliance with Contract Documents claim submission requirements.
- 4. <u>Caution.</u> This Section 01 4100, , does not apply to tort claims and nothing in this Section 01 4100, is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 and Chapter 2 of Part 3 of Division 3.6 of Title 1 of the California Government Code.
- 5. <u>Procedure:</u>
 - a. The Claim must be in writing, submitted in compliance with all requirements of Document 00 7200 (General Conditions), paragraph 12, including, but not limited to, the time prescribed by and including the documents necessary to substantiate the Claim, pursuant to Document 00 7200 (General Conditions), paragraph 12.3. Claims must be filed on or before the day of final payment. Nothing in this Section 01 4100, is intended to extend the time limit or supersede notice requirements for the filing of claims as set forth in Document 00 7200 (General Conditions), paragraph 12 or elsewhere in the Contract Documents.

- b. For Claims of \$50,000 or less, Owner shall respond in writing within 45 days of receipt of the Claim, or Owner may request in writing within 30 days of receipt of the Claim, any additional documentation supporting the Claim or relating to any defenses or claims Owner may have against claimant. If additional information is thereafter required, it shall be requested and provided in accordance with this Section 01 4100, upon mutual agreement of Owner and claimant. Owner's written response to the Claim, as further documented, shall be submitted to claimant within 15 days after receipt of further documentation or within a period of time no greater than taken by claimant in producing the additional information, whichever is greater.
- c. For Claims over \$50,000 and less than or equal to \$375,000: Owner shall respond in writing within 60 days of receipt of the Claim, or Owner may request in writing within 30 days of receipt of the Claim, any additional documentation supporting the Claim or relating to any defenses or claims Owner may have against claimant. If additional information is thereafter required, it shall be requested and provided in accordance with this Section 01 4100, upon mutual agreement of Owner and claimant; Owner's written response to the Claim, as further documented, shall be submitted to claimant within 30 days after receipt of further documentation or within a period of time no greater than taken by claimant in producing the additional information, whichever is greater.
- d. Meet and Confer: If claimant disputes Owner's written response, or Owner fails to respond within the time prescribed above, claimant shall notify Owner, in writing, either within 15 days of receipt of Owner's response or within 15 days of Owner's failure to timely respond, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon demand Owner will schedule a meet and confer conference within 30 days for settlement of the dispute.
- e. Following the meet and confer conference, if the Claim or any portion remains in dispute, claimant may file a claim as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the California Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time claimant submits its written claim as set forth herein, until the time that Claim is denied as a result of the meet and confer process, including any period of time utilized by the meet and confer process.

E. Compliance With Americans With Disabilities Act

1. Contractor acknowledges that, pursuant to the Americans with Disabilities Act ("ADA"), programs, services and other activities provided by a public entity to the public, whether directly or through a Contractor, must be accessible to the disabled public. Contractor shall provide the services specified in the Contract Documents in a manner that complies with the ADA and any and all other applicable federal, state, and local disability rights legislation. Contractor agrees not to discriminate against disabled persons in the provision of services, benefits, or activities provided under the Contract Documents and further agrees that any violation of this prohibition on the part of Contractor, its employees, agents, or assigns shall constitute a material breach of the Contract Documents.

F. Compliance With IRCA

1. Contractor acknowledges that Contractor, and all subcontractors hired by Contractor to perform services under this Agreement, are aware of and understand the immigration Reform and Control Act ("IRCA"). Contractor is and shall remain in compliance with the IRCA and shall ensure that any subcontractors hired by Contractor to perform services under this Agreement are in compliance with the IRCA. In addition, Contractor agrees to indemnify, defend, and hold harmless Owner, its agents, officers and employees, from any liability, damages, or causes of action arising out of or relating to any claims that Contractor's employees, or employees of any subcontractor hired by Contractor, are not authorized to work in the United States for Contractor or its subcontractor and/or any other claims based upon alleged IRCA violations committed by Contractor or Contractor's

subcontractors.

PART 2 – PRODUCTS – NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 4216

DEFINITIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

- 1. Reference standards, abbreviations, symbols, and definitions used in Contract Documents.
- 2. Full titles are given in this Section for standards cited in other Sections of Specifications.

1.02 REFERENCE TO STANDARDS AND SPECIFICATIONS OF TECHNICAL SOCIETIES; REPORTING AND RESOLVING DISCREPANCIES

A. References

- 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code, or laws or regulations in effect at the time of opening of Bids, except as may be otherwise specifically stated in the Contract Documents.
- 2. If during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such law or regulation applicable to the performance of the Work or of any such standard, specification, manual, or code or of any instruction of any supplier, Contractor shall report it in writing at once to Owner's Representative and Architect/Engineer, and Contractor shall not proceed with the Work affected thereby until consent to do so is given by Owner.

B. Precedence

- 1. Except as otherwise specifically stated in the Contract Documents or as may be provided by Change Order or Instruction Bulletin, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. The provisions of any such standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. The provisions of any such 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).
- 2. No provision of any standard, specification, manual, code, or instruction shall be effective to change the duties and responsibilities of Owner, Owner's Representative, Architect/Engineer or Contractor, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents, nor shall it be effective to assign to Owner, Architect/Engineer, or any of their consultants, agents, representatives, or employees any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

C. Referenced Grades, Classes, and Types:

1. Where an alternative or optional grade, class, or type of product or execution is included in a reference but is not identified in Drawings or in Specifications, Contractor shall provide

the highest, best, and greatest of the alternatives or options for the intended use and prevailing conditions.

D. Edition Date of References:

- 1. When an edition or effective date of a reference is not given, it shall be understood to be the current edition or latest revision published as of the date of opening Bids.
- 2. All amendments, changes, errata and supplements as of the effective date shall be included.
- E. **ASTM and ANSI References:** Specifications and Standards of the American Society for Testing and Materials (ASTM) and the American National Standards Institute (ANSI) are identified in the Drawings and Specifications by abbreviation and number only and may not be further identified by title, date, revision, or amendment. It is presumed that Contractor is familiar with and has access to these nationally- and industry-recognized specifications and standards.

1.03 DEFINITIONS

A. Meaning of Words and Phrases

Wherever any of the words or phrases defined below, or a pronoun used in place thereof, is used in any part of the Contract Documents, it shall have the meaning here set forth. Where abbreviations and symbols are used, such abbreviations and symbols shall be given their common meaning in the construction industry. In the Contract Documents, the neuter gender includes the feminine and masculine, and the singular number includes the plural.

While Owner has made an effort to identify all defined terms with initial caps, the following definitions shall apply regardless of case unless the context otherwise requires:

- 1. Addenda: Written or graphic instruments issued prior to the opening of Bids, which clarify, correct, or change the bidding requirements or the Contract Documents. Addenda shall not include the minutes of the Pre-Bid Conference and/or Site Visit.
- Agreement (Document 00 5200): Agreement is the basic Contract Document that binds the parties to construction Work. Agreement defines relationships and obligations between Owner and Contractor and by reference incorporates Conditions of Contract, Drawings, and Specifications and contains Addenda and all Modifications subsequent to execution of Contract Documents.
- 3. Alternate: Work added to or deducted from the base Bid, if accepted by Owner.
- 4. Application for Payment: Written application for monthly or periodic progress or final payment made by Contractor complying with the Contract Documents.
- 5. Approved Equal: Approved in writing by Owner as being of equivalent quality, utility and appearance.
- 6. Architect/Engineer: If used elsewhere in the Contract Documents, "Architect/Engineer" shall mean a person (or that person's firm) holding a valid California State Architect's or Engineer's license representing the Owner in the administration of the Contract Documents. Architect/Engineer may be an employee of or an independent consultant to Owner. When Architect/Engineer is referred to within the Contract Documents and not an employee of Owner, Architect/Engineer shall be construed to include employees of Architect/Engineer and/or employees that Architect/Engineer supervises. When the designated Architect/Engineer is an employee of Owner, his or her authorized representatives on the Project will be included under the term Architect/Engineer. If Architect/Engineer is an employee of Owner, Architect/Engineer of Owner, Architect/Engineer and/or employees and indemnities. Architect/Engineer and project will be included under the term Architect/Engineer. If Architect/Engineer is an employee of Owner, Architect/Engineer and an employee of other and an employee of Owner, his or her authorized representatives on the Project will be included under the term Architect/Engineer. If Architect/Engineer is an employee of Owner, Architect/Engineer is the beneficiary of all Contractor obligations to Owner, including without limitation, all releases and indemnities. Architect/Engineer may also be referred to as Architect or Engineer.

- 7. Asbestos: Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by OSHA or Cal/OSHA.
- 8. Bid: The offer or proposal of the Bidder submitted on the prescribed form(s) setting forth the prices for the Work to be performed.
- 9. Bidder: One who submits a Bid.
- 10. Bidding Documents: All documents comprising the Project Manual (including all documents and Specification Sections listed in Document 00 0110 [Table of Contents]), including documents supplied for bidding purposes only and Contract Documents.
- 11. BIT Component 3 of a Cost Proposal addressing Measurement and Payment of Bonds, Insurance and Taxes. See Document 01 2050 Modification Procedures.
- 12. BMP (Best Management Practices) Related to implementation of a SWPPP, the measures and methods undertaken to implement a Stormwater Pollution and Prevention Plan on a project site.
- 13. Board: The governing body of the Owner.
- 14. Business or Working (Work) Day: Any Day other than Saturday, Sunday, and the following days that have been designated as holidays by Owner. If a holiday falls on a Saturday, the preceding Friday will be the holiday. If a holiday falls on a Sunday, the following Monday will be the holiday.
 - a. New Year's Day, January 1;
 - b. Martin Luther King Jr.'s Birthday, third Monday in January;
 - c. Lincoln's Birthday, February 12;
 - d. Presidents' Day, third Monday in February;
 - e. Cesar Chavez Day, March 31;
 - f. Memorial Day, last Monday in May;
 - g. Independence Day, July 4;
 - h. Labor Day, first Monday in September;
 - i. Columbus Day, second Monday in October;
 - j. Veterans' Day, November 11;
 - k. Thanksgiving Day, as designated by the President;
 - I. The Day following Thanksgiving Day;
 - m. Christmas Day, December 25; and
 - n. Each day appointed by the Governor of California and formally recognized by the Governing Board as a day of mourning, thanksgiving, or special observance.
- 15. By Others: Work that is outside scope of Work to be performed by Contractor under this Contract, which will be performed by Owner, other contractors, or other means.
- 16. By Owner: Work that will be performed by Owner or its agents at the Owner's expense.
- 17. Change Order ("**CO**"): A written instrument prepared by Owner and signed by Owner and Contractor, stating their agreement upon all of the following:
 - a. a change in the Work;
 - b. the amount of the adjustment in the Contract Sum, if any; and
 - c. the amount of the adjustment in the Contract Time, if any.
- 18. Code: All Codes specified by law or applicable governing agency.
- 19. Code Inspector: A local or state agency responsible for the enforcement of applicable codes and regulations.
- 20. Concealed: Work not exposed to view in the finished Work, including within or behind various construction elements.
- 21. Contract Amount: a change order price, line item price, Contract Sum, or other price assigned to a scope of work.

- 22. Contract Conditions or Conditions of the Contract: Consists of two parts: General Conditions and Supplementary Conditions.
 - a. General Conditions are general clauses that are common to the Owner Contracts, including Document 00 7200 (General Conditions).
 - b. Supplementary Conditions modify or supplement General Conditions to meet specific requirements for Contract Documents.
- 23. Contract Documents and Contract: Contract Documents and Contract shall consist of the documents identified as the Contract Documents in Document 00 5200 (Agreement), plus all changes, Addenda, and modifications thereto.
- 24. Contract Modification: Either:
 - a. a written amendment to Contract signed by Contractor and Owner; or
 - b. a Change Order; or
 - c. a written directive for a minor change in the Work issued by Owner.
- 25. Contract Sum: The sum stated in the Agreement and, including authorized adjustments, the total amount payable by Owner to Contractor for performance of the Work and the Contract Documents. The Contract Sum is also sometimes referred to as the Contract Price or the Contract Amount.
- 26. Contract Time: The number or numbers of Days or the dates stated in the Agreement to achieve Final Completion of the Work or designated Milestones; and/or to achieve Final Completion of the Work so that it is ready for final payment and is accepted.
- 27. Contractor: The person or entity identified as such in the Agreement and referred to throughout the Contract Documents as if singular in number and neutral in gender. The term "Contractor" means the Contractor or its authorized representative.
- 28. Contractor's Employees: Persons engaged in execution of Work under Contract as direct employees of Contractor, as Subcontractors, or as employees of Subcontractors.
- 29. Cost Proposal: A cost estimate for an increase or decrease in Contract Sum relative to a Contract Modification. All cost proposals shall be submitted on the form included in Document 01 2050.
- 30. Day: One calendar day of 24 hours measured from midnight to the next midnight, unless the word "day" is specifically modified to the contrary.
- 31. Defective: An adjective which, when modifying the word "Work," refers to Work that is unsatisfactory or unsuited for the use intended, faulty, or deficient, that does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents (including but not limited to approval of Samples and "or equal" items), or has been damaged prior to final payment (unless responsibility for the protection thereof has been assumed by Owner). Unapproved substitutions are defective. Owner is the judge of whether Work is Defective.
- 32. Division of State Architect: A division of the State of California providing, design and construction oversight for K–12 schools and community colleges, and developing and maintaining accessibility standards and codes utilized in public and private buildings throughout the State of California.
- 33. Drawings: The graphic and pictorial portions of Contract Documents, wherever located and whenever issued, showing the design, location, and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.
- 34. Equal: Equal in opinion of Owner. Burden of proof of equality is responsibility of Contractor.
- 35. Exposed: Work exposed to view in the finished Work, including behind louvers, grilles, registers and various other construction elements.
- 36. Final Acceptance or Final Completion: Owner's acceptance of the Work as satisfactorily completed in accordance with Contract Documents. Requirements for Final Acceptance/Final Completion include, but are not limited to:
- a. Final cleaning is completed.
- b. All systems having been tested and accepted as having met requirements of Contract Documents.
- c. All required instructions and training sessions having been given by Contractor.
- d. All Project Record Documents having been submitted by Contractor, reviewed by Owner, and accepted by Owner.
- e. All punch list Work, as directed by Owner, having been completed by Contractor.
- f. Generally all Work, except Contractor maintenance after Final Acceptance/Final Completion, having been completed to satisfaction of Owner.
- 37. Force Account: Work directed to be performed without prior agreement as to lump sum or unit price cost thereof, and which is to be billed at cost for labor, materials, equipment, taxes, and other costs, plus a specified percentage for overhead and profit.
- 38. Furnish: Supply only, do not install.
- 39. Indicated: Shown or noted on the Drawings.
- 40. Install: Install or apply only, do not furnish.
- 41. Instruction Bulletin ("IB"): A document consisting of supplementary details, instructions, or information issued by Owner that clarifies or supplements Contract Documents, and with which Contractor shall comply. Instruction Bulletins may also order alterations or Modifications that do not result in change in Contract Sum or Contract Time, and do not substantially change Drawings or Specifications. Instruction Bulletins do not constitute changes in Contract Sum or Contract Time except as otherwise agreed in writing by Owner.
- 42. Latent: Not apparent by reasonable inspection, including but not limited to, the inspections and research required as a condition to bidding under Document 00 7200 (General Conditions).
- 43. Law: Unless otherwise limited, all applicable laws including without limitation all federal, state, and local laws, statutes, standards, rules, regulations, ordinances, and judicial and administrative decisions.
- 44. LEMS: Component 1 of a Cost Proposal addressing Measurement and Payment of Labor, Equipment, Material and Subcontractors. See Document 01 2050 Modification Procedures.
- 45. Material: This word shall be construed to embrace machinery, manufactured articles, materials of construction (fabricated or otherwise), and any other classes of material to be furnished in connection with Contract, except where a more limited meaning is indicated by context.
- 46. Milestone: A principal event specified in Contract Documents relating to an intermediate completion date or time prior to Final Completion of all Work.
- 47. Modification: Same as Contract Modification.
- 48. Not in Contract or "NIC": Work that is outside the scope of Work to be performed by Contractor under Contract Documents.
- 49. Notice of Completion: Shall have the meaning provided in California Civil Code §3093, and any successor statute.
- 50. Off Site: Outside geographical location of the Project.
- 51. Owner: Owner is defined in Document 00 5200 (Agreement).
- 52. Owner-Furnished, Contractor Installed: Items furnished by Owner at its cost for installation by Contractor at its cost under Contract Documents.
- 53. Owner's Representative(s): See Document 00 5200 (Agreement).
- 54. Partial Utilization: Use by Owner of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Final Completion of all of the Work.
- 55. PCBs: Polychlorinated biphenyls.

- 56. Phase: A specified portion of the Work (if any) specifically identified as a Phase in Document 00 5200 (Agreement) or Document 01 1000 (Summary).
- 57. Product Data: That information (brochures, catalog sheets, manufacturer's cut sheets, etc.) supplied by vendors having technical and commercial characteristics of the supplied equipment or materials and accompanying commercial terms such as warranties, instructions, and manuals.
- 58. Progress Report: A periodic report submitted by Contractor to Owner with progress payment invoices accompanying progress schedule. See Document 00 7200 (General Conditions).
- 59. Progress Schedule (schedule):
 - a. Baseline Progress Schedule: The first progress schedule submittal from the Contractor and reviewed by Owner, with no exceptions taken.
 - b. Progress Schedule: All subsequent schedule submissions after the Baseline Progress Schedule.
- 60. Project: Total construction of which Work performed under Contract Documents may be whole or part.
- 61. Project Manager: If used elsewhere in the Contract Documents, "Project Manager" shall mean a person representing the Owner in the administration of the Contract Documents. Project Manager may be an employee of or an independent consultant to Owner. When Project Manager is referred to within the Contract Documents and no Project Manager has in fact been designated, then the matter shall be referred to Owner. The term Project Manager shall be construed to include employees of Project Manager and/or employees that Project Manager supervises. When the designated Project Manager is an employee of Owner, his or her authorized representatives on the Project will be included under the term Project Manager. If Project Manager is an employee of Owner Project Manager is the beneficiary of all Contractor obligations to Owner, including without limitation, all releases and indemnities.
- 62. Project Manual: Project Manual consists of Bidding Requirements, Agreement, Bonds, Certificates, Contract Conditions, Drawings, and Specifications.
- 63. Project Record Documents: All Project deliverables required under the Contract Documents, including without limitation, as built drawings; Installation, Operation, and Maintenance Manuals; and Machine Inventory Sheets.
- 64. Provide: Furnish and install.
- 65. Request for Information ("**RFI**"): A document prepared by Contractor requesting information regarding the Project or Contract Documents. The RFI system is also a means for Owner to submit Contract Document clarifications or supplements to Contractor.
- 66. Samples: Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
- 67. Shop Drawings: All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
- 68. Shown: As indicated on Drawings.
- 69. Site: The particular geographical location of Work performed pursuant to the Contract Documents.
- 70. Specifications: The written portion of the Contract Documents consisting of requirements for materials, equipment, construction systems, standards, and workmanship for the Work; performance of related services.
- 71. Specified: As written in Specifications.

- 72. Standard Specifications: The most recent edition of the Standard Specifications of the State of California, Business and Transportation Agency, Department of Transportation, insofar as the same may apply and in accordance with the Specifications.
- 73. Subcontractor: A person or entity that has a direct contract with Contractor to perform a portion of the Work at the Site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and neutral in gender and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a separate contractor or subcontractors of a separate contractor.
- 74. SWPPP (Storm Water Pollution and Prevention Plan) Plan to mitigate storm water quality and discharges from the construction site.
- 75. Testing and special inspection agency: An independent entity engaged to inspect and/or test the workmanship, materials, or manner of construction of buildings or portions of buildings, to determine if such construction complies with the Contract Documents and applicable codes.
- 76. Time Impact Evaluation ("TIE"): An evaluation of the impact of an issue to the project schedule.
- 77. Underground Facilities: All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities that have been installed underground to furnish any of the following services or materials: Electricity, gases, chemicals, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems, or water.
- 78. Unit Price Work: Shall be the portions of the Work for which a unit price is provided in Document 00 5200 (Agreement) or Section 01 1000 (Summary).
- 79. Work: The entire completed construction, or the various separately identifiable parts thereof, required to be furnished under the Contract Documents within the Contract Time. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents including everything shown in the Drawings and set forth in the Specifications. Wherever the word "work" is used, rather than the word "Work," it shall be understood to have its ordinary and customary meaning.

B. Other Defined Terms

The following terms are not necessarily identified with initial caps; however they shall have the meaning set forth below:

- 1. Wherever words "as directed," "as required," "as permitted," or words of like effect are used, it shall be understood that direction, requirements, or permission of Owner is intended. Words "sufficient," "necessary," "proper," and the like shall mean sufficient, necessary, or proper in judgment of Owner. Words "approved," "acceptable," "satisfactory," "favorably reviewed," or words of like import, shall mean approved by, or acceptable to, or satisfactory to, or favorably reviewed by Owner.
- 2. Wherever the word "may" or "ought" is used, the action to which it refers is discretionary. Wherever the word "shall" or "will" is used, the action to which it refers is mandatory.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 5000

TEMPORARY FACILITIES AND CONTROLS

PART 1 – GENERAL

1.01 SUMMARY

A. This Section describes construction facilities and temporary controls required for the Work.

1.02 SECTION INCLUDES

- A. Temporary Utilities
- B. Temporary Controls: Barriers, tarpaulins, barricades and protection of the Work.
- C. Construction Facilities: sanitary facilities, parking, progress cleaning.
- D. Dust control.
- E. Noise control.
- F. Pest Control.
- G. Pollution control.
- H. Protect installed Work.
- I. Security.
- J. Nothing in this Section is intended to limit types and amount of temporary Work required. No omission from this Section will be recognized by Architect/Engineer that such activity is not required for successful completion of the Work and compliance with requirements of Contract Documents

1.03 RELATED DOCUMENTS

Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 00 and Division 01 Specification Sections, apply to Work of this Section.

1.04 TEMPORARY UTILITIES

- A. Temporary Sanitary Facilities:
 - 1. Provide and maintain required facilities and enclosures. Comply with all minimum requirements of all public agencies having jurisdiction.

1.05 TEMPORARY CONTROLS

- A. Barriers:
 - 1. Provide barricades, scaffolds, tarpaulins, canopies, warning signs, steps, etc., and other temporary construction required by governing authorities to comply with pertinent safety and other regulations.

- 2. Provide protection for plant life designated to remain. Replace damaged plant life immediately.
- 3. Protect non-owned vehicular traffic, stored materials, site and structures from damage.
- 4. Provide and maintain temporary enclosures to separate Work areas from areas occupied. by County and to prevent the penetration of dust and noise into occupied spaces.
 - a. Construct with closed, sealed joints. Close or seal edges, penetrations, and intersections with other surfaces to prevent penetrations of dust and noise.
 - b. Construct in accordance with fire-resistive requirements of regulatory agencies where indicated; maintain fire exits.
 - c. Finish surfaces exposed to view or public or in County-occupied areas as directed by the County.
- B. Fencing:
 - 1. Construction: Commercial grade chain link fence.
 - 2. Provide 8-foot high fence around staging area; equip with pedestrian gate with lock.
- C. Fire Protection:
 - 1. Volatile liquids shall be kept outside, in a well ventilated location, well removed from open heating or lighting devices, and brought inside in quantities only as needed.
 - 2. Provide housekeeping of volatile liquids and other materials to eliminate spillage and accumulation of oil wastes and provide approved hazardous waste and safety containers.
 - 3. Fire extinguishers:
 - a. Type A at low potential locations for fire.
 - b. Type ABC dry chemical at remaining locations.
 - c. Post warnings and quick instructions at each extinguisher location.
 - d. Instruct all personnel at time of their first arrival on proper use of extinguisher and other available site facilities.
- D. Security:
 - 1. Provide security and facilities to protect Work, and County's operations from unauthorized entry, vandalism, or theft.
 - 2. Coordinate with County's security program.

1.06 CONSTRUCTION FACILITIES

- A. Access Roads:
 - 1. Construct and maintain temporary roads accessing public thoroughfares to serve construction area.
 - 2. Extend and relocate as Work progress requires. Provide detours necessary for unimpeded traffic low.
 - 3. Provide and maintain access to fire hydrants, free of obstructions.
- B. Access Provisions:
 - 1. Provide ramps, stairs, ladders, and similar temporary access elements to perform the Work and facilitate its observation during installation.
 - 2. Permanent stairs used for access shall be covered and protected to ensure freedom from damage at time of completion.
- C. Parking:

- 1. Parking provided on site for contractor use, coordinate with Owner on site.
- 2. Do not allow vehicle parking on constructed pavement.
- 3. Designate one parking space each for the County and Architect/Engineer.
- D. Progress Cleaning:
 - 1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
 - 2. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
 - 3. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
 - 4. Remove waste material, debris, and rubbish from site periodically and dispose off-site. No burning (fires) on site allowed.

1.09 DUST CONTROL

- A. Conduct construction operations to minimize the generation of dust and dirt, and prevent dust and dirt from interfering with the progress of the Work and from accumulation in Work and adjacent areas.
- B. Provide positive means to prevent air-borne dust from dispersing into atmosphere and into existing facility. This facility is to remain operation during the construction.
 - 1. Periodically water construction areas to minimize the generation of dust and dirt.
 - 2. To additionally minimize the generation of dust and dirt, hauling equipment and trucks carrying load s of soil and debris shall have their loads sprayed with water or covered with tarpaulins.
 - 3. Prevent dust and dirt from accumulating on walks, roadways, parking areas, and planting, and from washing into sewer and storm drain systems.
- C. Dust and debris that may be generated during construction will be mitigated in accordance with the standards established by the Kern County Air Pollution Control District (KCUAPCD), Rule 42 Fugitive Dust/PM₁₀ pertaining to construction and demolition activities for the control of Fugitive Dust of fine particular matter (PM₁₀).

1.10 NOISE CONTROL

A. Provide methods, means, and facilities as required to minimize noise from the Work and noise produced by construction operations.

1.11 PEST CONTROL

A. Provide methods, means, and facilities as necessary to prevent rodents, pests and insects from entering facility.

1.12 POLLUTION CONTROL

- A. No burning of refuse, debris, or other materials shall be permitted on or in the vicinity of the Project Site.
- B. Comply with applicable regulatory requirements and anti-pollution ordinances during the conduct of construction and disposal operations.

1.13 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified where specified in individual Specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and sofffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturers.
- E. Prohibit traffic from landscaped areas.
- F. Protect all existing items to remain and as noted on the Construction Documents.

1.14 SECURITY

- A. Provide methods, means, and facilities as necessary to protect the Work, stored materials, equipment, temporary facilities, and County's operations from authorized entry, vandalism, or theft. Construction of barriers shall be proved as required to keep facility users out of the construction area throughout progress of the Work as well as maintaining a secured facility to prevent vandalism.
- B. For secured Sheriff Facilities, there are two security clearance tier levels [PROJECT MANAGER TO DETERMINE FOR BIDDING; INCLUDE APPROPRIATE TIER PACKET IN SPECIFICATIONS]
 - 1. Tier 1- (3) three page form (See attached Tier 1 Security packet). Packet includes and not limited to:
 - a. Fingerprints- Dept of Justice Inquiry
 - b. CJIS- Criminal Justice Information
 - c. ILEADS- Sheriff report data base
 - d. CLETS- California Law Enforcement Telecommunications System
 - e. DMV- Dept of Motor Vehicles
 - f. KCSO Arrest Records- Local arrest record info
 - g. KCSO Crime Reports- Local crime report info
 - h. BPD- Bakersfield Police Dept Arrest & Crime reports
 - i. Other law Enforcement Agencies- Where applicant worked or lived.
 - 2. Tier 2- (18) eighteen page form (See attached Tier 2 Security packet). Packet includes and not limited to:
 - a. Tier 1- All clearances above
 - b. Gang Information- If reason to do so
 - c. TLO- Private data base that searches criminal, civil,, credit, etc
 - d. Internet Name Search- Using public search engine such as Google, Bing, You Tube, etc
 - e. Drug Screen
 - 3. For unsecured Sheriff Facilities, Sheriff Department project manager to determine extent of security level

1.15 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pip chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and rubbish from site daily and dispose offsite.
- E. Open free-fall chutes not permitted. Terminate closed into appropriate containers with lids.

1.16 MAINTENANCE

A. Maintain temporary facilities and controls as long as needed for safe and proper completion of the Work.

PART 2 – PRODUCTS

(Not applicable)

PART 3 – EXECUTION

3.01 REMOVAL

- A. Maintain all temporary facilities and controls as long as needed for the safe and proper completion of the Work.
- B. Remove all such temporary facilities and controls prior to final payment.

3.02 CONTRACTOR'S OPERATIONS

- A. During the course of construction, do not interfere with other buildings or portions of buildings, which are to remain, occupied. Maintain free and safe passage to and from other buildings which are occupied
- B. Wherever existing services are to be unavoidably interrupted, consult with the County's Representative and schedule the interruptions in advance. Overtime Work if required will be at no additional cost to the County.
- C. Attempt to do all jackhammer and other particularly noisy Work after normal working hours and on weekends. In all cases, schedule this Work in advance with the County's Representative. Minimize construction noise by adequate mufflers and other means.

3.03 FIRE HAZARD AND BURNING

- A. The Contractor is hereby made aware of the fire hazard that exists at the site.
- B. Exercise all possible safety precautions to prevent fires and be responsible for any negligence of Subcontractors causing fires or creating hazards.

C. No burning of any kind shall be permitted.

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 6000

PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1 SUMMARY

A. Product requirements, transportation and handling of products, storage and protection of products, product options, and substitutions procedures.

1.2 SECTION INCLUDES

- A. Definitions.
- B. Products.
- C. Transportation and handling.
- D. Storage and protection.
- E. Product options.
- F. Substitutions.

1.3 RELATED DOCUMENTS

Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 00 and Division 01 Specification Sections, apply to Work of this Section.

1.4 **DEFINITIONS**

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
- B. Named products: Items identified by manufacturer's product name, including make and model as identified in published product literature current as of Contract Document date.
- C. Materials: Products substantially shaped, cut or worked or otherwise fabricated, processed, or installed to form a part of the Work.
- D. Equipment: Product with operational parts, motorized or manual, that requires service connections.

1.5 PRODUCTS

- A. New and in a condition acceptable to the County and the Architect/Engineer. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- B. In conformance with EPA Codes and Regulations.

- C. No material or equipment shall be used for any purpose other than that for which it is designed or specified.
- D. Provide interchangeable components of the same manufacture, for components being replaced.
- E. No material shall contain asbestos or polychlorinated biphenals (PCBs).
- F. No materials or products shall contain formaldehyde in excess of the amount recommended by OSHA Regulations (Standards -29 CFR).
- G. No lead containing powder driven anchors are permitted. Wherever powder driven anchors are Indicated or Specified, provide equivalent strength non-lead containing powder driven anchors.
- H. Pursuant to the Resource Conservation & Recovery Act (RCRA) 6002 and to the extent that new recyclable material maybe utilized for construction of the building expansion with the approval of Architect/Engineer.

1.6 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Deliver manufactured products in the manufacturer's original, unbroken containers or packaging, with identifying labels intact and legible.
- C. Immediately on delivery, inspect shipments to assure compliance with the requirements of the Contract Documents and accepted Submittals, quantities are correct and to verify that products are properly protected and undamaged.
- D. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damaging the product and their packaging.
- E. Promptly remove damaged and defective products from the Site, and replace at no increase in Contract Sum.
- F. Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.
- G. Protect finished surfaces, including jambs and soffits and openings used as passageways, through which equipment and material are handled.
- H. Schedule delivery to minimize long term storage at the site and to prevent overcrowding of construction storage space.
- I. Coordinate delivery with installation time to minimize holding time for flammable, hazardous, easily damaged, or other losses.
- J. Inspect products upon delivery to ensure compliance with Contract Documents, products are not damaged and they are properly protected.

1.7 STORAGE AND PROTECTION

- A. Except as otherwise approved by the Architect/Engineer, store and protect products in accordance with manufacturers' instructions, with seals and labels intact and legible.
- B. Store products that are subject to damage by the elements, under cover in a weather-tight, climate controlled enclosures.

- C. Maintain temperature and humidity within the ranges required by manufacturers.
- D. For exterior storage of fabricated products, place on sloped supports, above ground, to prevent soiling and staining.
- E. Provide off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of product.
- G. Store less granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect products to ensure that products are maintained under specified condition and free from damaged and deterioration.
- J. In event of damage to the product, promptly replace to the approval of the Architect/Engineer and at no additional cost to the County.
- K. Additional time required to secure replacements will not be considered by the Architect/Engineer for any extension in the contract time of completion.
- L. Protection after Installation:
 - 1. Provide substantial coverings as necessary to protect installed products from damage from traffic and construction operations. Remove coverings when no longer needed.
 - 2. Maintain temperature and humidity conditions for interior equipment and finish products in accordance with the manufacturers' printed instruction.

1.8 **PRODUCT OPTIONS**

- A. For products Indicated or Specified by Reference Standards or by descriptive requirements only, select any product by any manufacturer meeting description and that is recommended by manufacturer for the application Indicated.
- B. For products Indicated or Specified by Performance Requirements only, select any product by any manufacturer meeting requirements and that is recommended by manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application. Manufacturer's recommendations may be contained in published literature or by manufacturer's written certification of performance.
- C. For products Indicated or Specified by Naming One Product and Manufacturer: Products of manufacture named and meeting specifications, no options or substitution are allowed. This option shall only apply to products matching others in use on a particular public improvement either completed or in the course of completion.
- D. For products indicated or specified by naming several products or manufactures select, any one of the products or manufacturers named which complies with the Specified requirements. When the naming of one or more products is followed by "or accepted equal", a substitute product may be offered for consideration. Submit a request for substitution for any manufacturer not named in accordance with the following articles.

1.9 SUBSTITUTIONS

A. Refer to Section 00 2113 (Instruction to Bidders), Article 6, Paragraph 6.07. - END OF SECTION-

DOCUMENT 01 6000-A

SUBSTITUTION REQUEST FORM

To: The County of Kern, Owner

[(____] ____-__]

PROJECT: BVARA RPP	Contractor:
Owner Project No: 1650.7087-23	

Substitution	Firm:
Request By:	

Transmittal Record	Attn:	Firm:	Date Sent:	Date Rec'd:	Date Due:
Contractor to					
Owner					
Contractor to Architect					
Owner / Architect to Consultant					
Architect to Owner Representative					
Owner Representative to Contractor					

We hereby submit for your consideration the following product instead of the specified item for the Project:

Section / Drawing	Article	Specified Item	
Proposed Substitution:			

We have (a) attached manufacturer's literature, including complete technical data and laboratory test results, if applicable, (b) attached an explanation of why proposed substitution is a true equivalent to specified item, (c) included complete information on changes to Contract Documents that the proposed substitution will require for its proper installation, and (d) filled in the blanks below:

Contractor to complete questions that follow and certifies to the accuracy of all answers:

A.	Does the substitution affect dimensions shown on Drawings? Yes / No If Yes, please explain proposed mitigation and why substitution is equivalent to originally specified item:
В.	Will the undersigned pay for changes to the building design, including engineering and detailing costs caused by the requested substitution? Yes / No If No, please state reasons explain why substitution is equivalent to originally specified item:
C.	What effect does the substitution have on other trades? No effect:/ Some effect If substitution will affect other trades, please explain the effect and why substitution is equivalent to originally specified item:
D.	Will substitution cause change to Project Schedule, or to critical delivery dates? Add? Shorten? If the substitution will add to schedule dates or affect critical activities, please explain why substitution is equivalent to originally specified item:
E.	Please describe differences between proposed substitution and specified item? Please explain and identify any and all differences, and please explain why substitution is equivalent to originally specified item:
F.	What is the Cost Differential to Contractor in original specified item and proposed substitution including all mark-ups? [If substitution requested during bid period, skip this question.]
G.	Are Manufacturer's guarantees for the proposed item the same as for item specified? Yes; No If No, please explain why substitution is equivalent to originally specified item:

Н.	Contractor accepts full responsibility for delays caused by redesign of other items of the Work
	necessitated by substitution? Yes / No If No, please state reasons and explain why
	substitution is equivalent to originally specified item:

I. Contractor states that the function, appearance and quality are equivalent or superior to the specified item? Yes __ / No __. If No, please explain why substitution is equivalent to originally specified item:

We certify that the function, appearance, and quality of the proposed substitution are equivalent or superior to those of the specified item, except as we may specifically state otherwise in this request.

Contractor:			
Submitted by:		Signature:	
Firm:		Date:	
Address:		Phone/ Fax:	
Remarks:			
Proposed Substitution Manufactu	rer		
Submitted by:		Signature:	
Firm:		Date:	
Address:		Phone/ Fax:	
Remarks:			
Consultant Response: o Accepted o Not Accepted o Accepted As Noted o Received Too Late Remarks:	Owner Representative Response: o Accepted o Not Accepted o Accepted As Noted o Received Too Late Remarks:		
 By:	By:	 	

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 7000

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SUMMARY

A. Section describes requirements and procedures for:

- 1. Preparation for Contract Closeout
- 2. Punch List Development.
- 3. Final Completion
- 4. Warranties

1.02 PREPARATION FOR CONTRACT CLOSEOUT

A. Removal of Temporary Construction Facilities and Project Cleaning.

1. Prior to closeout procedures: remove temporary materials, equipment, services, and construction; clean all areas affected by the Work; clean and repair damage caused by installation or use of temporary facilities; restore permanent facilities used during construction to specified condition.

B. Equipment and Systems.

- 1. Prior to closeout procedures, Contractor shall start up, run for periods prescribed by Owner, operate, adjust and balance all manufactured equipment and Project systems, including but not limited to, mechanical, electrical, safety, fire, and controls.
- 2. Contractor shall perform all required scheduled maintenance throughout the duration of the Project.
- 3. Demonstrate that such equipment and systems conform to contract standards and manufacturer's guarantees. Where applicable, use testing protocols specified, and if the contract is silent, then consistent with manufacturer's recommendations and industry standards.
- 4. Where required by the technical specifications, provide training of Owner's personnel using Operation and Maintenance Manuals as described in Paragraph 1.02.C.

C. **Operation and Maintenance Manuals.**

- 1. Provide Operation and Maintenance manuals for all equipment in accordance with Section 01 3000.
- 2. Submit two (2) sets of fully reviewed operating/maintenance manuals prior to requesting the Final Walk, bound in 8-1/2 x 11 inch three ringside binders with durable plastic covers with identification on, or readable through, front cover stating general nature of manual.
- 3. Provide separate volume for each system, with table of contents and index tabs for each volume; all material neatly typewritten with each volume containing the following:
 - a. Part 1: Directory, listing names, addresses and telephone numbers of County Project Manager, County Construction Inspector, Contractor and, as appropriate, Subcontractor and/or Equipment Supplier.
 - b. Part 2: Completed Preventative Maintenance and Operating Requirement Sheets, a blank and sample of which are included at the end of this Section for each piece of equipment in the system. The following information shall also be included, as appropriate:
 - 1) Appropriate Design Criteria
 - 2) List of equipment

- 3) Parts list; including complete nomenclature, current costs, and names and addresses of nearest parts vendor.
- 4) Detailed operating instructions
- 5) Detailed maintenance instructions
- 6) Shop drawings and product data, including changes made during construction.
- 7) Copies of Guaranties/Warranties
- 4. Final versions of Operation and Maintenance manuals shall be provided in electronic format and submitted with Project Record Documents as described in Paragraph 1.04.B.2 of this Specification Section.

D. Permitting and Reporting.

- 1. Prior to closeout procedures, Contractor shall demonstrate or provide evidence that all outstanding permit requirements have been met, including reporting, certifications, and commissioning. Where Owner is required to certify to any permit compliance, Contractor shall prepare such certification documents for Owner execution.
- 2. Contractor shall schedule all necessary site visits from all authorities having jurisdiction to meet permit compliance.
- 3. Contractor shall provide all required commissioning documents and reports as required by Laws and Regulatory Requirements.

1.03 PUNCH LIST DEVELOPMENT

A. Punch List Readiness Determination.

1. When Contractor considers Work or designated portion of the Work as ready for punch list review, Contractor shall submit written notice to the Owner to review Project readiness with Inspector. Contractor and Inspector shall review the Work and, if Inspector identifies items needing correction prior to punch list review, Contractor shall make such corrections prior to scheduling the punch list walk.

B. Punch List Walk and Corrections.

- 1. When Contractor considers Work or designated portion of the Work as ready for punch list walk, submit written notice to Owner. Within reasonable time, Owner will schedule the punch list walk to determine status of completion. The attendees for the punch list walk will include the Architect/Engineer, Inspector, Owner, and Owner's Representatives. Consultant disciplines may schedule individual punch list walks as necessary. Contractor shall attend the punch list walk with personnel he deems necessary to accomplish Final Completion.
- Should Owner determine that status of Work does not meet the Contract requirements for Final Completion, Owner will promptly notify Contractor in writing, listing all defects and omissions (the "Punch List").
- 3. Contractor shall be aware that the generation of a Punch List does not limit the Owner's ability to identify other deficiencies not previously identified on the Punch List and that the Contractor is responsible for all corrections required to meet the Contract requirements.
- 4. Contractor shall remedy deficiencies to the satisfaction of the Owner. Contractor shall provide Project Record Documents and evidence that all permit requirements have been satisfied.

C. Final Walk.

1. After Contractor performs all corrections identified on the Punch List, performs corrections of subsequent items added after the punch list walk and provides Project Record Documents and evidence of permit compliance, Contractor shall submit written notice to Owner. Within a reasonable time, Owner will schedule the final walk to determine status of completion. Owner's attendees will be personnel involved in Punch List generation. Contractor shall provide all personnel he deems necessary to accomplish Project Completion.

- 2. The Punch List examination will be performed at the final walk. One follow-up review of Punch List items for each discipline will be provided. If further site visits are required to review Punch List items due to incompleteness of the Work by Contractor, Contractor will reimburse Owner for costs associated with these visits.
- 3. If Owner deems work has been completed in accordance with the Contract requirements, or in Owner's judgment minor corrections may be completed which do not hinder Final Completion, Contractor shall prepare for Final Completion.

1.04 FINAL COMPLETION

A. Requirements

1. Final Completion occurs when Work meets requirements for Owner's Final Acceptance.

B. Procedure

- 1. When Contractor and Owner consider Work to be Complete, Contractor shall submit written certification that:
 - a. Contractor has inspected Work for compliance with Contract Documents, and all Punch List requirements have been met.
 - b. Except for Contractor maintenance after Final Acceptance, Work has been completed in accordance with Contract Documents and deficiencies listed in the Punch List have been corrected. Equipment and systems have been tested in the presence of Owner, and are operative.
- 2. Project Record Documents are completed and turned over to Owner, Work is complete and certificate of occupancy is obtained. (3) copies of Project Record Documents shall be provided in PDF format on electronic media to the County.
- 3. In addition to submittals required by Contract Documents, provide submittals required by governing authorities and submit final statement of accounting giving total adjusted Contract Sum, previous payments, and sum remaining due.
- 4. Upon Contractor completion of all closeout procedures and Owner's Final Acceptance, Owner will file the Notice of Completion.

C. Final Adjustments of Accounts:

- 1. Submit a final statement of accounting to Owner, showing all adjustments to the Contract Sum and complete and execute Document 00 5200 (Agreement and Release of Claims).
- 2. If so required, Owner shall prepare a final Change Order for submittal to Contractor, showing adjustments to the Contract Sum that were not previously made into a Contract Modification.
- D. **Turn-In.** Contract Documents will not be closed out and final payment will not be made until all keys issued to Contractor during prosecution of Work and letters from property owners, pursuant to Contract Documents, are turned in to Owner.
- E. **Release of Claims.** Contract Documents will not be closed out and final payment will not be due or made until Document 00 5200 (Agreement and Release of Claims) is completed and executed by Contractor and Owner.
- F. **Fire Inspection Coordination.** Coordinate fire inspection and secure sufficient notice to Owner to permit convenient scheduling (if applicable).
- G. **Building Inspection Coordination.** Coordinate with Owner a final inspection for the purpose of obtaining an occupancy certificate (if applicable).

1.05 WARRANTIES

A. Warranty Documents

- Contractors shall assemble and provide warranty documents, executed or supplied by Subcontractors, suppliers, and manufacturers. Provide table of contents and assemble in 8½ inches by 11 inches three-ring binder with durable plastic cover, appropriately separated and organized. Assemble in specification section order. Additionally, Contractor shall provide to Owner all documents in the warranty document package in an electronic file, portable document format (pdf). Provide one copy on four individual flash drives.
- 2. Submit warranty documents in accordance with Document 01 3000 (Administrative Requirements) and prior to final Application for Payment. For equipment put into use with Owner's permission during construction, submit warranty documents within 14 Days after first operation. For items of Work delayed materially beyond the date of Final Completion, provide updated warranty documents within 14 Days after acceptance, listing date of acceptance as start of warranty period.
- 3. Warranty Forms: Submit drafts to Owner for review prior to execution. Forms shall not detract from or confuse requirements or interpretations of Contract Documents. Warranty shall be countersigned by manufacturers. Where specified, warranty shall be countersigned by Subcontractors and installers.
- 4. Rejection of Warranties: Owner reserves right to reject unsolicited and coincidental product warranties that detract from or confuse requirements or interpretations of Contract Documents.
- 5. Term of Warranties: For materials, equipment, systems, and workmanship, warranty period shall be one year minimum from date of Final Completion of entire Work except where:
 - a. Detailed Specifications for certain materials, equipment or systems require longer warranty periods.
 - b. Materials, equipment or systems are put into beneficial use of Owner prior to Final Completion as agreed to in writing by Owner.
 - c. Materials, equipment, or systems delayed from beneficial use of Owner as of the date of Notice of Completion, as agreed to in writing by Owner.

B. Warranty of Title:

1. No material, supplies, or equipment for Work under Contract shall be purchased subject to any chattel mortgage, security agreement, or under a conditional sale or other agreement by which an interest therein or any part thereof is retained by seller or supplier. Contractor warrants good title to all material, supplies, and equipment installed or incorporated in Work and agrees upon completion of all Work to deliver premises, together with improvements and appurtenances constructed or placed thereon by Contractor, to Owner free from any claim, liens, security interest, or charges, and further agrees that neither Contractor nor any person, firm, or corporation furnishing any materials or labor for any Work covered by Contract shall have right to lien upon premises or improvement or appurtenances thereon. Nothing contained in this paragraph, however, shall defeat or impair right of persons furnishing materials or labor under bond given by Contractor for their protection or any rights under law permitting persons to look to funds due Contractor in hands of Owner.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

Preventive Maintenance and Operating Requirement Sheets

Preventive Maintenance Program Equipment Record Number		nber
EQUIPMENT DESCRIPTION	ELECTRICAL OR MECHANICAL DATA	
Name:	Size:	
Serial No.:	Model:	
Vendor:		
Vendor Address:	Туре:	
	Mfr.:	
Vendor Rep:	Voltage:	Amps:
Phone:	Phase:	rpm:
Maintenance Work to be Done		Frequency*
	NTS AND REFERENCE	

*D - Daily; W - Weekly; B - Biweekly; M - Monthly; Q - Quarterly; S - Semiannually; A - Annually.

<u>SAMPLE</u>

Preventive Maintenance and Operating Requirement Sheets

Preventive Maintenance Program Equipment Record Number		Number
EQUIPMENT DESCRIPTION	ELECTRICAL OR MECHANICAL DATA	
Name: Influent Pump No. 1 Tag No.: P01-1	Size: 15 hp	
Serial No.: 123456ABC	Model: 140T Fran	ne
Vendor: ABC Pump Co.	Serial No. Class F Ir W/Space	987654ZY nsulation Heater
Vendor Address:	Туре:	
1111 Pump Circle Newport Beach, CA 92663	Mfr.: DEF Motors, Inc.	
Vendor Rep: XYZ Equipment, Inc.	Voltage: 460	Amps: 20
Phone: 714/752-0505	Phase: 3	rpm: 1,800
Maintenance Work to be Done		Frequency*
 Operate all valves and check such things as a) bearing D temperature, b) changes in running sound, c) suction and discharge gauge readings, d) pump discharge rate, and e) general condition of the drive equipment. 		
2. Check packing.		D
3. Checking pumping unit for any dust, dirt, or debris.		- \\/
(Continued on attached sheet)		vv
OPERATING REQUIREMENTS AND REFERENCE		
For manufacturer's instructions regarding installation, operation, maintenance, and trouble shooting of this equipment, see Volume, Section		

*D - Daily; W - Weekly; B - Biweekly; M - Monthly; Q - Quarterly; S - Semiannually; A - Annually.

<u>SAMPLE</u>

Preventive Maintenance and Operating Requirement Sheets

Preventive Maintenance Program Equipment Record Number		nber
EQUIPMENT DESCRIPTION	ELECTRICAL OR MECHANICAL DATA	
Name:	Size:	
Serial No.:	Model:	
Vendor:		
Vendor Address:	Туре:	
	Mfr.:	
Vendor Rep:	Voltage:	Amps:
Phone: Phase:		rpm:
Maintenance Work to be Done		Frequency*
4. Lubricate bearing frame and motor bearings (consult manufacturer's instructions for type of grease or oil).		Q
 Disassemble and change or repair the following: a) impeller, b) shafts, c) shaft sleeve, d) rotary seals, and e) sleeve bearings. 		A
	NTS AND REFERENCE	
*D - Daily; W - Weekly; B - Biweekly; M - Mont S - Semiannually; A - Annually.	hly; Q - Quarterly;	

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 7050

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section establishes General Requirements pertaining to cutting (including excavating), fitting, and patching of the Work required to:
 - 1. Make the several parts fit properly.
 - 2. Uncover Work to provide for installing, inspection, or both, of ill-timed Work.
 - 3. Remove and replace Work not conforming to requirements of the Contract Documents.
 - 4. Remove and replace defective Work.
- B. Requirements and limitations for cutting and patching of Work.

1.02 RELATED DOCUMENTS

Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 0 and Division 1 Specification Sections, apply to Work of this Section.

1.03 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural Work in a manner that would result in a reduction of load carrying capacity or of load deflection ration. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
 - 1. Foundation construction.
 - 2. Structural concrete.
 - 3. Stair systems.
 - 4. Miscellaneous structural metals.
 - 5. Exterior curtain wall construction.
 - 6. Equipment supports.
 - 7. Piping, ductwork, vessels and equipment.
- B. Operational and Safety Limitations: Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, to increase maintenance, or to decrease operational like or safety.
- C. Visual Requirements:
 - 1. Do not cut and patch construction exposed on the exterior or in its occupied spaces, without consulting the Engineer/Architect.
 - 2. Remove and replace Work cut and patched in a visually unsatisfactorily manner.
- D. Employ skilled workers for cutting and patching. Wherever practicable, employ original installer or fabricator providing Work under this Contract to perform cutting and patching for new:
 - 1. Weather-exposed and moisture-resistant products.
 - 2. Fireproofing.
 - 3. Finished surfaces exposed to view.

- E. Individual Product Specification Sections:
 - 1. Cutting and patching incidental to Work of the Section.
 - 2. Advance notification to other Sections of openings required in Work of those Sections.
 - 3. Limitations on cutting structural members.

1.04 SUBMITTALS

- A. Submit written request in advance of cutting or alteration which affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of County or separate contractor.
 - 6. Cost estimate and type of reimbursement review by Architect/Engineer. Review does not waive Architect/Engineer's right to later require complete removal and replacement of any part of Work found to be unsatisfactory.
- B. Include in Request:
 - 1. Identification of Project.
 - 2. Location and description of affected Work.
 - 3. Necessity for cutting or alteration.
 - 4. Description of proposed Work, entities to perform Work, products to be used, dates when Work is to be performed.
 - 5. Alternatives to cutting and patching.
 - 6. Effect on Work of County or separate Contractor.
 - 7. Written permission of affected separate Contractor.
 - 8. Describe anticipated results in terms of changes to existing construction.
 - 9. List utilities to be disturbed or relocated or temporarily out of service. Indicate length of service disruption.
 - 10. Where Work involves addition of reinforcement to structural elements, submit details and engineering calculations showing how new reinforcement integrates with original structure.
 - 11. Date and time Work will be executed, to provide for Engineering/Architect observation.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Primary Products: Those required for original installation.
- B. Product Substitution: Refer to Section 00 2113 (Instruction to Bidders), Article 6, Paragraph 6.07.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting, excavating, patching and backfilling.
- B. After uncovering the Work, inspect conditions affecting of new Work.
- C. If uncovered conditions are not as anticipated, immediately notify the Architect/Engineer and secure needed directions.

- D. Do not proceed until unsatisfactory conditions are corrected.
- E. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Provide required temporary supports including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- B. Prior to cutting, employ a competent private utility locating service capable of locating positions and depths of underground and concealed structural reinforcements and utilities including, but not limited to electrical conduits, plumbing lines, and other utilities in the vicinity of the construction to be cut.
- C. Perform cutting and patching using methods so as not to void existing warranties.
- D. Provide protection from elements for areas which may be exposed by uncovering Work.
- E. Maintain excavations free of water.

3.03 CUTTING

- A. Perform required cutting and fitting to complete the Work under pertinent other Sections of these Specifications.
- B. Perform required excavating and backfilling as required under pertinent other Sections of these Specifications.
- C. Perform cutting and demolition by methods which will prevent damage to other portions of the Work and provide proper surfaces to receive installation of repair and new Work.
- D. Do not cut or alter structural members without prior consultation with the Engineer/Architect unless specifically indicated. Do not damage reinforcing or structural steel to remain.
- E. Do not damage electrical conduits, plumbing lines, and other utilities to remain.
- F. Cut existing construction to provide for installation of Work. Make new openings neat, as close as possible to profiles indicated and only to extent necessary for new Work.
- G. Uncover Work to install improperly sequenced Work.
- H. Remove and replace defective or non-conforming Work.
- I. Remove samples of installed Work for testing when requested.
- J. Provide openings in the Work for penetration of mechanical and electrical Work.
- K. At concrete, masonry, paving, and other materials where edges of cuts and holes will remain exposed in the completed Work, make cuts using power-sawing and power-coring equipment; do not overcut at corners of cut openings. Saw overruns shall not be permitted. Pneumatic tools not allowed without prior approval.
- L. Upon completion of cutting and coring, clean remaining surfaces of loose particles and dust.

3.04 PATCHING

- A. Execute patching to complement adjacent Work.
- B. Patch existing construction by filling repairing, refinishing, closing up and similar operations. Patching includes the insertion of projection of other products in or from a surface.
- C. Perform fitting and adjusting of products together to integrate with other Work with the specified tolerance and finishes.
- D. Perform Work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- E. Restore Work with new Products in accordance with requirements of Contract Documents.
- F. Fit Work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. Patch weather-exposed components in a manner that restores them to a weathertight condition.
- H. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to full thickness of the penetrated element.
- I. Finish or refinish, as required, cut and patched surfaces to provide an even surface of uniform finish, color, texture, and appearance, matching existing adjacent. Finish complete surface plane, unless otherwise indicated. Over patched wall or ceiling surfaces, finish to nearest cutoff line for entire surface, such as intersection with adjacent wall or ceiling, beam, pilasters or to nearest opening frame, unless otherwise indicated. Finished surfaces shall not present a spotty, touched-up appearance. For an assembly, refinish entire unit.

3.05 PERFORMANCE

- A. Execute Work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- B. Employ original subcontractor to perform cutting and patching for weather exposed and moisture resistant elements.
- C. Cut materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- D. Restore Work with new products in accordance with requirements of Contract Documents.
- E. Fit Work tightly to pipes, sleeves, ducts, conduit, and other penetrations through surfaces, caulking where necessary to create water and air resistive barriers.
- F. At penetrations of fire-rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400 (Firestopping) and Section 07 9200 (Joint Sealers), to full thickness of the penetrated element.
- G. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

3.06 PAYMENT FOR COSTS

A. In accordance with Section 00 7200 (General Conditions) and Section 01 2000 (Price and Payment Procedures).

END OF SECTION

DIVISION 1 GENERAL REQUIREMENTS

SECTION 01 9113

STARTING OF SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY

A. Administrative procedures for starting up of various systems.

1.02 SECTION INCLUDES

- A. Starting systems.
- B. Demonstration and instructions.
- C. Testing, adjusting, and balancing.

1.03 RELATED DOCUMENTS

Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 0 and Division 1 Specification Sections, apply to Work of this Section.

1.04 QUALITY ASSURANCE

A. When specified in individual Sections, or when requested by Architect/Engineer, manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment installation prior to start-up; to supervise placing equipment in operations; and to provide a written report that equipment has been properly installed and lubricated, is in accurate alignment, is free from any undue stress imposed by connection lines or anchor bolts, and has been satisfactorily operated under full load conditions.

1.05 SUBMITTALS

- A. Submit under pertinent provisions of the Section 00 7200 (General Conditions) and Section 01 3000 (Administrative Requirements).
- B. Submit preliminary schedule listing times and dates for start-up of each item of equipment in sequence prior to proposed dates.
- C. Submit manufacturer's representative's reports within one week after start-up, listing satisfactory start-up dates.

1.06 **PROJECT CONDITIONS**

- A. Building enclosures complete and weather tight.
- B. Excess packing and shipping bolts are removed.
- C. Interdependent systems have been checked and are operational.

PART 2 – PRODUCTS

(Not applicable)

PART 3 – EXECUTION

3.01 INSPECTION

- A. Verify that Project conditions comply with requirements.
- B. Verify that status of Work meets requirements for starting of equipment and systems.

3.02 PREPARATION

- A. Coordinate sequence for start-up of various items of equipment including County provided equipment.
- B. Notify Architect/Engineer seven days prior to start-up of each item of equipment.
- C. Provide Contract Documents, shop drawings, product data, and operation and maintenance data available during entire start-up process.
- D. Verify that each piece of equipment has been checked for proper lubrication, drive rotation, belt tension, control sequence and other conditions which may cause damage.
- E. Verify control systems are fully operational in automatic mode.
- F. Verify that test, meter readings and specific electrical characteristics agree with those specified by electrical equipment manufacturer.
- G. Verify wiring to motors and controls required by mechanical Work for operation smoke and fire protection demonstrations is completed.
- H. Verify wiring and support systems for equipment installed under separate contracts is complete and checked.
- I. Bearings: Inspect for cleanliness; Clean and remove foreign matter, Verify alignment; Take corrective measures.
- J. Drives: Inspect for tension on belt drives, adjustment of varipitch sheaves and drives, alignment, proper equipment speed and cleanliness. Take corrective action.
- K. Motors: Verify that motor amperage agrees with nameplate value. Inspect for conditions which procedure excessive current flow and which exist due to equipment malfunction. Take corrective action.

3.03 STARTING SYSTEMS

- A. Execute start-up under supervision of responsible personnel.
- B. Place equipment in operation in proper sequence.
- C. Execute start-up under supervision of responsible Contractor's personnel in accordance with manufacturers' written instructions.
- D. When specified in individual Specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check and approve equipment or system installation prior to start-up and to supervise placing equipment or system in operation.
- E. Submit a written report in accordance with Section 01 4000 (Quality Requirements) that equipment or system has been properly installed and is functioning correctly.

3.04 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstration operation and maintenance of Products to County's personnel 2 weeks prior to date of Punch List Walk.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within 6 months, at no cost to the County.
- C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with County's personnel in detail to explain all aspects of operation and maintenance.
- D. Demonstrate, start-up, operation, control, adjustment, safety procedures, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed upon times, at equipment location.
- E. Prepare and inset additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.05 TESTING, ADJUSTING, AND BALANCING

- A. Contractor will appoint, employ, and pay for services of an independent firm to perform testing, adjusting and balancing.
- B. Reports will be submitted by the independent firm to the Architect/Engineer indicating observations and results of tests and indicating compliance of noncompliance with specified requirements and with requirement of the Contract Documents.

END OF SECTION

SECTION 033000 CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. This Section specifies cast in place concrete, rebar dowels, including formwork, reinforcing, mix design, placement procedures, finishes and curing.
 - 2. Foundations and footings.
 - 3. Slabs-on-grade.
 - 4. Foundation walls and retaining walls.
 - 5. Concrete footings/bases at light poles and bollards and miscellaneous items.
 - 6. Concrete footings/bases for miscellaneous items on site.
 - 7. Concrete fence and gate post footings.
 - 8. Placement of anchor bolts.
 - 9. Concrete sealers all exposed building slabs on and above grade.
 - 10. Concrete sealer/hardener/curing compound for all building slabs with floor covering over. (Special Warranty)
 - a. Vct
 - b. Carpet
 - c. SDVCT
- B. Geotechnical Report: Kern County commissioned a geotechnical report in accordance with the requirements of the CBC. This report is a part of the Contract Documents. The report is available for Contractor's examination.
 - 1. Geotechnical Report Publication Information:
 - a. Title: Geotechnical Investigation for the Buena Vista Aquatic Recreational Area
 - b. Date: August 16, 2023
 - c. Author: Soils Engineering, Inc.
 - d. Document / Project Number: 23-18994
- 1.3 SCOPE OF WORK

The work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of "concrete," complete as shown on the drawings and as specified herein.

- 1.4 RELATED SECTIONS
 - A. Section 322000 for "Earth Moving"
- 1.5 SUBMITTALS
 - A. General: Submit the following in accordance with the Conditions of Contract.
 - 1. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others as requested by the Architect. Mill certification for reinforcing steel and chemical analysis for each heat delivered to the site. Cement manufacturer's certification of manufacture and testing.

- a. Normal weight aggregates.
- b. Reglets.
- c. Vapor Retarder.
- B. Independent laboratory test reports for concrete materials and mix design test.
- C. Concrete mix design from an approved laboratory signed by a Civil or Structural Engineer licensed in the State of California. Mix designs shall indicate compliance with applicable sections of Chapter 19A of the 2022 CBC.
- D. The cost of testing all materials, including aggregate grading in conjunction with mix designs shall be paid by the Owner. The Contractor shall cooperate in furnishing test materials so that tests may be completed prior to their installation.

1.6 QUALITY ASSURANCE

- A. Retain "Pre-installation Conference" Paragraph below if Work of this Section is extensive or complex enough to justify a pre-excavation conference.
 - 1. ACI 318, "Building Code Requirements for Reinforced Concrete."
 - 2. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice."
- B. No work of this Section shall be covered until inspected by the Kern County Inspector.
 - 1. The Kern County Inspector shall be notified a minimum of 3 days prior to placing structural concrete and be given opportunity to review rebar and form placement.
 - 2. Project Inspector shall be present during concrete pour and the application of concrete curing processes.
 - 3. See recommendations in the Geotech Investigation. If any conflicts arise between these specifications and the Geotechnical report, the Geotechnical report shall prevail.

1.7 WARRANTY FOR CONCRETE SEALER/HARDNER/CURING COMPOUND

A. Manufacturer of the concrete sealer/hardener/curing compound shall warrant the floor covering system against failure due to moisture vapor migration or moisture-born contaminates for a period of (15) years from the date of original installation. The warranty shall cover all labor and materials needed to replace all floor covering that fails due to moisture vapor emission & moisture born contaminates.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Forms for Exposed Finish Concrete: Plywood, metal, metal framed plywood faced, or other acceptable panel type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.
 - 1. Use overlaid plywood complying with U.S. Product Standard PS 1 "A C or B B High Density Overlaid Concrete Form," Class I.

- B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
- C. Forms for Cylindrical Columns and Supports: Metal, fiberglass reinforced plastic, or paper or fiber tubes. Provide paper or fiber tubes of laminated plies with water resistant adhesive and wax impregnated exterior for weather and moisture protection. Provide units with sufficient wall thickness to resist wet concrete loads without deformation.
- D. Form Coatings: Provide commercial formulation form coating compounds with a maximum VOC of 350 mg/l that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
- E. Form Ties: Factory fabricated, adjustable length, removable or snap off metal form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units that will leave no metal closer than 1 1/2 inches to exposed surface.
 - 1. Provide ties that, when removed, will leave holes not larger than 1 inch diameter in concrete surface.

2.2 REINFORCING MATERIALS

- A. Reinforcing Bars: Shall be deformed bars conforming to ASTM A615, Grade 60 unless noted otherwise; #4 and smaller bars may be grade 40. Reinforcing bars intended for welding shall conform to ASTM A706 (Grade 60). Reinforcing steel that is required to be re-bent shall be ASTM A615, Grade 40.
- B. Smooth dowels shall be ASTM A 36, steel.
- C. Steel Wire: ASTM A 82, plain, cold-drawn steel.
- D. Welded Wire Fabric: ASTM A 185, plain welded steel wire fabric.
- E. Welded Deformed Steel Wire Fabric: ASTM A 497.
- F. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications in above grade applications.
 - 1. For slabs on grade, use supports with sand plates or horizontal runners where base material will not support chair legs.
 - 2. For concrete cast against earth, reinforcing steel shall be supported by appropriately sized precast concrete blocks with integral wire ties.
- G. Epoxy-Coated Reinforced Bars: ASTM A 615/ A 615M, Grade 60 deformed bars. Epoxy coated with less than 2 percent damaged coating in each 23-inch (300mm) bar length.

2.3 CONCRETE MATERIALS

- A. Portland Cement: Type V, ASTM C 150, and CBC Sec. 1903A.1.
 - 1. The cement shall not contain more than 0.60% total alkali when calculated as Sodium Oxide.
 - 2. Cement shall be stored in such a manner as to protect it from inclusion of foreign material and damage by moisture. Only one (1) brand of cement shall be used for this work.

- B. Fly Ash: Shall conform to ASTM C618, Type "F" and CBC 1903A.4 except that loss on ignition shall not exceed 4%.
- C. Normal Weight Aggregates: Aggregate shall conform to ASTM C33, CBC Sec. 1903A.1, Table I below and following. Provide non-reactive aggregate from a single source for all concrete used in this project. Reactivity testing of aggregate (coarse and/or fine) will be required if, in the opinion of the Structural Engineer and/or DSA, the source is questionable. The basis for acceptance of aggregate shall be that all samples of fine and coarse aggregate shall be determined "innocuous" by testing in accordance with ASTM C289.
 - 1. Do not use fine or coarse aggregates containing spalling causing deleterious substances. Aggregate that is known or determined to be reactive in the presence of cement alkalies shall not be incorporated in the work.
 - 2. Fine aggregate shall consist of a washed natural sand of hard, strong and durable particle and which does not contain more than two percent (2%) by weight of deleterious substances such as clay lumps, shale, schist, alkali, mica, coated grains, or soft and flaky particles. Fine aggregate shall be graded uniformly from fine to coarse and when combined with coarse aggregate shall meet the requirements of Table 1 below.
 - 3. Coarse aggregate shall consist of a clean, hard, fine grained, sound crushed rock, or washed gravel. It shall contain not more than five percent (5%) by weight of flat, thin, elongated, or laminated material nor more than two percent (2%) by weight shale or charty material. Coarse aggregate shall be graded uniformly from one fourth inch (1/4") in size to maximum size and when combined with fine aggregate shall meet the requirements of Table 1 below.

TABLE I GRADING OF COMBINED AGGREGATES			
Sieve	Percent by Wt.	Percent by Wt.	Percent by Wt.
Woven Wire Cloth	1-1/2" Max	1" Maximum	3/4" Maximum
Passing a 1-1/2"	95-100	-	-
Passing a 1"	70-90	90-100	-
Passing a 3/4"	50-80	70-95	90-100
Passing a 3/8"	40-60	45-70	55-75
Passing a #4	35-55	35-55	40-60
Passing a #8	25-40	27-45	30-46
Passing a #16	16-34	20-38	23-40
Passing a #30	12-25	12-27	13-28
Passing a #50	2-12	5-15	5-15
Passing a #100	0-3	0-5	0-5

D. Aggregate Size:

 Type of Work
 Max. Aggregate Size

 Joists or wall less than 5" wide
 3/4"

 Beams or walls 5" to less than 8" wide, slabs above grade less than 6" thick, floor slabs on grade
 1"

 All other concrete
 1"

- E. Water: Shall be clean and free from deleterious acids, alkali, oil and organic matter and shall be potable.
- F. Water-Reducing Admixture: ASTM C-494, Type A. Admixtures, other than those preapproved (below) shall be the types with prior DSA approval.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include but are not limited to the follow:
 - a. Grace WRDA-64.
 - b. Pozzolith 322-N.

2.4 RELATED MATERIALS

- A. Sand Cushion: Clean, manufactured or natural sand, conforming to the requirements for "fine aggregate".
- B. Vapor Retarder: Provide vapor retarder cover over prepared subbase where indicated below slabs on grade. Vapor retarder must have all of the following qualities:
 - 1. Permeance: As tested before and after mandatory conditioning per ASTM E-1745 Section 7.1; less than 0.01 Perm (grains/ grains/(ft2 · hr · inHg)].3
 - 2. Strength: ASTM E-1745 Class A4
 - 3. Acceptable Products:
 - a. Stego Wrap 15mil Vapor Barrier by Stego Industries, LLC
 - b. EcoShield E-15 by Epro Services, Inc.
 - c. VaporGuard by Reef Industries, Inc.6
 - d. W.R Meadows.
 - 4. Accessories:
 - a. Seam tape: Stego tape by Stego Industries LLC, or equal.
 - b. Vapor-proofing mastic: Stego Mastic by Stego Industries LLC or equal.
- C. Nonslip Aggregate Finish: Provide fused carborundum chips as abrasive aggregate for nonslip finish. Use material that is factory graded, and is unaffected by freezing, moisture, and cleaning materials. 35#/100sf application rate. Seive #8 42.8%; sieve #16 57.2%.
 - 1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - a. "Korundum (Aluminum Oxide)"; Concrete Service Materials Company (610) 825-4541.
 - b. "Frictex NS"; Sonneborn (800) 433-9517.
 - c. "Brown Aluminum Oxide"; Shenznew S & F Industrial Co., LTD. (755) 217-4376.
 - d. "GLM BFA" Great Lakes Minerals LLC (606) 833-8383.
- D. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M 182, Class 2.
- E. Moisture Retaining Cover: One of the following, complying with ASTM C 171.
 - 1. Waterproof paper.
 - 2. Polyethylene film.
 - 3. Polyethylene coated burlap.
- F. Water Based Acrylic Membrane Curing Compound: Complying with ACI 308and ASTM C1315, Type 1, Class A for exposed concrete floor, Class B for non-exposed concrete floor. The compound, when applied at the rate recommended by the manufacturer, shall restrict the loss of water to not more than 0.40 kg/m². The compound shall not reduce the bonding effectiveness of adhesives of commonly used or specified herein to adhere flooring materials to the concrete.

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. "Dress & Seal #18WB," L&M Construction Chemicals, Inc.
 - b. "Kure 1315" Sonneborn/ De Gussa.
 - c. "Vo Comp 25", W.R. Meadows, Inc.
- G. Concrete sealer/hardener/curing compound:
 - 1. Sealer/Hardener/Curing Compound: Concrete surface treatment applied the day of the concrete pour in lieu of other curing methods for concrete slabs either on grade, below grade or above grade receiving resilient flooring such as sheet vinyl, vinyl composition tile, rubber, wood flooring, carpet, epoxy coating and overlays.
 - 2. ASTM C1315 Type 1 Class A, ASTM C309 Type 1 Class A, penetrating product to have no less than 34% solid content, leaving no sheen, volatile organic compound (VOC) content rating as required to suit regulatory requirements. Product to have at least a 5-year documented history in controlling moisture vapor emission from damaging floor covering, compatible with all floor finish materials.
 - Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, product specified.
 a. "PMC3300", Curranseal
- H. Exposed Concrete Sealer: Water based acrylic concrete sealer, no VOC's composed of methyl metacrylate copolymer resins and aromatic resins.

Properties		
Color	Water clear	
Solids	25-27% by weight	
Flash point	0	
Viscosity	22 Sec	
Dry Time	Normal Traffic 4-8 hours	
	Max hardness 7 days	
Coverage	200sf/gallon	

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. Exposite "WB", Lambert Corporation 1-800-432-4746.
- I. Evaporation Control: Monomolecular film forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. "Aquafilm," Conspec Marketing and Mfg. Co.
 - b. "Eucobar," Euclid Chemical Co.
 - c. "E Con," L&M Construction Chemicals, Inc.
 - d. "Confilm," Master Builders, Inc.
- J. Underlayment Compound: Free flowing, self leveling, pumpable, cement based compound for applications from one inch thick to feathered edges.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:
 - a. "K 15," Ardex, Inc.
 - b. "Conflow," Conspec Marketing and Mfg. Co.
 - c. "LevelLayer II," Dayton Superior Corp.
- d. "Flo Top," Euclid Chemical Co.
- e. "Levelex," L&M Construction Chemicals, Inc.
- f. "Pourcrete," Master Builders, Inc.
- g. "Stoncrete UL1," Stonhard, Inc.
- h. "Thoro Underlayment Self Leveling," Thoro System Products.

2.5 PROPORTIONING AND DESIGN MIXES

- A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301 and CBC 1905A.2. If trial batch method used, use an independent testing facility acceptable to the Architect for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing.
 - 1. Concrete design mix(es) shall be prepared, signed and stamped by an independent California registered civil engineer.
 - 2. Mix design shall indicate compliance with applicable section of CBC 2022 Chapter 19A.
- B. Submit written reports to Architect of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until proposed mix designs have been reviewed by the Architect, Structural Engineer and approved by lab of record.
- C. Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules:
 - 1. 4000 psi, 28 day compressive strength; water/cement ratio, 0.42 maximum (non air entrained), shall be at least 2400-psi at 7-day. Minimum cement content 6.2 sacks per cubic yard.
- D. Proportions: The Contractor shall propose to the Architect and Structural Engineer Laboratory Designed Mixes based on the following limitations: The mix design shall be approved prior to use. The relative amounts of cement, fine and coarse aggregate and mixing water shall be determined by a testing laboratory in accordance with CBC 1905A.3 or 1905A.4. The concrete ready-mix supplier shall pay the costs of concrete mix designs, excluding the cost of aggregate gradation analysis where required.
- E. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Architect and Structural Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by the Architect, Structural Engineer, and Laboratory before using in work.
- F. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
 - 1. The amount of mixing water used (including free moisture carried by the aggregate) shall not exceed the maximum allowed by the approved mix design. The addition, the amount used shall be the minimum necessary to produce the following maximum allowable slumps:

Slabs	4"
Other	4"

2.6 CONCRETE MIXING

- A. Ready Mix Concrete: Comply with requirements of ASTM C 94, and as specified. Use a single source for all concrete incorporated in the project.
 - 1. Transit Mixed Concrete shall be mixed and delivered in accordance with the requirements of ASTM C-94 and CBC 1905A. Transit mixed concrete shall not be delivered to the work with the total specified amount of water incorporated therein. Two and one-half (2-1/2) gallons of water per cubic yard shall be withheld but may be incorporated in the mix under the supervision of the representative of the Architect. Transit mixed concrete shall be mixed for a period of not less than ten (10) minutes at a peripheral drum speed of approximately two hundred (200) feet per minute and mixing shall be continued until discharge is complete. Concrete will be rejected if not discharged within one and one-half (1-1/2) hours during normal weather or forty-five (45) minutes during hot weather after the addition of cement to the aggregates. The manufacturer of the transit mixed concrete shall furnish with each mixer truck a certificate stating the quantity of cement, water, fine aggregate, coarse aggregate and admixture (if used) in each batch delivered to the job.
- B. Batch plant inspection is required in accordance with CBC 1704A.4.2.
- C. Concrete shall be sampled, tested and inspected in compliance with 2022 CBC 1905A.6 and 1916A and 1704A.4.

PART 3 - EXECUTION

- 3.1 GENERAL
 - A. Coordinate the installation of joint materials and vapor retarders with placement of forms and reinforcing steel.
- 3.2 FORMS
 - A. General: Design, erect, support, brace, and maintain formwork to support vertical and lateral, static and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances complying with ACI 347.
 - B. Construct forms to sizes, shapes, lines, and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent leakage of cement paste. The arrangement and construction shall be subject to the approval of the Engineer, but responsibility for adequacy of the forms shall rest with the Contractor. The supporting studs or joists shall be spaced not more than twelve inches (12"-0) center to center. The surfaces of the forms shall be smooth and free from irregularities. Wall form panels shall be placed with their long dimension horizontal and so as to form continuous horizontal joints.
 - C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the

like, for easy removal. The forms shall not be removed until the concrete has sufficiently hardened to permit their removal with safety, but in no case in less time than as follows:

Columns, walls, vertical forms	24 hours
Slab (above grade)	7 days
Joists, Beams and Girders	14 days

- 1. All removal shall be accomplished in such a manner as to prevent injury to the concrete and comply with CBC 1906A.2.
- D. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- E. Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- F. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.
- G. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Retighten forms and bracing before concrete placement as required to prevent mortar leaks and maintain proper alignment.

3.3 VAPOR RETARDER/BARRIER INSTALLATION

- A. General: Following leveling and tamping of base for slabs on grade, place vapor retarder/barrier sheeting with longest dimension parallel with direction of pour. At perimeters, membrane shall be turned up against walls and cemented with adhesive. Penetrations through membrane required by piping, conduit, drains, reinforcing and anchors shall be formed by cutting slits in membrane material and then sealing membrane surface and sealing against the riser.
- B. Lap joints 6 inches and seal vapor barrier joints with manufacturers' recommended mastic and pressure sensitive tape or glue.
- C. Fill Under Interior Floor Slabs: Place vapor barrier over compacted earth subgrade. Apply two inches (2") of sand fill over the completed membrane, moisten, grade smooth and level and roll to smooth, even surface. Moisten sand prior to placement but do not allow to become saturated.

3.4 PLACING REINFORCEMENT

- A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as herein specified.
 - 1. Avoiding cutting or puncturing vapor retarder during reinforcement placement and concreting operations.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.

- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved by Architect.
- D. Place reinforcement:
 - 1. Reinforcing shall be accurately placed in accordance with the drawings and meeting CRSI and shall be securely tied in position with at least No. 16 gage annealed wire at all bar intersections except that in floor slabs on grade bars shall be tied at alternate intersections. Metal chairs and bolsters shall be used to hold all steel above the form bottoms at the proper distance. Metal spacers shall be used to support reinforcing steel off the ground in footings and slabs at 36" o.c. max. The clear distance between parallel bars shall not be less than 1-1/2 times the bar diameter, but in no case less than 1-1/2" nor less than 1-1/3 times the maximum size of coarse aggregate.
 - 2. Splices shall be made with a lap of at least Class "B" unless noted otherwise. Do not locate splices at control joints. The bars shall be placed in contact and wired together in such a manner as to maintain a clearance of not less than the minimum clear distance to the other bars and to the surface of the concrete. In general, stagger splices at least 4'-0". Vertical reinforcing steel shall be spliced only where specifically detailed. Splice wire mesh with a lap of at least the dimension of one mesh +2". Welded splices shall be in accordance with CBC 1908A.1.6.
 - 3. The bending and placing of all reinforcement shall conform to the "Manual of Standard Practice" of the American Concrete Institute and CRSI. Bends shall be made as indicated on the drawings. Bars shall be bent cold.
- E. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- F. No unprotected aluminum embedments.
 - 1. Coat all aluminum embedments with bituminous coating or approved equal.

3.5 JOINTS

- A. Construction Joints: Shall be cleaned and roughened per CBC 1906A.4. Locate and install construction joints (expansion joints) as indicated or, if not indicated, locate so as not to impair strength and appearance of the structure, as acceptable to Architect and Structural Engineer.
 - 1. All vertical members, such as walls and columns, shall be poured at least two (2) hours before horizontal members are poured therein to permit the concrete in the vertical members to take its initial settlement.
 - 2. After the pour has been completed to the construction joint and the concrete has hardened, the entire surface of the joint shall be thoroughly cleaned of surface laitance and clean coarse aggregate exposed by means of wire brushing and washing with a pressure stream of water. This shall be done at least two (2) hours, but not more than four (4) hours after the concrete was placed.
 - 3. A modified mix of concrete as hereinbefore specified with fifty percent (50%) of the coarse aggregate omitted may be deposited on horizontal construction joints before proceeding with the regular specified mix.
 - a. This same modified mix may be used where conditions make puddling difficult or where reinforcing is congested.

- 4. The location of construction joints shall be as shown on the plan or as approved by the Architect. Vertical construction joints shall be keyed.
- 5. Maximum spacing shall be 20 feet on center for curbs and gutters, 10 feet on center for mow strips, and exterior slabs on grade (see below, also) 20 feet on center for retaining walls.
- B. Provide keyways at least 1 1/2 inches deep in construction joints in walls and slabs and between walls and footings. Accepted bulkheads designed for this purpose may be used for slabs.
- C. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.
- D. Control (Contraction) Joints in Slabs on Grade: Construct control joints in slabs on grade to form panels of patterns as shown.
 - 1. Form slab control joints by inserting premolded plastic, by deep tooling, by "Soff-Cutting" or by other specifically detailed methods. In slab that will remain exposed, tool joints and slab edges round. After concrete has cured, remove inserts and clean groove of loose debris.
 - 2. Joints in concrete slabs on grade shall be spaced a maximum of 10'-0" o.c. (or less where shown on the plans).
 - 3. Expansion joints in concrete slabs on grade shall be spaced a maximum of 20'-0" o.c. (or less where shown on the plans).

3.6 INSTALLATION OF EMBEDDED ITEMS

- A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to or supported by cast in place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.
- B. The Contractor shall cooperate with all tradesmen to insure that all conduit, anchor bolts, sleeves, inserts, hangers, etc., are properly installed and secured in correct position. All embedded items shall be thoroughly clean and free from rust, scale, oil or other foreign matter. All embedded items, including bolts, shall be securely held in their final positions by means of wood templates before any concrete is poured.
- C. Pipes, other than electrical conduit, shall not be embedded in structural concrete. Where conduit is specifically shown on the structural drawings to run in slabs on grade, conduit shall be located within the middle half of the slab and its outside diameter shall not be greater than three-quarter (3/4) inch diameter. Architect shall approve all locations. Electrical conduits shall run a minimum of 6" below bottom of slab.
- D. The Contractor shall properly form all reglets and rebates required in the concrete to receive flashings, frames and other equipment. Dimensions and details shall be obtained from the equipment to be provided for.
- E. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to obtain required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike off templates or compacting type screeds.
- F. No unprotected aluminum embedments.
 - 1. Coat all aluminum embedments with bituminous coating or approved equal.

3.7 PREPARATION OF FORM SURFACES

- A. General: Coat contact surfaces of forms with an approved, nonresidual, low VOC, form coating compound before reinforcement is placed.
- B. Do not allow excess form coating material to accumulate in forms or to come into contact with in place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.
- C. Coat steel forms with a nonstaining, rust preventative material. Rust stained steel formwork is not acceptable.

3.8 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Concrete shall not be placed until forms and rebar have been inspected by the Project Inspector. Project Inspector will confirm moisture content level of base material prior to placement of concrete, see requirement herein.
- B. General: Comply with ACI 304, "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete," and as herein specified.
- C. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete to avoid segregation at its final location.
- D. Concrete shall be used while fresh and before it has taken an initial set. Retempering partially hardened concrete with additional water will not be permitted. Concrete shall be placed in horizontal layers of such thickness that can be satisfactorily consolidated with vibrators. The concrete shall be placed as nearly as possible in its final position and the use of vibrators for extensive shifting of fresh concrete shall not be permitted. Fresh concrete shall not be permitted to fall more than six feet (6'-0") without the use of adjustable length pipes or "elephant trunks". The use of chutes in conveying concrete will not be permitted except with the Architect's approval and only if segregation does not occur and concrete of proper consistency flows freely. Once concreting is started, it shall be carried on as a continuous operation at such a rate that the concreting surface is at all times plastic and flows readily until the section is completed between pre-determined construction joints.
- E. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
 - 1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.
 - 2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

- F. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.
 - 1. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 - 2. Bring slab surfaces to correct level with straightedge and strike off. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
 - 3. Maintain reinforcing in proper position during concrete placement.
- G. Cold-Weather Placing: Comply with provisions of ACI 306, CBC 1905.12 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
- H. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
 - 1. The concrete shall then be protected from freezing or frost for a period of five (5) days after placing by a means acceptable to the Architect and the Division of the State Architect for projects under their jurisdiction. Chloride shall not be added to the mix.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
- I. Hot-Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305, CBC 1905.13 and as herein specified.
 - 1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F (32 deg C). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
 - 3. Fog spray forms, reinforcing steel, and subgrade just before concrete is placed.
 - 4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions, when acceptable to Architect.
 - 5. Concrete (excepting foundations) shall not be placed when the maximum air temperature expected to exceed 100 degrees F. on the day of placement unless specifically approved by the Architect. Such approval may require any or all of the following precautions:
 - a. Provide shade for slabs to be finished after 11:00 a.m.
 - b. Store all materials and equipment in the shade.
- J. Moisture content of base material under concrete shall be as prescribed herein and confirmed by project inspector immediately prior to casting concrete. Base material shall

be removed and replaced with dampened sand meeting this limitation if the upper limit is exceeded prior to casting.

3.9 FINISH OF FORMED SURFACES

- A. Rough Form Finish: For formed concrete surfaces not exposed to view in the finish work or concealed by other construction. This is the concrete surface having texture imparted by form facing material used, with the holes and defective areas repaired and patched and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.
- B. Smooth Form Finish: For formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or other similar system. This is an as cast concrete surface obtained with selected form facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projections completely removed and smoothed.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 MONOLITHIC SLAB FINISHES

- A. Scratch Finish: Apply scratch finish to monolithic slab surfaces to receive mortar setting beds for tile, and other bonded applied cementitious finish flooring material, and as otherwise indicated.
- B. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified; slab surfaces to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand bed terrazzo; and as otherwise indicated.
 - After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using float blades or float shoes only, when surface water has disappeared, when concrete has stiffened sufficiently to permit operation of power driven floats, or both. Consolidate surface with power driven floats or by hand floating if area is small or inaccessible to power units. Uniformly slope surfaces to drains. Grind smooth surface defects that would telegraph through applied floor covering system.
- C. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin film finish coating system.
 - 1. After floating, begin first trowel finish operation using a power driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand troweling operation, free of trowel marks, uniform in texture and appearance, and with surface plane to tolerances indicated. Grind smooth surface defects that would telegraph through applied floor covering system.
 - 2. For trowel finished without floor covering, concrete shall maintain a slip coefficient of 0.65 or greater before and after stain and related products are applied.
- D. Floor Tolerances: Floor slabs on grade indicated for float finishing and for trowel finishing shall be tested as follows:

1. Surfaces shall be tested by the Contractor within 48 hours after finishing in accordance with ASTM E-1155 (latest edition), "Standard Test Method for Determining Floor Flatness and Levelness using the F-Number System". Test results shall be made available, within 24 hours, to the Project Inspector. Compliance with the following Table is required.

	<u> </u>				
Floor Flatness and Levelness Table					
	Minimum Floor Profiles				
Floor Profile		Random Tr	affic Floors		Defined Traffic
Category	Specified O	verall Value	Minimum Local Value		Floors
	Ff	Fl	Ff	Fl	F(min)
Trowel Finish	35	25	20	18	35
Float Finish	20	25	15	18	20

- 2. Surfaces shall be re-tested within 10 days prior to the commencement of either the installation of interior wall or floor finishes by the Project Inspector using the straightedge method applied in particular to areas adjacent to slab joints. The tolerance shall be measured by placing a freestanding (unleveled) 10ft. straightedge anywhere on the slab and allowing it to rest upon two high spots. The gap at any point between the straightedge and the floor (and between the highspots) shall not exceed 1/8".
- 3. Surface areas found to be out of compliance with the above tolerances shall, within 7 days of defining of such areas, be repaired by surface grinding or by sawcutting and removing the defective areas and the installation of a new portion of slab as directed and approved by the Architect.
- E. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin set mortar, apply trowel finish as specified, then immediately follow with slightly scarifying surface by fine brooming, verify with tile manufacturer.
- F. Nonslip Broom Finish: Apply nonslip medium broom finish to exterior concrete platforms, steps, ramps, walks, interior exposed slabs, and elsewhere as indicated without floor covering.
 - 1. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
 - 2. Medium broom finish on all surface less than 6% and heavy broom finish on all surfaces greater than or equal to 6%.
- G. Nonslip Aggregate Finish: Apply nonslip aggregate finish to exterior concrete, platforms, stops, ramps, walks, and elsewhere as indicated, without floor covering.
 - 1. After completion of float finishing and before starting trowel finish, uniformly spread 35 lbs. of dampened nonslip aggregate per 100 sq. ft. of surface. Tamp aggregate flush with surface using a steel trowel. After broadcasting and tamping, apply trowel finishing as herein specified.

3.11 CONCRETE CURING AND PROTECTION

A. General: Concrete shall be maintained above 50°F and in a moist condition for at least the first seven (7) days after placement in accordance with CBC Sec. 1905.12 and ACI 308. During hot weather, proper attention shall be given to ingredients, production methods, handling, placing, protection and curing to prevent excessive concrete temperatures or water evaporation that may impair required strength or serviceability. Provide curing methods that will eliminate alternate cycles of wetting and drying.

- 1. Formed Surfaces: Formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces shall be moist cured, as described below, for the full curing period. If forms are removed prior to the conclusion of the curing period, moist curing of the surfaces shall be continued until the end of the prescribed curing period.
- 2. Construction Joints: Construction joints shall be prepared as herein specified and receive moist curing, as described below, for the curing period. Liquid membrane forming compound shall not be used for the curing of construction joints.
- 3. Unformed Surfaces: Slabs, floor toppings and other unformed surfaces shall be cured by the application of liquid membrane forming compound unless otherwise indicated below.
 - a. Moist curing shall be used in areas to receive toppings, ceramic tile, terrazzo, surfaces to receive liquid floor hardener or other materials that are incomparable with liquid membrane forming compound.
 - b. Slab surfaces to remain exposed shall be cured using water-based acrylic membrane forming curing compound.
 - c. Slab surfaces to receive resilient flooring such as sheet vinyl composition tile, rubber, wood flooring, carpet, epoxy coating and overlay shall be cured using concrete sealer/hardener/curing compound.
- B. Initial curing, such as fog spraying in accordance with ACI 308.1, may be employed; other initial curing methods shall be approved by the Architect prior to the commencement of the work. Start final curing as soon as free water has disappeared from concrete surface after placing and finishing.
- C. Final curing methods as noted below specific to concrete final finish materials and coatings:
 - 1. Moisture curing by one or more of the following methods: (All areas not noted herein otherwise).
 - a. Ponding: Maintain a minimum of 1 inch of water over the entire area.
 - b. Spray: Maintain a wet surface over the entire area by fog spraying or by sprinkling, using caution to avoid erosion of the surface.
 - c. Absorptive cover: Cover surface with absorptive mats covering the entire surface and edges (with a 4 inch lap with adjacent mats); thoroughly saturate mats with water and keep continuously wet.
 - d. Forms shall be covered and kept continuously moist during the full curing period.
 - 2. Moisture-cover curing by covering the pre-wetted concrete surfaces with moisture retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape. The cover shall be in contact with the concrete surface at all times during the curing period. (All areas not noted herein otherwise).
 - 3. Membrane-forming curing (or curing/sealing) compound: (All areas not noted herein otherwise).
 - a. Apply curing compound to concrete surfaces as soon as final finishing pass is completed and within 1 hour after surface water sheen has disappeared. Apply uniformly in a continuous operation by power spray or roller in accordance with the manufacturer's published directions and at the rate of application recommended by the manufacturer (for curing) and conforming to ASTM C1315.
 - b. Recoat areas subjected to rainfall, again within 2 hours after surface water sheen has disappeared. Maintain continuity of coating and repair damage during the curing period.

- 4. Concrete sealer/hardener/curing compound with warranty: (Occurs at all areas with VCT, Rubber flooring, Sheet Vinyl, SDVCT, wood flooring and similar floor finishes).
 - a. Apply concrete sealer/hardener/curing compound on the day of the concrete pour prior to any other chemical treatments for concrete slabs either on grade, below grade or above grade receiving resilient flooring such as sheet vinyl, vinyl composition tile, rubber, wood flooring, carpet, epoxy coatings and overlays.
 - b. Manufacturer's technician shall be on site the day of the concrete pour to install or train in application document and shall return on every application thereafter to verify that proper procedures are followed in accordance with the manufacturer's published direction and at the rate recommended by the manufacturer and conforming to ASTM C1315.
 - c. Moisture content of base material under concrete shall be between 5% and 7% immediately prior to casting concrete. Base material shall be removed and replaced with dampened sand meeting this limitation if the upper limit is exceeded prior to casting. Project Inspector shall confirm this requirement is met prior to allowing concrete to be placed.
- 5. Stained concrete and special coatings: (Occurs at stained concrete finish and special coatings).
 - a. Manufactures recommended method and procedures to facilitate installation, curing and protection of finish.

3.12 SHORES AND SUPPORTS

A. General: Comply with ACI 347 for shoring and reshoring in multistory construction, and as herein specified.

3.13 REMOVAL OF FORMS

A. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

3.14 REUSE OF FORMS

- A. Clean and repair surfaces of forms to be reused in work. Split, frayed, delaminated, or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces except as acceptable to Architect.

3.15 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in place construction. Provide other miscellaneous concrete filling shown or required to complete work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

- C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.
- 3.16 GROUT AND DRYPACK (Other than non-shrink)
 - A. Grout shall be composed of one (1) volume of portland cement and three (3) volumes of fine aggregate and only enough water to make the mixture flow under its own weight.
 - B. Drypack shall be composed as for grout except that only enough water shall be added to set the mixture (no free water and no slump). Drypack will be tamped into place.
 - C. Do not use grout or drypack that has been mixed longer than thirty (30) minutes.
 - D. Grout and drypack shall be kept moist for a minimum of 7 days.
- 3.17 CONCRETE SURFACE REPAIRS
 - A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect.
 - 1. Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush coat the area to be patched with specified bonding agent. Place patching mortar before bonding compound has dried.
 - 2. For exposed to view surfaces, blend white portland cement and standard portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 - B. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.
 - 1. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.
 - C. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having required slope.
 - 1. Repair finished unformed surfaces that contain defects that affect durability of concrete. Surface defects, as such, include crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop outs, honeycomb, rock pockets, and other objectionable conditions.
 - 2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.

- 3. Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with patching compound. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable to Architect.
- 4. Repair defective areas, except random cracks and single holes not exceeding 1 inch in diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- D. Perform structural repairs with prior approval of Architect and Structural Engineer for method and procedure, using specified epoxy adhesive and mortar.
- E. Repair methods not specified above may be used, subject to acceptance of the Architect.

END OF SECTION 033000

SECTION 10 73 00

SPECIALTIES MANUFACTURERS OF PROTECTIVE COVERS

PART 1 - GENERAL

[reference CSI 2020 MasterFormat[™] Division 10 (Specialties Manufacturers) category 7300 (Protective Covers)]

1.1 DESCRIPTION OF PRODUCT

- A. Shade Structure
 - 1. Shade Structure Base Bid: DB-159: 23x24 (4 Column Kite) with over MR.
 - 2. Shade Structure Bid Alternate: Custom Monoslope40x40 () with over MR.

B. Roof Slope:

- 1. Shade Structure Base Bid: 12:2
- 2. Shade Structure Bid Alternate: 12:2.25
- C. Minimum Clearance Height (MCH): 8 in ft. Minimum clearance height under the structure indicates the lowest height of a member from finish grade for clearance under the structure. This is generally the clearance under roof eave or frame, whichever is lower.

1.2 REFERENCES

- A. REFERENCE STANDARDS:
 - 1. AISC- American Institute of Steel Construction Manual of Steel Construction.
 - 2. ASTM American Society for Testing and Materials.
 - 3. AWS American Welding Society.
 - 4. LEED Leadership in Energy and Environmental Design.
 - 5. OSHA Occupational Safety and Health Administration Steel Erection Standard 29 CFR 1926 Subpart R-Steel Erection.
 - 6. PCI Powder Coating Institute.
 - 7. SSPC The Society for Protective Coatings.
 - 8. Architecturally Exposed Structural Steel (AESS) as defined by AISC

1.3 SUBMITTALS

- A. Deferred Submittal Requirements:
 - 1. Submittal documents for deferred submittal items shall be submitted to the building official for review and approval by the project architect, and not by the individual sub-contractor / consultant.
 - 2. Deferred submittal documents in addition to the seal of the responsible engineer, shall bear the shop drawing approval stamps of the project architect, engineer of record, and the general contractor on all sheets of plans and cover of the calculations.
 - 3. Submittal documents for deferred submittal items shall be submitted in a timely manner that allows for a minimum of thirty calendar days for the initial plan review turn-around.
 - 4. Deferred submittal items shall not be fabricated / installed until their design and submittal documents have been approved by the building official.
 - 5. Provide two copies of deferred submittal documents for final approval.
- B. Product Design Requirements
 - 1. Building Codes: See drawings.
 - 2. Ground Snow Load (Pg): See drawings.
 - 3. Basic Wind Speed (V): See drawings.
 - 4. Seismic Design: See drawings.

- C. Foundation Design:
 - 1. The shelter shall be set on foundations designed by the manufacturer.
 - 2. Foundation materials shall be provided by contractor.
 - 3. Owner shall provide manufacturer with complete information about the site including soil bearing capacity and lateral load capacity.
 - 4. If soil data are not provided, foundations will be designed to the minimum values identified in the governing building code.
- D. Anchor Bolts:

Anchor bolts shall be provided by manufacturer. Hooked anchors are not permitted per AISC requirements.

E. LEED Submittals:

LEED MR Credit 4.0: Materials and Resources, Recycled Content.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Minimum of (10) years in the shelter construction industry.
 - 2. Full time on-staff Licensed Engineer.
 - 3. Full time on-staff Quality Assurance Manager.
 - 4. Full time on-staff LEED AP.
 - 5. All welders AWS Certified.
 - 6. Manufacturer owned and controlled finishing system to include shot blast, pretreatment, primer, and top coat.
 - 7. Published Quality Management System.
 - 8. Annual audit of Quality System and Plant Processes by Third Party Agency.
 - 9. Annual audit of powder coat finish system by Third Party Agency (PCI)
- B. Manufacturer's Certifications:
 - 1. AISC Certified Building Fabricator, (American Institute of Steel Construction) Certified Building Fabricator is an AISC Quality Management Systems (QMS) Certification which sets the quality standard for the structural steel industry.
 - PCI 4000 S Certified, Certification thru Powder Coating Institute for original equipment manufacturers (OEMs) to evaluate process on entire finish system to add powder coat over steel.
 - 3. City of Los Angeles, CA Approved Fabricator Type I Steel.
 - 4. Clark County, NV Approved Fabricator steel.
 - 5. City of Houston, TX Approved Fabricator for Structural Steel.
 - 6. Miami Dade County Certificate of Competency for Structural Steel.
 - 7. State of Utah Approved Fabricator for Medium and High Strength Steel.
 - 8. City of Riverside, CA Approved Fabricator Type I Steel.
 - 9. City of Phoenix, AZ Approved Steel Fabricator.
- C. Field or Site Conditions
 - 1. Foundations shall be at the same elevation unless specifically noted otherwise on the drawings.
- D. Manufacturer Warranty
 - 1. Shelter must have a (10) year limited warranty on steel frame members.
 - 2. Shelter must have a (10) year limited warranty on paint system.
 - 3. Pass through warranty of Metal Roof manufacturer shall be provided upon request.
- 1.5 COORDINATION

The Contractor shall notify all other Contractors, such as plumbers, electricians, etc., in ample time to install work including sleeves, before concrete is placed.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Refer to Division 1, Section 01 65 00: PRODUCT DELIVERY REQUIREMENTS
- B. Refer to Division 1, Section 01 66 00 PRODUCT STORAGE AND HANDLING REQUIREMENTS.
- 1.7 QUALITY ASSURANCE
 - A. Subcontractor shall coordinate all inspections, and final acceptance through General Contractor.

PART 2 - PRODUCTS

- 2.1 SHELTER SYSTEM AND MATERIALS
 - A. Manufacturers:
 - 1. Acceptable Manufacturer: Poligon, a Product of PorterCorp, 4240 N 136th Ave., Holland, MI 49424.Poligon 1099
 - Talk to a local rep agency. Receive pricing from Kelly Spence at <u>kelly.spence@miracleplayground.com</u>. 800-264-7225 x108
 - 3. The product shall be designed, produced, and finished at a facility operated and directly supervised by the supplier who has a minimum of (10) years in the business of making pre-manufactured shelters.
 - 4. Manufacturer must be an AISC Certified Building Fabricator.
 - B. Substitution Limitations:
 - Substitutions for cause: Will only be considered when circumstances, outside of the contractor's control, will create a substantial delay in the completion of the project. Approval of substitution requests is at the discretion of the architect, owner, and/or their designated consultants. Architect will only consider contractor's request for substitution when the following conditions are satisfied:
 - a. Requested substitution meets or exceeds requirements as per the Contract Documents and will produce indicated results.
 - b. Requested substitution provides equal design characteristics that specified product provides.
 - c. Substitution request is fully documented and properly submitted.
 - 2. If those conditions are not satisfied, Architect may return requests without action, except to record non compliance with these requirements. It is required that the contractor provide the following:
 - a. Documentation that the proposed substitution complies with all requirements as stated or shown in the contract documents and/or drawings
 - b. Proof of meeting or exceeding specified warranty and/or certifications. Example: Fabricator Qualifications, such as AISC or PCI4000
 - c. Detailed comparison of significant qualities of proposed substitutions with those of the specified product. Include annotated copy of applicable Specification Section. Product data, including drawings and descriptions of products and fabrication.
 - d. Documentation of any deviations from the specified material/product.
 - e. Architect may request additional information and documentation prior to rendering a decision.
 - f. If substitution approval happens during bidding, Architect will approve substitution requests by issuing an Addendum. Substitutions not approved by addendum are rejected. This information will be provided in an expeditious

manner.

- g. Substitutions for convenience: Will not be considered.
- C. Product Requirements and Materials:
 - 1. General:

The pre-engineered package shall be pre-cut unless otherwise noted and pre fabricated which will include all parts necessary to field construct the shelter. The shelter shall be shipped knocked down to minimize shipping expenses. Field labor will be kept to a minimum by pre-manufactured parts. Onsite welding is not necessary.

- 2. Reinforced Concrete:
 - a. Concrete shall have minimum 28-day compressive strength of 3,000psi and slump of 4" (+/- 1"), unless otherwise noted on the drawings.
 - b. Reinforcing shall be ASTM A615, grade 60.
- 3. Steel Columns:
 - a. Hollow structural steel tube minimum ASTM A500 grade B with a minimum wall thickness of 3/16".
 - b. Unless columns are direct buried, columns shall be anchored directly to concrete foundation with a minimum of four anchor rods to meet OSHA requirement 1926.755(a)(1).
 - c. Columns and frame shall be Poli-5000 certified powdercoat finish. Color shall be Hunter Green
- 4. Compression Members:

Compression rings of structural channel or welded plate minimum ASTM A36 or compression tubes or structural steel tube minimum ASTM A500 grade B shall only be used.

- 5. Connection Requirements:
 - a. Anchor bolts shall be ASTM F1554 (Grade 36) unless otherwise noted.
 - b. Structural fasteners shall be zinc plated ASTM A325 high strength bolts and A563 high strength nuts.
 - c. Structural fasteners shall be hidden within framing members wherever possible.
 - d. Structural fasteners shall be manufactured in the U.S.
 - e. No field welding shall be required to construct the shelter.
 - f. All welds shall be free of burrs and inconsistencies.
 - g. Exposed fasteners shall be powder coated by manufacturer prior to shipment to match frame or roof colors as applicable.
 - h. Manufacturer shall provide extra structural and roofing fasteners.
- 6. Roofing Materials:
 - a. Primary Roof Deck: "R" Panel Metal Roofing (MR):
 - Roofing shall be 24 gauge ribbed galvalume steel sheets, with ribs 1 3/16" high and 12" on center.
 - 2) Roof surface shall be painted with Kynar 500 to the manufacturer's standard color: Almond. Ceiling surface shall be a "wash coat" primer.
 - Roof panels shall be factory precut to size and angled to provide ease of one-step installation.
 - 4) Metal roofing trim shall match the color of the roof and shall be factory made of 26 gauge Kynar 500 painted steel.
 - 5) Trim shall include panel ridge caps, hip caps, eave trim, splice channels, rake trim, roof peak cap, and corner trim as applicable for model selected. Trim may need to be cut to length and notched. Installation drawings shall have detailed information on how to cut and affix roof trim.
 - 6) Ridge, hip, and valley caps shall be pre-formed with a single central bend to match the roof pitch and shall be hemmed on the sides.
 - 7) Roof peak cap shall be pre-manufactured.

- 8) Manufacturer shall supply painted screws and butyl tape.
- b. Secondary Roof System by Others
- 7. Accessories:
 - a. Electrical access & Cutouts:
 - 1) Electrical access to be provided through a 1-1/8" diameter hole in the column base plate and 3/4" diameter holes are provided through connection plates for wire access through columns, trusses, and into the compression ring/tube.
 - 2) Electrical cutouts shall be provided in 4 places for fixtures or wires.

PART 3 - EXECUTION

- 3.1 INSTALLERS STORAGE AND HANDLING:
 - A. Protect building products after arrival at destination from weather, sunlight, and damage.
 - B. Installer shall store product elevated to allow air circulation and to not introduce mold, fungi decay or insects to the product.
 - C. Product must be handled with protective straps or padded forks if lifting with mechanical equipment. Use of chain or cable to lift product into place will not be accepted and may void manufacturer's warranty.

3.2 ERECTION:

- A. Installation: Install all components according to manufacturer's installation instructions and these specifications.
- B. General Contractor

Interface with other work is to be coordinated by the customer or the customer's agent. Certain designs have electrical or other plumbing requirements that are not supplied by Poligon.

C. Tolerances:

Tolerances on steel structural members are set according to AISC construction practices, abided in the factory, and cannot be increased. No field slotting or opening of holes will be allowed. It is therefore essential that contractors conform to the tolerances specified on the installation drawings for anchor bolt or column layout details.

D. OSHA Compliance: OSHA Compliance to Steel Erection Standard 29CRF 1926 Subpart R-Steel Erection.

3.3 REPAIR

A. Do not attempt any field changes without first contacting Poligon.

3.4 FIELD OR SITE QUALITY CONTROL

A. Field or Site Tests and Inspections are note required by Poligon but may be required by the customer or by the local building inspector.

END OF SECTION 10 73 00

SECTION 12 93 00 SITE FURNISHINGS

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

A. The Conditions of the Contract and Division 1 apply to this section as fully as if repeated herein.

1.2 SCOPE OF WORK

- A. Furnish all labor, material, equipment and services necessary to provide all site furnishings, complete in place, as shown on the drawings or specified herein.
- B. Work included:
 - 1. Barbecue Pit
 - 2. Hot Ash Receptacle
 - 3. Picnic Tables
 - 4. Floating Dock Assembly
 - 5. Dog Drinking Station
 - 6. Chainlink Fence
- C. Related work specified in other sections:
 - 1. Section 312000 for "Earth Moving"
 - 2. Section 033000 for "Cast in Place Concrete"
 - 3. Section 321313 for "Concrete Paving"

1.3 SUBMITTALS

- A. Submit for acceptance manufacturer's catalogue information or shop drawings indicating size, materials, finishes and quantities of items being supplied. Submit one sample for precast concrete products.
- B. Submittals per Division 01 General Requirements.
- C. Product Data: Submit certificates of compliance, manufacturer's specifications, installation instructions, and general recommendations for each product and other materials required by the manufacturer(s).
- D. Certification: Submit notarized certification from applicator and manufacturer stating that the work has been installed to meet or exceed the specifications and manufacturer's written instructions and recommendations.

1.4 COORDINATION

- A. The Contractor shall notify all other Contractors, such as plumbers, electricians, etc., in ample time to install work including sleeves, before concrete is placed.
- 1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Refer to Division 1, Section 01 65 00: PRODUCT DELIVERY REQUIREMENTS
- B. Refer to Division 1, Section 01 66 00 PRODUCT STORAGE AND HANDLING REQUIREMENTS.
- 1.6 QUALITY ASSURANCE
 - A. Source Limitations: Obtain each site furnishing item from single source and from single manufacturer.
 - B. Subcontractor shall coordinate all inspections, and final acceptance through General Contractor.

PART 2 - PRODUCTS

- 2.1 Provide furnishings as specified and in locations as noted in the drawings.
 - A. Barbeque Pit
 - Manufacturer: Pilot Rock, R.J. Thomas Mfg. Co. Inc. (800) 762-5002
 - a. Model: Q3-2460-B8, Group Grill
 - b. Size:
 - i. Grill Box: 24"x60" x 10"
 - ii. Post: 6" O.D. x 27"
 - iii. Base Plate 3/8" x 10" square.
 - c. Color/Finish: High temp non-toxic black enamel paint
 - d. Accessories: Model ANC1-4 Anchor Kit for Surface Mount
 - 2. Or approved equal
 - B. Hot Ash Receptacle
 - 1. Manufacturer:

Pilot Rock, R.J. Thomas Mfg. Co. Inc. (800) 762-5002

- a. Model: HCB/B-1, 14 gauge steel Hot Coal Bin with top funnel and grate
- b. Size: 23" x 23" x 32-1/2" tall
- c. Color/Finish: High temp non-toxic black enamel paint
- d. Accessories:
 - i. Two (2) "caution" decals included
 - ii. Model BR-4HSA, Hex Sleeve Concrete Anchors for Surface Mount
 - iii. Model CNG-2310C, Galvanized steel collection can- 31 gallon
 - iv. Model PL-1, Brass Padlock
- 2. Or approved equal
- C. Picnic Tables
 - 1. Manufacturer:

Pilot Rock, R.J. Thomas Mfg. Co. Inc. (800) 762-5002

- a. Standard Picnic Table
 - i. Model: UT-G-6R-W, Heavy Duty Picnic Table, w/ ANC6-4 Anchor Kit (Concrete Screws) and Model ANG-5 Anchor Kit (Anchor Straps)
 - ii. Size: 6' Length Bench, 8' Length Top
 - iii. Color/Finish:
 - 1. Frame Finish: Hot Dipped Galvanized Steel
 - 2. Top and Bench: Perforated Steel, Brown

- b. Accessible Picnic Table
 - i. Model: UTH-G-6R-W, Accessible Heavy Duty Picnic Table, w/ ANC6-4 Anchor Kit (Concrete Screws) and Model ANG-5 Anchor Kit (Anchor Straps)
 - ii. Size: 6' Length
 - iii. Color/Finish:
 - 1. Frame Finish: Hot Dipped Galvanized Steel
 - 2. Top and Bench: Perforated Steel, Brown
- 2. Or approved equal
- D. Waste Receptacle
 - 1. Furnished and Installed by Owner
 - 2. Generic symbol shown per plan at recommended locations
- E. Floating Dock Assembly
 - 1. Manufacturer:

i.

i.

- FWM Docks
- (603) 944-9538
- a. Floating Dock Assembly Unit
 - One (1) Custom 6' x 20' Floating Dock
 - 1. 6' x 20' Aluminum Dock Frame
 - 2. Thruflow Decking, Gray
 - 3. Floatation Drums
 - ii. Four (4) Augur Pole Anchoring Assembly with Pole Top Solar Lights
 - iii. Eight (8) Tie Down Cleats
 - iv. Eight (8) Corner Bumpers
 - v. Eight (8) Vertical Bumpers (installed between Cleats)
- b. Accessible Gangway Assembly
 - One (1) 4' x 30' Gangway
 - 1. ADA Compliant Railings
 - 2. Aluminum Frame
 - 3. Thruflow Decking, Gray
 - 4. Gangway Roller, 4ft wide
 - 5. Transition Plate, 4ft wide
 - 6. Abutment Hinge Kit, 4ft wide
- c. Non-Accessible Dock Ramp
 - i. One (1) 4' x 20' Aluminum Dock Section
 - 1. Aluminum Frame
 - 2. Thruflow Decking, gray
 - 3. Dock Transition Hinge
- 2. Or approved equal
- F. Dog Drinking Station
 - 1. Garden Valve
 - a. Arrowhead GV75F Lead Free Bent Nose Garden Valve
 - b. Or Approved Equal
 - 2. Utility Hook
 - a. Tetra-Teknica UH03 Heavy Duty Utility Hook

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- b. Powdercoat Black
- c. Secure to post with two (2) 1-1/2" black screws
- G. Chainlink Fence
 - 1. Master Halco
 - a. Chainlink Fabric: Galvanized After Weaving, 9 Gauge, 2" Mesh, 4'-0" height, KK (knuckle knuckle)
 - b. Top Rail: 1-5/8" O.D. Full Weight Pipe
 - c. Line Posts: 1-7/8" O.D. Full Weight Pipe
 - d. Terminal Posts: 2-3/8" O.D. Full Weight Pipe
 - e. Terminal Posts (Gate Supporting): 4" O.D. Full Weight Pipe
 - f. Other elements as shown on the plans.
 - 2. Or Approved Equal

PART 3 - EXECUTION

- 3.1 Furnish all labor, material, equipment and services necessary to provide all furnishings, complete in place, as shown on the drawings or specified herein.
- 3.2 Work shall be set plumb level and true to line and shall present a neat and finished appearance. Include setting each item in its correct place, fastening it, connecting it, or incorporating it into other portions of the work, as each item may require; and testing and operating equipment to assure proper functioning.
- 3.3 The work of this Section shall include the furnishing of anchors and adhesives required for installing and attaching the equipment specified herein. All furnishings shall be installed per manufacturer's recommendations unless noted in drawing or herein.
- 3.4 Adequately protect all work from damage by subsequent construction operations. Damaged work shall be replaced.
- 3.5 The Contractor shall at all times keep the premises free from accumulation of waste materials and rubbish caused by his employees. Upon completion of work, rubbish and excess materials are to be removed from the site, leaving the areas acceptably clean.

END OF SECTION 12 93 00

SECTION 131100 SPRAY GROUND GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 WORK INCLUDED

The scope of the work included under this Section of the Specifications shall include A. spray ground(s) as illustrated on the Drawings and specified herein. The General and Supplementary Conditions of the Specifications shall form a part and be included under this Section of the Specifications. The Spray ground Subcontractor shall provide all supervision, labor, material, equipment, machinery, plant and any and all other items necessary to complete the work. ALL OF THE WORK IN SECTIONS 13 11 00 - 13 11 08 IS TO BE THE RESPONSIBILITY OF ONE EXPERIENCED SPRAY GROUND SUBCONTRACTOR PRIMARILY ENGAGED IN THE CONSTRUCTION OF COMMERCIAL PUBLIC-USE SPRAY GROUNDS. THE SUBCONTRACTOR (CONTRACTOR LICENSEE, RME/RMO) MUST HAVE, IN THE LAST FOUR YEARS CONSTRUCTED AT LEAST THREE (3) COMMERCIALLY DESIGNED MUNICIPAL AND PUBLIC-USE SPRAY GROUNDS, EACH OF WHICH SHALL HAVE INCORPORATED A MINIMUM SIZE OF 1,000 SQUARE FEET OF SURFACE AREA WITH A SELF-MODULATING BALANCE TANK. The spray ground Subcontractor shall furnish and install the spray ground structures, finishes, forming, spray ground mechanical and electrical systems, and all accessories necessary for a complete, functional spray ground system, as herein described. Work shall include start-up, instruction of Owner's personnel, as-built drawings and warranties as required.

1.2 CODES, RULES, PERMITS, FEES

- A. The spray ground shall be constructed in strict accordance with the applicable provisions set forth by authorities having jurisdiction over swimming pool construction and operation in the State of California.
- B. The spray ground Subcontractor shall give all necessary notices, obtain all permits, and pay all government sales taxes, fees, and other costs in connection with their work; file all necessary plans, prepare all documents and obtain all necessary approvals of governmental departments having jurisdiction; obtain all required certificates of inspection for their work and deliver same to the Designated Representative before request for acceptance and final payment for the work.
- C. The spray ground Subcontractor shall include in the work any labor, materials, services, apparatus, or drawings in order to comply with all applicable laws, ordinances, rules and regulations, whether or not shown on Drawings and/or specified.
- D. The Contractor shall submit all required documents and materials to all Governmental Departments having jurisdiction for any deferred approval items or substituted materials or products to obtain final approval to installation.

1.3 DESCRIPTION OF WORK

A Furnish and perform supervision, coordination, all layout, formwork, excavation, hand trim, disposing off-site of all unused material or debris to complete the Spray ground excavation to the dimensions shown on the plans.

- B. Furnish and install complete splash pad structures, including reinforcing steel and castin-place concrete floors.
- C. Furnish and install spray ground finishes as shown on the plans.
- D. Furnish and install complete spray ground mechanical system(s), including, but not limited to, circulation systems, filtration systems, water chemistry control systems, domestic water fill line systems, booster pump and special effects systems, and all pumps, piping, valves, and connections between system(s) and Spray ground(s).
- E. Furnish and install complete spray ground electrical system(s) from P.O.C. in Mechanical Room, including, but not limited to, lighting systems, water level control systems, special effects systems, control circuitry, motor starters, time clocks, bonding, and all conduits, conductors, contactors, and switches between the system(s) and Spray ground(s).
- F. Furnish and install all spray ground deck equipment and required anchors and inserts for the specified equipment as required by code, shown on the Drawings and specified herein.
- G. After the initial filling of the spray ground balance tank(s), should any repairs, continuing work, or other Subcontractor responsibility require drainage or partial drainage of the spray ground systems, the spray ground Subcontractor shall be responsible for any subsequent refilling and shall complete the project with the Spray ground balance tank(s) full of water, water in chemical balance, complete in every way, and in full operation.

1.4 ASSIGNED RESPONSIBILITIES AND RELATED WORK

- A It is the intent of this section of the Specifications to clarify Work responsibilities of the trades directly and indirectly involved in construction of the spray ground systems. All labor, equipment, materials and supplies furnished by the spray ground Subcontractor and other Subcontractors per the contractual agreement with the General Contractor and Owner and shall be as directed by the Owner through their Designated Representative.
- B. THE SPRAY GROUND SUBCONTRACTOR SHALL NOT SUBCONTRACT ANY PORTION OF THE SPRAY GROUND CONSTRUCTION OR SPRAY GROUND EQUIPMENT INSTALLATION TO ANYONE OTHER THAN A SUBCONTRACTOR THAT SATISFIES THE REQUIREMENTS OF SECTION 13 11 00
- C. References to "Spray Ground Systems" shall include the Spray Grounds Equipment, and Accessories.
- D. The Owner will provide one complete water filling of the spray ground balance tank(s) when they have been proved fully operational, complete in every way and accepted by the Designated Representative.

1.5 RESPONSIBILITIES OF THE CONTRACTOR

- A The Contractor shall grade the spray ground site(s), establish benchmarks, cut and fill as necessary to provide as level an area as possible at spray ground deck elevation before spray ground layout.
- B. The Contractor shall be responsible for horizontal dimensions and grade elevations accurately from established lines and benchmarks (as indicated on the Drawings) and be responsible for those grades.
- C. The Contractor shall provide adequate temporary light, electric power, heat and ventilation per Federal and State OSHA requirements to construct the spray ground system(s).
- D. The Contractor shall not permit any heavy equipment activity over any area or within five (5) feet of any area under which spray ground piping is buried. There shall be no exceptions to this requirement.
- E. The Contractor shall keep the swimming pool excavation(s) and spray ground structure(s) free of construction residue and waste materials of their workmen or Subcontractors, removing said material from the spray ground as required.
- F. The Contractor shall protect the spray ground(s) from damage caused by their construction equipment and /or workmen and Subcontractors.
- G. The Contractor shall provide a representative at time of spray ground start-up to coordinate all trades related to Spray ground system(s).

1.6 RESPONSIBILITIES OF THE MECHANICAL SUBCONTRACTOR

- A The Mechanical Subcontractor shall be licensed in the State of California and provide written notifications to spray ground Subcontractor and contractor when necessary to excavate and backfill within the spray ground construction site.
- B. The Mechanical Subcontractor shall not utilize any spray ground piping trench for installation of any sanitary sewer, storm sewer, domestic water, hot water, chilled water or natural gas line.
- C. The Mechanical Subcontractor shall furnish and install all sanitary sewer piping, including vent stacks (if necessary), for backwash pits, floor drains and floor sinks as required by code, shown on Drawings, and herein specified.
- D. The Mechanical Subcontractor shall furnish and install all storm sewer piping and site drainage systems as required by code, shown on the Drawings, and herein specified.
- E. The Mechanical Subcontractor shall provide a minimum 75 psi water supply for spray ground construction work within fifty (50) feet of the Spray ground construction site(s).
- F. The Mechanical Subcontractor shall furnish and install reduced pressure backflow protected domestic water lines to P.O.C. within spray ground Mechanical Room as required by code, shown on the Drawings, and herein specified.

- G. The Mechanical Subcontractor shall furnish and install all ductwork, louvers, and all HVAC equipment within spray ground mechanical room as required by code, shown on the Drawings, and herein specified.
- H. The Mechanical Subcontractor shall provide a representative at time of spray ground start-up to coordinate work related to spray ground system(s).

1.7 RESPONSIBILITIES OF THE ELECTRICAL SUBCONTRACTOR

- A. The Electrical Subcontractor shall be licensed in the State of California and shall furnish and install electrical service to spray ground Mechanical Room sized to accommodate all necessary spray ground equipment as shown on the Drawings and herein specified.
- B. The Electrical Subcontractor shall furnish any temporary power needed by the spray ground Subcontractor within fifty (50) feet of the swimming pool construction site(s).
- C. The Electrical Subcontractor shall furnish and install all conduits, conductors, starters/disconnects, panels, circuits, switches and equipment as required for lighting, ventilation and HVAC equipment within Spray ground Mechanical Room as required by code, shown on the Drawings, and herein specified.
- D. The Electrical Subcontractor shall furnish and install all conduits, conductors, panels, circuits, switches and equipment for area lighting as required by code, shown on the Drawings, and herein specified.
- E. All equipment, material and installation shall be as required under Division 16 of the Specifications and shall conform to NEC Article 680 (latest revision), State and Local Codes, and as may be required by all authorities having jurisdiction over Spray ground construction within the State of California.
- F. The Electrical Subcontractor shall provide a representative at time of spray ground start-up to coordinate work related to spray ground system(s).

1.8 INTENT

- A It is the intention of these specifications and Drawings to call for finished work, tested and ready for operation. Wherever the word "provide" is used, it shall mean "furnish and install complete and ready for use."
- B. Minor details not usually shown or specified, but necessary for proper installation and operation, shall be included in the work, the same as if herein specified or shown.

1.9 SCHEDULE OF VALUES

A. Provide a Schedule of Values for all work specified in each of the technical specifications listed in the table below, regardless of whether the work is performed by the spray ground contractor or others. Values listed shall be fully burdened, with contractor general conditions, overhead, profit and bonds included. Payments for swimming pool work completed shall not be approved until Schedule of Values has been submitted to and approved by Architect.

SPRAY	GROUND S	CHEDULE OF VALUES	
No.	Section #	Description	Value
1.	131101	Spray Ground Excavation	
2.	131102	Spray Ground Concrete	
3.	131103	Spray Ground Shotcrete	
4.	131105	Spray Ground Waterproofing	
5.	131106	Spray Ground Equipment	
6.	131107	Spray Ground Mechanical	
7.	131108	Spray Ground Electrical	
Total			

1.10 SUBMITTAL PROCEDURES

- A. General: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by Architect for Subcontractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing submittals with performance construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for schedules performance of related construction activities.
- D. Processing Time: Allow enough time for submittal review, including time for resubmittals as follows. Time for review shall commence on Architect's receipt of submittal.
 - 1. Initial Review: Allow fifteen (15) days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Architect will advise Contract when a submittal being processed must be delayed for coordination.
 - 2. Concurrent Review: Where concurrent review of submittals by Architect's consultants, Owner, or other parties is required, allow twenty-one (21) days for initial review of each submittal.
 - 3. Direct Transmittal to Consultant: Where the Contract Documents indicate that submittals may be transmitted directly to Architect's consultants, provide duplicate copy of transmittal to Architect. Submittal will be returned to Architect before being returned to Subcontractor.
 - 4. If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 5. Allow fifteen (15) days for processing each submittal.
 - 6. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

- E. Identification: Place a title block on each submittal for identification.
 - 1. Indicate name of firm or entity that prepared each submittal on title block.
 - 2. Provide a space on title block to record Subcontractor's review and approval markings and action taken by Architect.
 - 3. Include the following information on title block for processing and recording action taken: (See Attached Sample)
 - a. Project name.
 - b. Date.
 - c. Name and address of Subcontractor.
 - d. Name of Subcontractor.
 - e. Name of Supplier.
 - f. Name of Manufacturer.
 - g. Unique identifier, including revision number.
 - h. Number and title of appropriate Specification Section.
 - i. Drawing number and detail references, as appropriate.
 - j. Other necessary identification.

SUBMITTAL FOR:

SUBMITTAL TO:

SUBCONTRACTOR:

Item Number:			
Section Number:			
Section Description:			
Subcontractor:			
Supplier:			
Manufacturer:			
Product Code:			
Quantity:			
Subcontractor Certification:		Contractor's Submittal Stamp:	
It is hereby certified that the material designated in this submit to be incorporated in the above and is in compliance with the co and / or specifications and is approval. Certified by:	equipment or ttal is proposed named project ntract drawings submitted for		
Date:			
Job Superintendent: Revisions:		-	

Architect's Review Stamp and Comments

- F. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract documents on submittal.
- G. On all catalogue or cut sheets identify which model or type is being submitted.
- H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Product data and shop drawings shall be packaged within a three-ring binder and colored samples shall be packaged on a heavy cardboard. Transmit each submittal using a transmittal form.
 - 1. On an attached separate sheet, prepared on Subcontractor's letterhead, record relevant information, request for data, revisions other than those requested by Architect on previous submittals and deviations from requirements of the Contract documents, including minor variations and limitations. Include the same label information as the related submittal.
 - 2. Include Subcontractor's certification stating that information submitted complies with requires of the Contract Documents.
 - 3. Transmittal Form: Provide locations on form for the following information:
 - a. Project name.
 - b. Date.
 - c. Destination (To:).
 - d. Source (From:).
 - e. Names of Subcontractor, manufacturer, and supplier.
 - f. Category and type of submittal.
 - g. Submittal purpose and description.
 - h. Remarks.
- I. Distribution: Furnish copies of final submittals to manufacturers, Subcontractors, suppliers, fabricators, installers, authorities having jurisdiction and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Use only final submittals with mark indicating action taken by Architect in connection with construction.

1.11 SUBSTITUTIONS

- A. To obtain approval to use unspecified products, bidders shall submit requests for substitution at least ten (10) days prior to bid date. Requests shall only be considered if they clearly describe the product for which approval is asked, including all data necessary to demonstrate acceptability. All unspecified products and equipment will be considered on an "or equal" basis at the discretion of the Designated Representative. Requests for substitution received after the specified deadline will not be considered. Where a conflict exists between the requirements of the General Conditions / Special Conditions / Division 1 concerning substitutions and the requirements of this Article, this Article (Section 13 11 00, Article 1.10) shall govern.
- B. Where the spray ground Subcontractor proposes to use an item of equipment other than that specified or detailed on the Drawings which requires any redesign of the structure, partitions, foundations, piping, wiring, or any other part of the architectural, mechanical, or electrical layout, all such redesign and all new drawings (stamped by California Licensed Engineer) and detailing required shall be prepared by the Spray

ground Subcontractor, at their own expense, submitted for review and approval by the Designated Representative prior to bid.

C. Where such approved deviation requires a different quantity and arrangement of piping, supports and anchors, wiring, conduit, and equipment from that specified or indicated on the Drawings, the spray ground Subcontractor shall furnish and install any such piping, structural supports, controllers, motors, starters, electrical wiring and conduit, and any other additional equipment required by the system, at no additional cost to the Owner.

1.12 SURVEYS AND MEASUREMENTS

A The spray ground Subcontractor shall base all measurements, both horizontal and vertical, from benchmarks established by the Contractor. All work shall agree with these established lines and levels. The mechanical Drawings do not give exact details as to elevations of piping, exact locations, etc. and do not show all offsets, control lines, pilot lines and other installation details. Verify all measurements at site and check the correctness of same as related to the work.

1.13 DRAWINGS

A. Drawings are diagrammatic and indicate the general arrangement of the systems and work included in the Subcontractor. Drawings are not to be scaled. The architectural drawings and details shall be examined for exact dimensions. Where they are not definitely shown, this information shall be obtained from the Designated Representative.

1.14 SPRAY GROUND SUBSUBCONTRACTOR

- A. The spray ground construction work as herein described and specified in Division 13 of the Project Manual shall be the complete responsibility of a qualified Spray ground Subcontractor with extensive experience in commercial public use Spray ground installations.
- B. The Contractor shall require the spray ground Subcontractor to furnish to the Contractor performance and payment bonds in the amount of 100% of the Spray ground Subcontractor's bid written by a surety Company properly registered in the State of California and listed by the U.S. Treasury. The expense of the bond(s) is to be borne by the Subcontractor. The Contractor shall clearly specify the amount and requirements of the bond(s) in the Contractor's written or published request for subbids. The Contractor's written or published request for subbids. The Contractor's written or published request for subbids shall also specify that the bond(s) expense is to be borne by the Subcontractor.
- C. Subcontractor certifies that it meets the qualifications and experience requirements established in Spray ground General Requirements, Section 13 11 00, as follows:
 - 1. Subcontractor (Contractor Licensee, RME/RMO) has, in the last four (4) years, constructed at least three (3) commercially designed municipal and public-use Spray grounds, each of which have incorporated a minimum size of 1,000 square feet of surface area with a self-modulating balance tank.
 - 2. The following list of projects meet the requirements of Section (B) above and the contact as reference by the Contractor, the Awarding Authority of their agent or designee.

a.	Owner: Scope of Project: Contact Person: Phone Number: Architect for Project:	
b.	Owner: Scope of Project: Contact Person: Phone Number: Architect for Project:	
C.	Owner: Scope of Project: Contact Person: Phone Number: Architect for Project:	

- D. Spray Ground Deck Subcontractor other than the swimming pool Subcontractor certifies that it meets the qualifications and experience requirements established in Spray Ground General Requirements, Section 13 11 00, as follows:
 - 1. Subcontractor has, in the last four (4) years, constructed at least three (3) commercially designed spray ground decks, each of which have incorporated a minimum size of 1,000 square feet of surface area of the spray ground.
 - 2. The following list of projects meet the requirements of section (b) above and the contact as reference by the Contractor, the Awarding Authority of their agent or designee.

SPRAY GROUND DECK SUBCONTRACTOR

a.	Owner: Scope of Project: Contact Person: Phone Number: Architect for Project:	
b.	Owner: Scope of Project: Contact Person: Phone Number: Architect for Project:	
C.	Owner: Scope of Project: Contact Person: Phone Number: Architect for Project:	

1.15 OPERATING INSTRUCTIONS

A. The spray ground Subcontractor shall determine from actual samples of spray ground water supplied by the Owner, the proper water management program necessary for maximum operating efficiency and comfort. The spray ground Subcontractor shall

provide the services of experienced personnel familiar with this type of spray ground system operation, in conformance with Section 13 11 05 of the Specifications.

1.16 MAINTENANCE MANUALS

- A The spray ground Subcontractor shall provide six (6) bound sets for delivery to the Designated Representative of instructions for operating and maintaining all systems and equipment included in this Contract. Manufacturer's advertising literature or catalog pictures will not be acceptable for operating and maintenance instructions.
- B. Bound in ring binders shall be all parts lists, periodic maintenance instructions and troubleshooting guidelines for all pool equipment, including but not limited to filters, pumps, controllers, water chemistry control equipment, etc.

1.17 SECURE FROM THE OWNER

- A. A complete Owner-furnished filling of the spray ground.
- B. The Owner's assistance, as specified herein, from the time of start-up until final written acceptance of the spray ground system(s).
- C. Chemicals as required for swimming pool operation after spray ground Subcontractor completes initial water chemistry balance and water treatment during the maintenance period described in Section 13 11 05 of the Specifications.

1.18 WARRANTY

A. The spray ground Subcontractor shall warrant all spray ground structures, finishes and systems against defects in material and workmanship for a period of one year after the date of acceptance by the Owner. Any repair or replacement required due to defective material or workmanship will be promptly corrected by the spray ground Subcontractor.

PART 2 - PRODUCTS NOT USED

PART 3 - EXECUTION NOT USED

END OF SECTION

SECTION 131101 SPRAY GROUND EXCAVATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Finish and fine grading to bring the surface of the ground to the required grades and elevations as indicated on the Drawings.
- B. Subgrade improvements and placing of compacted fills.
- C. Excavation and backfill for all Spray Ground structural requirements, including footings, foundations, slabs and balance tank.

1.2 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies: Conform with requirements of the General Conditions, and more specifically the following:
 - 1. Comply with California Building Code, latest edition.
 - 2. Comply with applicable construction safety orders, latest edition, Federal and State OSHA.
 - 3. Comply with applicable trench safety provisions, latest edition, Federal and State OSHA.
- B. Qualifications of Workers:
 - The entity performing the work for this Section (Contractor License E) shall have been successfully engaged with a C-53 license as an RME or RMO for at least the past four (4) years immediately prior to the commencement of the work. The Qualified contractor Shall submit documentation of a minimum of three (3) interactive spray ground play equipment and climb-on structure installations completed in the last four (4) years.
 - 2. For actual construction operations, use only trained and experienced workers with a minimum of three (3) years experience with the materials and methods specified.
 - 3. Provide at least one person who shall be present at all times during execution of the work of this Section, with a minimum of five (5) years experience with the type of materials being installed, the referenced standards, and who shall direct all Work performed under this Section.
- C. Project/Site Conditions:
 - 1. Be familiar with site and subsurface conditions.
 - 2. Excavation is unclassified and includes excavation to sub-grade elevations indicated or necessary, regardless of character of materials and obstructions encountered.
 - 3. Provisions for mitigation of wet soils due to seepage or rain shall be made during excavation and throughout construction. If wet soils are encountered within the Spray Ground excavations, de-watering shall be provided and the Geotechnical Engineer shall make recommendations for moist soil mitigation.

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- 4. Where slope instability is encountered, all excavations within those areas shall be 1:1 or flatter. Forming of vertical walls may be necessary, and all soil conditions shall be field verified by the Geotechnical Engineer.
- 5. Contractor shall review the Geotechnical Investigation Report as furnished by the Owner's Representative to determine the suitability of the soils.
- D. Adverse Weather Conditions:
 - 1. During the periods when site soil moisture content is substantially in excess of moisture content required for optimum compaction, do not perform fill compaction.
 - 2. When unfavorable weather conditions necessitate interrupting filling and grading operations, prepare areas by compaction of surface and grading to avoid collection of water. Provide adequate temporary drainage to prevent erosion.

1.3 SUBMITTALS AND SUBSTITUTIONS

- A. Provide submittals in conformance with requirements of Section 013300.
- B. Required submittals include:
 - 1. Offsite fill material, if applicable.
- C. Submit proof of qualifications as specified in Article 1.2.A of this Section.

1.4 EXCAVATING & TRENCHING, GENERAL REQUIREMENTS

- A. Refer to Section 015000, Temporary Facilities and Controls.
- B. All trenches, holes, etc. are to be completely protected using solid barricades, steel plates, and plywood both during construction and during off hours, including night time.
- C. Flashing warning light barricades are required on sidewalks, roads, and any other critical areas that require night time protection.
- D. Roads, paths and sidewalks shall not be blocked at any time or in any way. Trenching across roads, paths or sidewalks involves special instructions and review of the construction procedure by the Owner's Representative at least three (3) days prior to the Work actually being started.
- E. Construction equipment, including all trucks, cars, etc. shall not be parked or driven on roads, paths or sidewalks. Items not allowed on roads, paths or sidewalks include hoses, power cords, ropes, construction materials, dirt and debris, etc.
- F. All roads, paths and sidewalks must remain clear and the Contractor shall maintain temporary safe and effective pedestrian access at all times.
- G. Drawings show existing major underground utilities using the best information available. The Contractor shall also fully check public works reference drawings prior to excavation. Call local Dig Alert to locate utilities to ensure safety.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Fill Material, General: All material shall be subject to the review and approval of the Geotechnical Engineer.
- B. Engineered Fill: Earth materials obtained on-site are acceptable for use as engineered fill provided that all grasses, weeds and other deleterious debris are first removed. Engineered fill materials should be placed in thin layers (less than ten inches uncompacted thickness), brought to near the optimum moisture content or to a moisture content commensurate with effective compaction and soil stability, and compacted to a minimum of 90 percent of the maximum density obtainable by ASTM Test Method D1557.

Maximum Percent Passing #200 Sieve	40
Maximum Percent Retained 3" Sieve	0
Maximum Percent Retained 11/2" Sieve for Building Footing Zones	15
Maximum Percent Retained 3/4" Sieve for Landscape Areas	5
Maximum Percent Retained 1/2" Sieve for Play Fields	0
Maximum Liquid Limit	40
Maximum Plasticity Index	14
Minimum R-Value for Pavement Areas	50
Maximum Expansion Index (per 2022 CBC)	

- D. Furthermore, the soils proposed for import shall be generally homogenous and shall not contain cemented or clayey and/or silty lumps larger than one inch. When such lumps are present, they shall not represent more than ten percent (10%) of the material by dry weight. Where a proposed import source contains obviously variable soils, such as clay and/or silt layers, the soils which do not meet the above requirements shall be segregated and not used for this project or the various layers shall be thoroughly mixed prior to acceptance testing by the Geotechnical Engineer.
- E. The contractor shall provide sufficient advance notice, prior to import operations, to allow testing and evaluation of the proposed import materials. Because of the time needed to perform the above tests, the contractor shall provide a means by which the Geotechnical Engineer or others can verify that the soil(s) which was sampled and tested is the same soil(s) which is being imported to the project.

PART 3 - EXECUTION

- 3.1 INSPECTION
 - A. Verify drawing dimensions and elevations with actual field conditions. Inspect related Work and adjacent surfaces and report discrepancies and conditions which prevent proper execution of the Work to the Owner.

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3.2 EXCAVATION

- A. Checking Layout: Contractor shall, before commencing the excavation work, check all lines, stakes and levels for dimensions, angles, elevations and grades with the survey.
- B. Dimensions: Excavate to proper dimensions as shown, cut square and smooth with firm level bottoms. Prepared excavations shall be approved by Geotechnical Engineer. Excavations shall be free of loose or disturbed materials.
- C. Excess Water Control: Keep all excavations free from standing water by pumping, draining or providing proper protection against water intrusion. If soil becomes soft, soggy or saturated, perform additional excavation to firm soil not affected by water.
- D. Form Removal: Make all excavations of sufficient size to permit installation and removal of forms and all other required work.
- E. Alternate Forming: Sides of structures may be formed by neat excavations where banks will stand without caving. If banks cave, provide forming as required and widen excavation to permit forming, bracing and inspection. Provide forming in conformance with Section 131102, "Spray Ground Concrete" and all recognized safety standards.
- F. Excavate earth material to a minimum depth of 1 foot below proposed foundations or two feet below existing grade, whichever is deeper and recompact with 12 inches of select engineered fill.

3.3 BACKFILLING

- A. Method: After concrete has been placed, forms removed and concrete work approved, backfill the excavations with earth to indicated or required grades. Carry on backfilling simultaneously on each side of walls or grade beams. Remove all rubbish and wood from the excavations before placing backfill.
- B. Concrete Protection: Prior to placing any backfill, adequately cure all concrete and provide any bracing required to ensure the stability of the structure. Protect waterproofing and dampproofing against damage in a manner acceptable to the Owner. Remove bracing as backfill operations progress.
- C. Material: Use the material from the excavations for backfilling, subject to approval by Geotechnical Engineer. The earth shall be free from debris, large clods or stones.
- D. Lifts: Place backfill in eight (8) inch loose layers, bring to optimum moisture content and compact per the recommendations of the Geotechnical Report, sloping down and away from the structures being backfilled.
- E. Moisture: Rigidly control the amount of water used to ensure optimum moisture conditions for the type of fill material used. Excessive amounts of water causing saturation of earth will not be permitted. Compaction by flooding or jetting is prohibited.

3.4 GRADING

A. Slopes: Grade to finish grades indicated on Drawings, with uniform slopes between all points.

- B. Subgrades: Blade to required grade and roll or tamp subgrades for exterior slabs, decks and paving.
- 3.5 CLEAN-UP
 - A. Disposal: Haul away rubbish, debris, and rocks from site promptly and dispose of legally. Burning rubbish on site is prohibited.
 - B. Dust and Noise Abatement: During entire period of construction keep area and material being loaded sprinkled to reduce dust in air and annoyance to premises and surrounding property. **END OF SECTION**

SECTION 131102 SPRAY GROUND CONCRETE

PART 1 - GENERAL

- 1.1 WORK INCLUDED
 - A. Forming for cast-in-place concrete and shotcrete associated with spray ground areas and spray ground area decks.
 - B. Reinforcement for cast-in-place concrete and shotcrete associated spray ground areas and spray ground area decks.
 - C. Cast-in-place concrete for spray ground area structures. Do not use waterproofing admixture of any kind.
 - D. Cast-in-place concrete for spray ground area decks with Xypex C-500 crystalline waterproofing admixture. Waterproofing admixture for spray ground area only.
 - E. Provide labor, materials and equipment as required to install sealant for all spray ground area deck expansion joints, or any other caulking, as indicated on the aquatic Drawings and herein specified.

1.2 QUALITY ASSURANCE

- A. Qualifications of Workers:
 - The entity performing the work for this Section (Contractor License E) shall have been successfully engaged with a C-53 license as an RME or RMO for at least the past four (4) years immediately prior to the commencement of the work. The Qualified contractor Shall submit documentation of a minimum of three (3) interactive spray ground play equipment and climb-on structure installations completed in the last four (4) years.
 - 2. For actual construction operations, use only trained and experienced workers with a minimum of three (3) years experience with the materials and methods specified.
 - 3. Provide at least one person who shall be present at all times during execution of the work of this Section, with a minimum of five (5) years experience with the type of materials being installed, the referenced standards, and who shall direct all Work performed under this Section.
- B. Standards:
 - 1. In addition to complying with the California Building Code (2022 edition), comply with all pertinent recommendations contained in "Recommended Practice for Concrete Formwork," Publication ACI 347 of the American Concrete Institute.
 - 2. In addition to complying with California Building Code (latest edition), comply with all pertinent recommendations contained in "Manual of Standard Practice for Detailing Reinforced Concrete Structures," Publication ACI 315 of the American Concrete Institute.
 - 3. In addition to complying with all local codes and regulations, comply with all pertinent recommendations contained in American Society for Testing and Materials (ASTM); ASTM C 920 "Standard Specification for Elastomeric Joint Sealants."

- 4. Where provisions of applicable codes and standards conflict with the requirements of this Section, the more stringent provisions shall govern.
- C. Tolerances: Construct all spray ground concrete straight, true, plumb and square within a tolerance horizontally of one in 200 and vertically of one in 2000.
- 1.3 SUBMITTAL AND SUBSTITUTIONS
 - A. Provide submittals in conformance with the requirements of Section 013300.
 - B. Samples and Certificates, Concrete Reinforcement:
 - 1. Provide all data and access required for testing as described in Section 014523 of the Specifications.
 - 2. All material shall bear mill tags with heat number identification. Mill analysis and report shall be made available upon request.
 - 3. Material not so labeled and identifiable may be required by the Owner's Representative to be tested by the testing laboratory selected by the Owner's Representative and at no additional cost to the Owner, in which case random samples will be taken for one series of tests from each 2-1/2 tons or fraction thereof of each size and kind of reinforcing steel.
 - 4. Design mix from batch plant demonstrating previous use history and associated strengths at 28 days.
 - 5. The Contractor shall submit a mix design stamped and signed by a licensed engineer for approval by the Owner's Representative prior to any placement of concrete.
 - 6. The Contractor shall submit a separate mix design stamped and signed by a licensed engineer for the spray ground area decks which contains the specified Xypex C-500 crystalline waterproofing admixture for approval by the Owner's Representative prior to any placement of concrete.
 - C. Submit proof of qualifications as specified in Article 1.2.A of this Section.
 - D. Submit reinforcing shop drawings for pool walls, gutters, floors, dike walls and balance tank, etc. as shown on the construction drawing.

1.4 PRODUCT HANDLING

- A. Delivery: Deliver materials to the Project Site in the manufacturer's original unopened containers with all labels intact and legible.
- B. Storage: Store materials under cover in a manner to prevent damage and contamination, and store only the specified materials at the Project Site.
- C. Protection: Use all means necessary to protect the spray ground concrete before, during, and after installation and to protect the installed Work specified in other Sections.
- D. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's Representative.

PART 2 - PRODUCTS

2.1 CONCRETE FORMWORK

- A. Form Materials:
 - 1. Form Lumber: All form lumber in contact with exposed concrete shall be new except as allowed for reuse of forms in Part 3 of this Section, and all form lumber shall be one of the following, a combination thereof, or an equal approved in advance by the Owner.
 - a. "Plyform," Class I or II, bearing the label of the Douglas Fir Plywood Association; "Inner-Seal" Form as manufactured by Louisiana-Pacific, or equal.
 - b. Douglas Fir-Larch, number two grade, seasoned, surfaced four sides.
 - 2. Form Release Agent: Colorless, non-staining, free from oils; chemically reactive agent that shall not impair bonding of paint or other coatings intended for use.
- B. Ties and Spreaders:
 - 1. Type: All form ties shall be a type which do not leave an open hole through the concrete and which permits neat and solid patching at every hole.
 - 2. Design: When forms are removed, all metal reinforcement shall be not less than two (2) inches from the finished concrete surface.
 - 3. Wire Ties and Wood Spreaders: Do not use wire ties or wood spreaders.
- C. Alternate Forming Systems: Alternate forming systems may be used subject to the advance approval of the Owner.

2.2 CONCRETE REINFORCEMENT

- A. Bars: Bars for reinforcement shall conform to "Specifications for Deformed Billet-Steel Bars for Concrete Reinforcement," ASTM A-615, Grade 60.
- B. Wire Fabric: Wire fabric shall conform to "Specifications for Wire Fabric for Concrete Reinforcement," ASTM A-185.
- C. Tie Wire: Tie wire for reinforcement shall conform to "Specifications for Cold-drawn Steel Wire for Concrete Reinforcement," ASTM A-82 black annealed 16-gauge tie wire.

2.3 CAST-IN-PLACE CONCRETE

- A. Concrete:
 - 1. All concrete, unless otherwise specifically permitted by the Owner, shall be transitmixed in accordance with ASTM C94. Concrete for water retaining structures that do not receive a waterproofing finish (such as ceramic tile or spray ground plaster) shall receive a topical waterproofing finish.
 - 2. The control of concrete production shall be under the supervision of a recognized testing agency, selected by the Owner.
 - 3. Quality: All concrete shall have the following minimum compressive strengths at twenty-eight (28) days and shall be proportioned within the following limits:
 - a. 4,000 psi minimum compressive strength for cast-in-place concrete swimming pool structures.
 - b. 4,000 psi minimum compressive strength for cast in place spray ground decks with Xypex C-500

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- c. 1" maximum size aggregate.
- d. 6.0 minimum sacks of cement per cubic yard.*
- e. Maximum water to cement ratio of 0.40-0.45.
- f. 4" maximum slump.
- g. Xypex Admix C-500 2%-2.5% by weight of cement content. Contact Xypex Technical Services to confirm dosage. (To be used for swimming pool decks only.)
 - For estimate only: to be determined by mix design.
- 4. Cement: All cement shall be Portland Cement conforming to ASTM C-150, Type I or II, and shall be the product of one manufacturer.
- 5. Aggregates:

*

- a. Shall conform to "Standard Specifications for Concrete Aggregates," ASTM C33, except as modified herein.
- b. Coarse Aggregate: Clean sound washed gravel or crushed rock. Crushing may constitute not more than 30% of the total coarse aggregate volume. Not more than 5% flat, thin, elongated or laminated material nor more than 1% deleterious material shall be present. 1" aggregate graded from 1/4" to 1", fineness modulus 6.90 to 7.40. 1-1/2" graded from 1/2" to 1-1/2", fineness modulus 7.80 to 8.20.
- c. Fine Aggregate: Washed natural sand of hard, strong particles and shall contain not more than 1% of deleterious material, fineness modulus 2.65 to 3.05.
- d. Aggregate must be certified, non-expansive from a "known" good source.
- 6. Water: Clean, fresh, free from acid, alkali, organic matter or other impurities liable to be detrimental to the concrete (potable).
- 7. Admixtures: Admixtures shall be used upon approval of the Owner.
 - a. Air-entraining admixture: Conform to ASTM C260.
 - b. Water-reducing admixture: Conform to ASTM C494.
 - c. Waterproofing admixture for spray ground decks only: Xypex Admix C-500, no substitutions permitted. Conform to ASTM C494.
- 8. Xypex Admix C-500 Dosage: To be used for swimming pool decks only.
 - a. General: Xypex Admix must be added to concrete mix at time of batching. It is important to obtain a homogeneous mixture of Xypex Admix with the concrete. Do not add dry Admix powder directly to wet mixed concrete as this could cause clumping and thorough dispersion may not occur.
 - b. Dosage Rate: Under normal conditions, the crystalline waterproofing powder shall be added to the concrete mix at the following rates:
 - 1.) Xypex Admix C-500 2% 2.5% by weight of cement content
 - c. Weather Conditions: For mixing, transporting and placing concrete under conditions of high temperature or low temperature, follow concrete practices such as those referred to in ACI 305R (Hot Weather Concreting) and ACI 306R (Cold Weather Concreting) or other applicable standards.
 - d. Concrete Batching & Mixing Procedures: Procedures for the addition of Xypex admixture will vary according to type of batch plant operation and equipment. Prior to the placement of any concrete, the concrete batch plant and the contractor shall be responsible to consult with the local Xypex representative concerning additional procedures for the addition, mixing and to confirm dosage.
 - e. Note: For enhanced chemical protection or for meeting specific project requirements or where the concrete mix design contains higher than 25% type F fly ash content or includes a Portland cement/slag cement/type C fly

ash blend, consult with manufacturer or its authorized representative to determine appropriate dosage rates

- B. Concrete Pool Deck Penetrating Sealer:
 - 1. Manufacturer: PROSOCO, Inc., 3741 Greenway Circle, Lawrence, KS 66046. Phone: (800) 255-4255; Fax: (785) 830-9797. E-mail: CustomerCare@prosoco.com
 - 2. Typical Technical Data:
 - a. FORM: Clear liquid
 - b. SPECIFIC GRAVITY: 1.04
 - c. pH: not applicable
 - d. WEIGHT/GALLON.: 8.69 pounds
 - e. ACTIVE CONTENT: 11.47 percent
 - f. TOTAL SOLIDS: 9.21 percent ASTM D2369
 - g. FLASH POINT: 63 degrees Fahrenheit (53 degrees Celsius) ASTM D3278
 - h. FREEZE POINT: 38 degrees Fahrenheit (3 degrees Celsius)
 - i. SHELF LIFE: 2 years in tightly sealed, unopened container
 - j. VOC CONTENT: less than 100 grams per Liter
 - 3. Limitations
 - a. Not appropriate for use on limestone, marble, travertine or other calcareous stones. Always test other natural stone to ensure desired results.
 - b. Not suitable for application to synthetic resin paints, gypsum, plaster or other nonmasonry surfaces.
 - c. May not be suitable for surfaces receiving paints or coatings. Always test.
 - d. May cause slight darkening on some surfaces.
 - e. May adhere to glass. Contact PROSOCO for removal recommendations.
 - f. Not suitable for protecting surfaces subject to constant water spray.
 - g. Will not compensate for structural or material defects.
 - h. Not recommended for below grade application.
- 4. Application: Provide two coats per manufacturer's requirements. Before applying, read "Preparation" in the Manufacturer's Product Data Sheet and all safety information in the Manufacturer's Safety Data Sheet for Saltguard® VOC (for projects in California use Saltguard WB). Refer to the Product Data Sheet for additional information about application of Saltguard® VOC. Do not dilute or alter.
- C. Construction Joints: Use keyform for slab pour joints. Either preformed galvanized or PVC construction joint forms of a standard manufacturer may be used. Install per manufacturer's recommendations and tool edges of slabs.
- D. Waterstops: PVC bulb-type for use between concrete pours / lifts, conforming with ASTM D 570, D 624, and D 638. Provide in configuration(s) as recommended by manufacturer for specific application. Greenstreak, W.R. Meadows, or equal.
- E. Curing Materials:
 - 1. Liquid Membrane (covered slab): Chlorinated rubber membrane forming, curing sealing compound conforming to ASTM C309.
 - 2. Liquid Membrane (exposed slab): Clear methyl and butyl methacrylate nonstaining, membrane forming, curing-sealing compound conforming to ASTM C309.
- F. Cement Grout and Drypack:

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- 1. Cement Grout: Mix 1 part by volume of Portland Cement, 1/2 part by volume of water and fine aggregate enough to make mixture flow under its' own weight.
- 2. Drypack: Mix 1 part by volume of Portland Cement, 1/2 part by volume of water and fine aggregate enough to make a stiff mix that will mold into a ball. Mix no more than can be used in 30 minutes.

2.4 JOINT SEALANT MATERIALS

- A. Caulking: Multipart, non-sag gun grade polyurethane-based sealant meeting the requirements of ASTM C920-02, Type S or M, Mamemco International, Pecora, Sika Corp., Sonneborn Building Products, Tremco or approved equal. Self-leveling caulking materials are not allowed.
- B. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- C. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- D. Sealant Backer Rod: Provide compressible polyethylene or polyurethane backer rod as recommended by the sealant manufacturer.
- E. Bond Breaker Tape: Provide polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant.
- F. Sand: Cover the surface of the caulking with #30 silica sand.

2.5 OTHER MATERIALS

A. All other materials, not specifically described but required for proper completion of the work of this Section, shall be as selected by the Contractor subject to the advance review by the Owner.

PART 3 - EXECUTION

- 3.1 SURFACE CONDITIONS
 - A. Inspection:
 - 1. Prior to all Work of this Section, carefully inspect the installed Work of other trades and verify that all such Work is complete to the point where this installation may properly commence.
 - 2. Verify that all Work may be constructed in accordance with all applicable codes and regulations, the referenced standards, the original design, and in accordance with the site specific Geotechnical Report.
 - B. Discrepancies:
 - 1. In the event of discrepancy, immediately notify the Owner.
 - 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.
 - 3. Failure to notify the Owner and give written notice of discrepancies shall constitute acceptance by the Contractor of existing conditions as fit and proper to receive work.

3.2 CONCRETE FORMWORK

- A. Construction of Forms:
 - 1. General: Construct all required forms to be substantial, sufficiently tight to prevent leakage of concrete paste, and able to withstand excessive deflection when filled with wet concrete.
 - 2. Layout:
 - a. Form for all required cast-in-place concrete to the shapes, sizes, lines and dimensions indicated on the Drawings.
 - b. Exercise particular care in the layout of forms to avoid necessity for cutting concrete after placement.
 - c. Make proper provisions for all openings, offsets, recesses, anchorages, blocking and other features of the Work as shown or required.
 - d. Perform all forming required for Work of other trades and do all cutting and repairing of forms required to permit such installation.
 - e. Carefully examine the Drawings and Specifications and consult with other trades as required relative to providing for pipe and conduit penetrations, reglets, chases and other items in the forms.
 - 3. Imbedded Items: Set all required steel frames, angles, bolts, inserts and other such items required to be anchored in the concrete prior to concrete being placed.
 - 4. Bracings:
 - a. Properly brace and tie the forms together so as to maintain position and shape and to ensure safety to workmen.
 - b. Construct all bracing, supporting members and centering of ample size and strength to safely carry, without excessive deflection, all dead and live loads to which they may be subjected.
 - c. Properly space the forms apart and securely tie them together, using metal spreader ties that give positive tying and accurate spreading.
 - 5. Wetting: Keep forms sufficiently wetted to prevent joints from opening up before concrete is placed.
- B. Plywood Forms:
 - 1. Design: Nail the plywood panels directly to studs and apply in a manner to minimize the number of joints.
 - 2. Joints: Make all panel joints tight butt joints with all edges true and square.
- C. Footing Forms:
 - 1. Wood Forms: All footing forms shall be wood unless otherwise specifically approved by the Owner, or as specified in paragraph 3.2(C)(2).
 - 2. Earth Forms:
 - a. Side walls for footings may be of earth provided the soil will stand without caving and the sides of the bank are made with a neat cut to the minimum dimensions indicated on the Drawings.
 - b. For excavation and backfill of earth forms, conform with applicable provisions of Section 131101, "Spray ground Excavation".
- D. Reuse of Forms:
 - 1. Reuse of forms shall be subject to advance approval of the Owner.
 - 2. Except as specifically approved in advance by the Owner, reuse of forms shall in no way delay or change the schedule for placement of concrete from the schedule obtainable if all forms were new.

- 3. Except as specifically approved in advance by the Owner, reuse of forms shall in no way impart less structural stability to the forms nor less acceptable appearance to finished concrete.
- E. Removal of Forms:
 - 1. General:
 - a. In general, side forms of footings may be removed seven (7) days after placement of concrete, but time may be extended if deemed necessary by the Owner.
 - b. Forms for footings, foundations, grade beams, slabs, walls, and other formed concrete may be removed fourteen (14) days after placement of concrete.
 - 2. Removal:
 - a. Use all means necessary to protect workers, passersby, the installed Work of other trades and the complete safety of the structure.
 - b. Cut nails and tie wires or form ties off flush and leave all surfaces smooth and clean.
 - c. Remove metal spreader ties on exposed concrete by removing or snapping off inside the wall surface and pointing up and rubbing the resulting pockets to match the surrounding areas.
 - d. Flush all holes resulting from the use of spreader ties and sleeve nuts using water, and then solidly pack throughout the wall thickness with cement grout applied under pressure by means of a grouting gun; grout shall be one part Portland Cement to 2-1/2 parts sand; apply grout immediately after removing forms.

3.3 CONCRETE REINFORCEMENT

- A. Bending:
 - 1. General:
 - a. Fabricate all reinforcement in strict accordance with the Drawings.
 - b. Do not use bars with kinks or bends not shown on the Drawings.
 - c. Do not bend or straighten steel in a manner that will injure the material. (When opposite end is already encased in concrete.)
 - 2. Design:
 - a. Bend all bars cold.
 - b. Make bends for stirrups and ties around a pin having a diameter of not less than two (2) times the minimum thickness of the bar.
 - c. Make bends for other bars, including hooks, around a pin having a diameter of not less than six (6) times the minimum thickness of the bar.
- B. Placing:
 - 1. General: Before the start of concrete placement, accurately place all concrete reinforcement, positively securing and supporting by concrete blocks, metal chairs or spacers, or by metal hangers.
 - 2. Clearance:
 - a. Preserve clear space between bars of not less than one and one-half (1-1/2) times the nominal diameter of the round bars.
 - b. In no case let the clear space be less than one and one-half (1-1/2) inches nor less than one and one-third (1-1/3) times the maximum size of the aggregate.
 - c. Provide the following minimum concrete covering of reinforcement:
 - 1) Concrete deposited against earth: three (3) inches minimum.

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- 2) Concrete below grade deposited against forms: two (2) inches minimum.
- 3) Concrete elsewhere: As indicated on Drawings or otherwise approved by the Owner.
- 3. Splicing:
 - a. Horizontal Bars:
 - 1) Place bars in horizontal members with minimum lap at splices sufficient to develop the strength of the bars.
 - 2) Bars may be wired together at laps except at points of support of the member, at which points preserve clear space described above.
 - 3) Whenever possible, stagger the splices of adjacent bars.
 - 4) Splice sixty (60) bar diameters minimum.
 - b. Wire Fabric: Make all splices in wire fabric at least one and one-half (1-1/2) meshes wide.
 - c. Other Splices: Make only those other splices that are indicated on the Drawings or specifically approved by the Owner.
- 4. Dowels: Place all required steel dowels and securely anchor them into position before concrete is placed.
- 5. Obstructions: In the event conduits, piping, inserts, sleeves and other items interfere with placing reinforcement as indicated on the Drawings or otherwise required, immediately consult with the Owner and obtain approval of a new procedure prior to placing concrete.
- C. Cleaning Reinforcement: Steel reinforcement, at the time concrete is placed around it, shall be free from rust scale, loose mill scale, oil, paint and all other coatings which will destroy or reduce the bond between steel and concrete. Bend down all tie wire away from the top of the pool deck. Maintain a 2" clear from top of concrete to the tie wire.

3.4 CAST-IN-PLACE CONCRETE

- A. Conveying and Placing Concrete:
 - 1. Before placing concrete, mixing and conveying equipment shall be well cleaned, and the forms and space to be occupied by concrete shall be thoroughly cleaned and wetted. Ground water shall be removed until the completion of the work.
 - 2. No concrete shall be placed in any unit of work until all formwork has been completely constructed, all reinforcement has been secured in place, all items to be built into concrete are in place, and form ties at construction joints tightened.
 - 3. Concrete shall be conveyed from mixer to place of final deposit in such a way to prevent the separation or loss of ingredients. It shall be placed as nearly as practicable in its' final position to avoid rehandling or flowing. Concrete shall not be dropped freely where reinforcing bars will cause segregation, nor shall it be dropped freely more than six (6) feet. Use tremies, spouts and dump boxes in deep sections. Vibrators are not acceptable for facilitating concrete transport.
 - 4. Concrete shall be tamped and spaded to insure proper compaction into all parts of forms and around reinforcement. A mechanical vibrator shall be used to thoroughly compact the concrete. Vibration must be by direct action in the concrete and not against forms or reinforcement.
 - 5. Mixing and transport time as indicated in ASTM C94 is required. If air temperatures are between 85° and 90° F the delivery time is to be reduced to 75 minutes. When air temperatures are in excess of 90° F the delivery time should be reduced to 60 minutes.

- 6. Truck mixes without batch certificates will be rejected.
- B. Construction Joints / Expansion Joints: Construction joints and expansion joints shall be provided at locations and in the manner shown on the Drawings. With exception of existing concrete / new shotcrete joints, use PVC bulb-type waterstops appropriate for design condition between all concrete pours / lifts to avoid cold joints. Waterstops shall be placed in such a way to protect reinforcing steel from rust and oxidation. All expansion joints must be the full depth of the concrete section in which they are located.
- C. Slab Finishes: Concrete slabs shall be compacted and screeded uniformly to grades shown. Push large aggregates below the surface with a screen tamper, screed and bull float. As soon as the surface becomes workable, it shall be wood floated, then finished as indicated on the Drawings to a uniform smooth, true surface in a neat and workman-like manner. Carefully coordinate slab finish requirements with other trades (ceramic tile, pool plaster) to ensure concrete finish is appropriate substrate for final finish material.
 - 1. Contractor shall provide three mock-up deck samples, minimum 3' x 3', with a wedge anchor installed in one sample. These three (3) samples shall be constructed; one (1) with a light broom finish, one (1) with a medium broom finish and one (1) with a heavy broom finish for determination and selection of an appropriate deck finish. Each sample shall be edged on all four sides to demonstrate a ³/₄" radius edge. Anchor installation shall demonstrate acceptable interface between anchor and the top of deck. Deck samples shall remain on job site through final inspection for reference.
 - 2. Spray ground Decks: Medium Broom Finish.
- D. Protection and Curing:
 - 1. Concrete shall be protected from injurious action of the elements and defacement of any nature during construction.
 - 2. All forms must be kept wet to prevent drying out of the concrete.
 - 3. All concrete surfaces including footings must be kept wet for at least seven (7) days after concrete is placed.
 - 4. Apply the appropriate curing materials, as specified in 2.03 of this Section, immediately after finishing slabs. Application shall be as specified by the manufacturer.
- E. Form Removal:
 - 1. Take care in removing forms so that surfaces are not marred or gouged and that corners are true, sharp and unbroken.
 - 2. No steel spreaders, ties or other metal shall project from or be visible on any concrete surfaces.
- F. Defective Work:
 - 1. Should the strength of any concrete for any portion of the work indicated by tests of molded cylinders and core tests fall below minimum 28 days strength specified or indicated, concrete will be deemed defective work and shall be replaced.
 - 2. Concrete work that is not formed as indicated, is not true to intended alignment, not plumb or level where so intended, not true to intended grades or elevations, not true to specified or selected finish, contains sawdust shavings, wood, or embedded debris, which exhibits cracks or contains fine or coarse sulfide

particles, or expansive aggregates detrimental to performance or appearance of the concrete shall be deemed defective.

3. Promptly perform work required to replace and properly clean (by sandblasting if necessary) any defective concrete panels (control joint or expansion joint to control joint or expansion joint), at Contractor's expense, including all expense of additional inspection, tests, or supervision made necessary as a result of defective concrete.

3.5 EXPANSION JOINTS

- A. Temperatures: Do not install sealants when air temperature is less than 40°F.
- B. Tooling: Tool exposed joints to a slightly concave surface using slicking materials recommended by the manufacturer. The tooling procedure shall press sealant against the sides of the joint. No materials shall be left "feathered" out or smeared on the abutting materials. Completed joints shall have a uniform professional appearance.
- C. Joint Construction: Sealant joint width, thickness and cross-sectional profile to be constructed in strict accordance with the sealant manufacturer's recommendations.
- D. Sand: At the appropriate time cover the sealant with sand to provide a sanded finish.

3.6 CLEAN-UP

A. Upon completion of the Work of this Section, immediately remove all spray ground concrete materials, debris and rubbish occasioned by this Work to the approval of the Owner.

END OF SECTION

SECTION 131103 SPRAY GROUND SHOTCRETE

PART 1 - GENERAL

- 1.1 WORK INCLUDED
 - A. Provide labor, materials and equipment as required to install wet mix shotcrete for spray ground area as indicated on the Drawings and herein specified.
 - B. Balance tank waterproofing.

1.2 QUALITY ASSURANCE

- A. Qualifications of Workers:
 - The entity performing the work for this Section (Contractor License E) shall have been successfully engaged with a C-53 license as an RME or RMO for at least the past four (4) years immediately prior to the commencement of the work. The Qualified contractor Shall submit documentation of a minimum of three (3) interactive spray ground play equipment and climb-on structure installations completed in the last four (4) years.
 - 2. For actual construction operations, use only trained and experienced workers with a minimum of three (3) years experience with the materials and methods specified.
 - 3. Provide at least one person who shall be present at all times during execution of the work of this Section, with a minimum of five (5) years experience with the type of materials being installed, the referenced standards, and who shall direct all Work performed under this Section.
- B. Standards: Except as otherwise indicated, provide shotcrete per American Concrete Institute Standard ACI 506R, ACI 506.2, ACI 318-19. In addition, conform to recommendations contained in "Shotcrete," Brochure G-84 as published by the Gunite Contractors Association, Sylmar, California and the California Building Code (2022 edition).
- C. Mix Design: The Contractor shall submit a mix design stamped and signed by a licensed engineer for approval by the Owner's Representative prior to any placement of shotcrete. Mix design shall indicate source of aggregate and brands of cement and admixtures used. All mix designs shall take character of locally available aggregate into consideration and make adjustments as necessary to conform with specified design criteria.
- D. Testing and Inspection: Testing and Inspection: A test panel shall be shot, cured, cored or sawn, examined and tested (representing the most congested and difficult project scenario) prior to commencement of the project in accordance with ASTM C1140. All project conditions and personnel shall be represented in the test panel. Additionally, one test panel shall be provided for each 50 yards (or portion thereof) of shotcrete placed for each day or each nozzleman, whichever is greater. The size of the strength test panel shall be per the direction of the Special Shotcrete Inspector. At least three (3) cores shall be taken from each test panel. (At least three (3) cores shall be taken for each day of shotcrete operation.) Testing shall be performed by the Owner's designated Testing Lab and comply with Section ACI

BVARA RPP Project No. 1650.7087-23 Spray Ground Shotcrete 131103 - 1 318-19 and CBC 2022 1705A.3.9., Continuous inspection of the shotcrete operation by a deputy inspector provided by the Owner shall be required.

E. Tolerances: Construct all swimming pool shotcrete straight, true, plumb and square within a tolerance horizontally of one in 200 and a tolerance vertically of one in 2000.

1.3 SUBMITTALS AND SUBSTITUTIONS

- A. Provide submittals in conformance with the requirements of Section 013300 and ACI 506.2.
- B. Materials List: Within thirty (30) days after issuance of Notice to Proceed, and before shotcrete materials are delivered to the project site, submit to the Owner's Representative a complete list of materials proposed to be used in this portion of the Work, showing manufacturer's name and catalog number of all items such as admixtures and curing membranes, and the name and address of the supplier of cement and aggregate to be used.
- C. Submit proof of qualifications as specified in Article 1.2.A of this Section.

1.4 1.04 PRODUCTHANDLING

- A. Protection: Use all means necessary to protect shotcrete materials before, during and after installation and to protect the installed Work specified in other Sections.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's Representative and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

- A Cement: Cement shall be Type I or II Portland Cement conforming to ASTM C150. Cement type shall be the same for all shotcrete work.
- B. Aggregate: ASTM C33, washed hard dense durable clean sharp sand from approved pit, free of organic matter and opaline, feldspar, or silicous magnesium substances and containing not more than 3% by weight of deleterious substances. Maximum size aggregate for shotcrete is ³/₄" per ACI 318-19. When tested for organic impurities by ASTM C40 method, fine aggregate color not darker than reference standard color. When tested for soundness by ASTM C88 method, grading No. 2 of ASTM C1436, loss after 5 cycles not over 10% of fine aggregate.
- C. Water: Potable, clean, fresh, free from acid, alkali, organic matter or other impurities liable to be detrimental to the shotcrete.
- D. Admixtures: Admixtures shall conform to ASTM C1141 and only be used upon approval of the Owner's Representative.

2.2 BALANCE TANK WATERPROOFING

A Xypex, Miracote Miraflex Membrane C, Hycrete Waterproofing Systems concrete additive or approved equal.

PART 3 - EXECUTION

3.1 EXECUTION

- A. Inspection:
 - 1. Prior to all Work of this Section carefully inspect the installed Work of other trades and verify that all such Work is complete to the point where this installation may properly commence.
 - 2. Verify that items to be imbedded in shotcrete are in place and that shotcrete may be placed to the lines and elevations shown on the Drawings, with all required clearance from reinforcement.
- B. Discrepancies:
 - 1. In the event of discrepancy, immediately notify the Owner's Representative.
 - 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.
 - 3. Failure to notify the Owner's Representative and give written notice of discrepancies shall constitute acceptance by the Contractor of existing conditions as fit and proper to receive the Work.

3.2 PREPARATION

- A. General:
 - 1. Thoroughly clean all areas where shotcrete is to be placed to insure proper bonding of shotcrete.
 - 2. Where shotcrete is to be placed against smooth surfaces (i.e., cast-in-place concrete), sandblast surfaces to receive shotcrete to provide clean aggregate surface, thereby insuring proper bond between materials.
- B. Ground Wires: Adequate ground wires, to be used as screeds, shall be installed to establish the thickness and surface planes of the shotcrete work. Ground wires shall be placed so that they are tight and true to line and grade and in such a manner that they can be easily tightened.

3.3 PROPORTIONING AND MIXING

- A. Accurately control proportion of water to Portland cement to produce thorough and uniform hydration of the shotcrete that, when shot, forms a homogeneous mass containing neither sags nor dry sand formation. Proportion by mass per ASTM C94 or by volume per ASTM C685.
- B. Shotcrete shall have a minimum compressive strength of 4,000 PSI at 28 days. Shotcrete material shall have a water/cement ratio of 0.40 minimum-0.45 maximum per ACI 506R, Chapter 6, Proportioning and Preconstruction Testing; Section 6.3.3, Wet Mix Process

- C. Discontinue shotcrete work if the time between the addition of mixing water to cement and aggregate, or cement to aggregates, and placement of shotcrete exceeds ninety (90) minutes when the ambient temperature is below 85 degrees Fahrenheit, or exceeds sixty (60) minutes when the ambient temperature is above 85 degrees Fahrenheit. Batch, mix and deliver wet-mixture shotcrete per ASTM C94 or C685.
- D. Hot Weather Shotcreting Unless otherwise specified, do not place shotcrete when shotcrete temperature is above 95°F, unless prequalification testing shows that the required quality of materials can be achieved at high temperatures. The temperature of reinforcement and receiving surfaces shall be below 90°F prior to shotcrete placement.
- E. Cold Weather Shotcreting Unless otherwise specified, shooting may proceed when ambient temperature is 40°F and rising. Stop shooting when ambient temperature is 40°F and falling, unless measures are taken to protect the shotcrete. Shotcrete material temperature, when shot, shall not be less than 50°F. Do not place against frozen surfaces
- 3.4 SHOTCRETE PLACING, FINISHING, AND CURING
 - A. Operations: Utilize a standard type of air compressor, capable of providing a minimum of 250 cubic feet of air per minute per nozzle.
 - B. Placing: Except when shooting reinforcing, hold the nozzle perpendicular to and 2-1/2 to 3 feet from surface. At reinforcing bars, hold the nozzle so as to direct shotcrete behind the bars, and shoot each side of each bars separately. A nozzleman's helper equipped with an air jet shall precede the nozzle and blow out rebound or sand lodged behind bars, on forms, or placed shotcrete. Placing shotcrete horizontal members from the top is not allowed unless approved methods are employed to eliminate all rebound. Material shall emerge from the nozzle in a uniform flow. If flow becomes intermittent for any reason, direct the nozzle away from the surface until the flow is again steady and constant. Do not reuse rebound or loose sand for any purpose.
 - C. Puddled Shotcrete: Use of "puddled shotcrete" in which the air pressure is reduced and the water content is increased to facilitate placing in difficult locations is not allowed. Do not place shotcrete where nozzle stream cannot impinge directly on the involved surface. Where difficult shooting conditions occur, obtain proper results by maintaining correct air pressure and water ratio and reduce supply of material.
 - D. Construction Joints: Form joints with sloping beveled edges. Clean and dampen the hardened joint surfaces before placing additional shotcrete. Square edged construction joints are not allowed. The film of laitance which forms on the surface of the shotcrete shall be removed within approximately two hours after application by brushing with a stiff broom. If this film is not removed within two hours, it shall be removed by thorough wire brushing or sand blasting. Construction joints over eight hours old shall be thoroughly cleaned with air and water prior to receiving shotcrete.
 - E. Finishing: Rod exposed surfaces to true planes and lines on reaching the thickness and plane established by forms and ground wires. Tamp and wood float surfaces level and provide a rough raked finish. Carefully coordinate finish requirements with other trades (ceramic tile, pool plaster) to ensure shotcrete finish is appropriate substrate for final finish material.

F. Curing: Keep shotcrete continuously damp for not less than seven (7) days after placing. Use sealed curing sheeting or other approved curing method where water curing is not feasible. Do not use curing compound of any kind.

3.5 DEFECTIVE WORK

- A. Cut out, remove and replace, or repair to the satisfaction of the Owner's Representative, shotcrete not meeting minimum strength, not true, plumb or level, not to required elevations, containing cracks detrimental to performance or appearance, containing shavings, debris or with honeycombs or voids.
- B. Promptly perform Work required to repair, patch, replace, render properly cleaned surfaces (by sandblasting if necessary) or otherwise make good any defective shotcrete at Contractor's expense, including all expense of additional inspection, tests, or supervision made necessary as a result of defective shotcrete.

3.6 BALANCE TANK WATERPROOFING

A. Mix and apply per manufacturer's recommendations for specific application. Color shall be gray. Provide two (2) coats minimum on the floor, walls and lid of the balance tank.

3.7 CLEAN-UP

A. Upon completion of the Work of this Section, immediately remove all swimming pool shotcrete materials, debris and rubbish occasioned by this work to the approval of the Owner's Representative.

END OF SECTION

SECTION 131105 SPRAY GROUND WATERPROOFING

PART 1 - GENERAL

- 1.1 SUMMARY
 - A. Section Includes:
 - 1. Furnish all labor, materials, tools and equipment as necessary to perform Cement Waterproofing on new and existing structures as shown on drawings and as specified in this section. This section applies to gutter, pump pit, backwash pit & surge chamber waterproofing.

1.2 QUALITY ASSURANCE

- A. Qualifications of Workers:
 - The entity performing the work for this Section (Contractor License E) shall have been successfully engaged with a C-53 license as an RME or RMO for at least the past four (4) years immediately prior to the commencement of the work. The Qualified contractor Shall submit documentation of a minimum of three (3) interactive spray ground play equipment and climb-on structure installations completed in the last four (4) years.
 - 2. For actual construction operations, use only trained and experienced workers with a minimum of three (3) years experience with the materials and methods specified.
 - 3. Provide at least one person who shall be present at all times during execution of the work of this Section, with a minimum of five (5) years experience with the type of materials being installed, the referenced standards, and who shall direct all Work performed under this Section.
- B. Standards:
 - 1. ASTM C 39/C 39M Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 1999.
 - 2. ASTM C 109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
 - 3. ASTM C 267 Standard Test Methods for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacings and Polymer Concretes; 1997.
 - 4. ASTM C 321 Standard Test Method for Bond Strength of Chemical-Resistant Mortars.
 - 5. ASTM C 348 Standard Test Method for Flexural Strength of Hydraulic Cement Mortars.
 - 6. ASTM E 96 Standard Test Method for Water Vapor Transmission of Materials.
 - 7. ASTM E 329 Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction; 1998a.
 - 8. COE CRD-C 48 Standard Test Method for Water Permeability of Concrete; 1992.
 - 9. NSF 61 Drinking Water System Components Health Effects; 2000a.

1.3 SUBMITTALS

A. Submit under provisions of Section 014500.

- B. Product Data: Manufacturer's printed data sheet, for specified products.
- C. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 - 1. Testing Agency: Independent laboratory meeting the requirements of ASTM E 329 and certified by the United States Bureau of Standards.
- D. Certificates: Product certificates signed by manufacturer certifying that:
 - 1. Materials comply with specified performance characteristics and physical requirements.
 - 2. Installer is qualified and approved by manufacturer.
- E. Manufacturer's installation instructions.
- F. Manufacturer's report on field inspection of substrates, prior to installation.
- G. Executed warranties.
- 1.4 PRODUCT HANDLING
 - A. Deliver and store in a dry area between 40°F (5°C) and 90°F (32°C). Handle and protect from freezing and direct sun light in accordance with manufacturer's instructions.
 - B. Deliver materials in manufacturer's unopened containers, fully identified with brand, type, grade, class and all other qualifying information. Provide Material Safety Data Sheets for each product.
 - C. Take necessary precautions to keep products clean, dry and free of damage.
- 1.5 SYSTEM REQUIREMENTS
 - A. Coordinate waterproofing installation with other trades.
 - B. Provide materials and accessories in timely manner so as not to delay Work.
- 1.6 PROJECT CONDITIONS
 - A. Maintain surfaces to be waterproofed and surrounding air temperature at not less than 40°F (5°C). Apply only when temperatures are steady or rising.
 - B. Do not apply materials to frozen or frost-filled surfaces.
 - C. Exercise caution when temperatures exceed 90°F (32°C).

PART 2 - PRODUCTS

- 2.1 MANUFACTURERS
 - A. Approved Manufacturers:

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- Xypex Chemical Corporation; 13731 Mayfield Place, Richmond, BC V6V 2G9. ASD. Tel: (800) 961-4477 or (604) 273-5265. Fax: (604) 270-0451. E-mail: info@xypex.com. www.xypex.com.
- 2. Miracote Miraflex Membrane C 3000 E. Harcourt St. Rancho Dominguez, CA 90221 Phone: (310) 631-6594, Fax: (310) 886-9119
- 3. Hycrete, Inc.; 462 Barrell Ave, Carlstadt, NJ, 07072. Phone: (201) 386-8110. Fax: (201) 386-8155. www.hycrete.com
- B. Requests for substitutions will be considered only if submitted to the architect/engineer in writing and must include substantiation of product performance, 10 days prior to the original bid date.

2.2 MATERIALS

- A. Waterproofing Material Acrylic Modified Cement Waterproofing: Cementitious, twocomponent, acrylic emulsion based, highly flexible, crack bridging waterproof membrane barrier against positive water pressure, with the following characteristics:
 - 1. Product: Miracote Miraflex Membrane C or Xypex two coat crystalline waterproofing or Hycrete W500.
 - 2. Color: Gray
 - 3. Dry Component-A: Precise blend of cementitious material
 - 4. Liquid Component-B: White acrylic emulsion and admixtures
 - 5. Working Time: Approximately 45 minutes
 - 6. Shore A Hardness: > 90
 - 7. Bond/Adhesion: (ASTM C-321) 215 psi (1.5 MPa) @ 28 days
 - 8. Tear Resistance: 190 psi (1.3 MPa) at 68oF (20oC)
 - 9. Elongation: (%) 60 (gray); 40 (white) at 68oF (20oC)
 - 10. Elongation: (mils) 40 (gray); 25 (white)
 - 11. Crack bridging capacity: (inch) 1/16 (gray) (1.5 mm)
 - 12. Vapor Permeability: (US Perms) 1.2 (ASTM E-96)
 - 13. Waterproofing: (CRD C 48-92) Withstands 200 psi = 460 feet (14 bar = 140 m) hydrostatic pressure (positive side) at 3/32 (2.4 mm) thickness.
 - 14. Penetration: At least 2 inches (50 mm) penetration of crystal-forming material, evidenced by scanning electron microscope photographs.
 - 15. Chemical Resistance: No detrimental effects when tested using 4000 psi (27.6 MPa) compressive strength concrete in accordance with ASTM C 267 using hydrochloric acid (pH of 3.5), brake fluid, transformer oil, ethylene glycol, toluene, and caustic soda as test mediums for duration of 84 days each; minimum of 14 percent increase in concrete compressive strength when tested in accordance with ASTM C 39/C 39M.
 - 16. Potable Water Contact Approval: NSF certification for use on structures holding potable water, based on testing in accordance with NSF 61.

PART 3 - EXECUTION

- 3.1 EXAMINATION
 - A. Examine all construction substrates and conditions under which waterproofing materials are to be installed. Do not proceed with the waterproofing application until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. A. Protect adjacent surfaces not designated to receive waterproofing.
- B. Substrate preparation:
 - 1. Remove oil, grease, dirt, loose particles, remains of form oils, water repellents, rust or other coatings by high-pressure water blasting (>3000 psi), wet or dry sand blasting, or other mechanical means to produce surfaces suitable for application of waterproofing.
 - 2. Follow manufacturer's instructions to clean and prepare surfaces and seal cracks and joints.
 - 3. Voids in concrete substrates: 1/4-inch (6 mm) diameter and larger, pre-treat with a cementitious mortar. Less than 1/4-inch (6 mm) diameter can be filled with a scratch coat of two-component waterproofing material.
- C. Rinse surfaces to be waterproofed (excluding drywall or similar) with clean water to saturated surface dry (SSD) condition, with no standing water on horizontal surfaces.

3.3 INSTALLATION

- A. Mix two-component waterproofing material in proportions recommended by manufacturer.
- B. Taping:
 - Apply two-component waterproofing material by brush in a six to seven inch (15 18 cm) wide strip coat centered over all joints, cracks, penetrations and changes of plane to be taped.
 - 2. While this coat is still wet, unroll joint sealing tape into the coating and apply a coat of two-component waterproofing material over the tape, smoothing out wrinkles and fish mouths.
- C. Positive Side Waterproofing:
 - 1. Apply two-component waterproofing material in quantities as per manufacturer's specifications and recommendations:
 - a. Apply at 60 mils or 1/16" (1.5 mm) total thickness for water levels up to 2-feet (0.60 m).
 - b. Apply at 90 mils (2.4 mm) total thickness for water depth greater than 2-feet (>0.60 m).
- D. Application considerations:
 - 1. Apply, using stainless steel trowel, tampico brush, short nap roller, or appropriate compressed-air spray equipment.
 - 2. If needed, such as in zones posed to movement or cracking, plaza decks, the waterproofing material can be additionally reinforced with a reinforcing mesh (supplied by waterproofing manufacturer), embedded between two waterproofing layers.
 - 3. Apply only when surface and ambient temperatures are 40oF (5oC) and rising. At high temperatures i.e. 86oF (30oC) and above) protect application from direct sun and wind to prevent premature surface drying and shrinkage cracks. Apply material in two coats minimum.
 - 4. Application thickness should not exceed 1/8-inch (120 mils (3 mm)).
 - 5. Do not bridge cracks greater than 1/16-inch (1.5 mm).

- 6. Bridge dynamic cracks or joints with elastomeric joint sealing tape, as supplied by waterproofing manufacturer.
- 7. Do not overcoat waterproofing material with solvent-based materials.
- 8. Prime and protect alkali sensitive metals such as copper, aluminum, galvanized or zinc treated metal before over-coating with waterproofing material. Follow manufacturer's recommendations for primer material.

3.4 CURING

- A. Follow manufacturer's general instructions for curing and hardening of waterproofing material. Do not use water for curing. Waterproofing material is self-curing.
- B. Protect surfaces from rain, frost and premature dehydration.

3.5 ACCEPTANCE

- A. Remove left over materials and any foreign material resulting from the work from the site.
- B. Clean adjacent surfaces and materials occasioned by this Work to the approval of the Owner.

END OF SECTION

SECTION 131106 SPRAY GROUND EQUIPMENT

PART 1 - GENERAL

- 1.1 WORK INCLUDED
 - A. Spray Ground equipment items required for this Work as indicated on the Drawings and specified herein.
 - B. Provide start up and operation instructions to the Owner for both the spray ground and mechanical equipment. Properly balance spray ground water chemistry until such time that the Owner takes occupancy of the project.

1.2 QUALITY ASSURANCE

- A. Qualifications of Workers:
 - The entity performing the work for this Section (Contractor License E) shall have been successfully engaged with a C-53 license as an RME or RMO for at least the past four (4) years immediately prior to the commencement of the work. The Qualified contractor Shall submit documentation of a minimum of three (3) interactive spray ground play equipment and climb-on structure installations completed in the last four (4) years.
 - 2. For actual construction operations, use only trained and experienced workers with a minimum of three (3) years experience with the materials and methods specified.
 - 3. Provide at least one person who shall be present at all times during execution of the work of this Section, with a minimum of five (5) years experience with the type of materials being installed, the referenced standards, and who shall direct all Work performed under this Section.
- B. All equipment supplied or work performed shall comply with regulations governing public Spray Ground areas as contained within State and Local Codes.

1.3 SUBMITTALS AND SUBSTITUTIONS

- A. Provide submittals in conformance with the requirements of Section 013300.
- B. Required submittals include:
 - 1. Spray Ground Deck and Mechanical Equipment as specified in Article 2.1-2.12 of this Section.
- C. Submit proof of qualifications as specified in Article 1.2.A of this Section.
- D. The equipment shown on the plans represent the first listed items in the technical specifications. The Contractor shall be responsible for all required field coordination and installation of any approved equal product to provide a fully working and warranted system. The Contractor shall submit detailed shop drawings for any products used other than the first listed specified items. Contractor provided shop drawings shall include details and quality equal to the original plans and construction documents. The Contractor shall provide any and all required engineering including but not limited to structural and anchorage requirements for any proposed equipment other than the first

listed specified equipment. The Contractor is responsible to provide a factory certified representative(s) to start-up and provide on-site training for all swimming pool mechanical equipment provided.

1.4 PRODUCT HANDLING

- A. Protection: Use all means necessary to protect Spray Ground equipment items before, during and after installation and to protect the installed work specified in other Sections.
- B. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's Representative.

PART 2 - PRODUCTS

- 2.1 DECK EQUIPMENT
 - A. Spray Ground Safety Signs: As required by the Department of Health. Submittal required. Placement at the pool site shall be in conformance with Health Department Inspector. One (1) set minimum per site.
 - B. Spray Ground Elements:

'Water Play' or approved equal.

Provide complete equipment / system submittals for approvals.

	Elements	Qty.	GPM
1.	FS Boingo with GS	2	4
	'Waterplay' 0010-2399		
2.	FS Flutter	1	8
	'Waterplay' 0010-1443		
3.	FS Fun-Brella	1	14
	'Waterplay' 0010-0485		
4.	FS Helices	2	6
_	'Waterplay' 0010-2768		•
5.	FS Morning Grass #1	1	3
•	Vvaterplay 0010-1448		0
6.	FS Morning Grass #3	1	3
7	Vaterplay 0011-1450	4	45
7.	FS Sparx	1	15
0	CS Lily Dod (Chor)	2	e
о.	(Waterplay' 0010 7401 2	2	0
۵	GS Lily Pad (Tulip)	2	12
5.	'Waterplay' 0010-7491-15	2	12
10.	GS Mister Mister	12	12
	'Waterplay' 0011-1293	•=	
11	GS Puddle #1	2	6
	'Waterplay' 0010-7466		-
12	GS Puddle #2	2	6
	'Waterplay' 0010-7467		
13.	GS Spray Tunnel #4	1	6
	'Waterplay' 0010-7496-14		
14.	GS Starlet Spray	1	5
	'Waterplay' 0010-7483		

15.	GS Team Effect	1	8
	'Waterplay' 0010-9816		
16.	GS Geyser	2	12
	'Waterplay' 0010-7478		
17.	Activator Power Post	1	
	'Waterplay' 0010-1854		
18.	Circulator Drain	1	
	'Waterplay' 0010-4133		
19.	GS Glow Effect	12	
	'Waterplay' 0010-4133		

2.2 SPRAY GROUND CIRCULATION PUMP

A. 'Jandy' SHPF 3.0, 3PH pump, 230V 3HP with Danfoss 3 HP variable frequency drive; self-priming pump, 3450 RPM with integral strainer. One (1) total. (62 lbs.) Pump to be programmed with normal flow rate of 160 GPM. One (1) total. Interlock circulation pump with all booster pump to only allow booster pump operation when circulation system is operational. Provide pump with two (2) strainer baskets.

2.3 SPRAY GROUND BOOSTER PUMP

A. 'Jandy' SHPF 3.0, 3PH pump, 230V 3HP with Danfoss 3 HP variable frequency drive; self-priming pump, 3450 RPM with integral strainer. One (1) total. (62 lbs.) Pump to be programmed with normal flow rate of 160 GPM. One (1) total. Interlock circulation pump with all booster pump to only allow booster pump operation when circulation system is operational. Provide pump with two (2) strainer baskets.

2.4 SPRAY GROUND FILTERS

A 'Jandy' Aster #66711-53 hi rate permanent media filters with 15.38 sq. ft. of filter area rated at 230 GPM at 15 GPM/sq. ft. Complete with 4" flanges and tandem filter piping manifold kit, 4" backwash, seismic anchorage. Provide all utilities, piping, valving, etc. Two (2) tanks total. (1,007 lbs. each)

2.5 SPRAY GROUND ULTRAVIOLET SYSTEM

A. 'Evoqua' #WF-115-4-N, 1x1.5 kw 208V 1PH with 20-amp breaker, rated at 396 GPM at 40 mj/cm2. Complete with strainer, valving, and control panel, one (1) system complete.

2.6 CHLORINE STORAGE/FEED SYSTEM

A. Provide 'PPG' Accu-Tab Powerbase chlorination unit model 1030 with 84 lbs./day output. Complete with 1 HP booster pump, piping, valving and venturi injection. One (1) system total.

2.7 ACID STORAGE/FEED SYSTEM

A. Provide 'Acid Rite' 450; flow rate = 10 GPM from sodium bisulfate tablet feed. Complete system with flow meter piping, valving and ³/₄" booster pump. NSF 50 certified. One (1) system total.

2.8 SPRAY GROUND BALANCE TANK FILL SYSTEM

A. 2" 'Cla-Val' fill system to include 2" 'Cla-Val' solenoid control valve #136-01BY, 2" bronze or stainless-steel body with stainless steel disc retainer and diaphragm washer, bronze trim, flanged globe pattern, 120V at 60 hz solenoid wiring shall be wired to water chemistry controller. Provide 6" air gap at fill point.

2.9 SPRAY GROUND WATER CHEMISTRY CONTROLLER

A. Provide one (1) BecSysRCM communication module and dedicated ethernet line for one (1) 'BecSys5'. Installed per manufactures recommendations. One (1) total. Contractor to connect controller to new network connection and coordinate IP signature with city representative.

2.10 EYEWASH / SHOWER

A. Haws model #8300-8309 CRP barrier free combination shower and eye/face wash with corrosion resistant protection. See MEP sheets for supply piping. Two (2) total.

2.11 FLOWMETER

A. 'Blue/White' F-300, Circulation Pump line = 4" line size. Booster Pump line = 3". Two (2) total.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Inspection:
 - 1. Prior to installing the items of this Section, carefully inspect the installed Work of other trades and verify that all such Work is complete to the point where this installation may properly commence.
 - 2. Verify that the Spray Ground equipment items may be installed in strict accordance with original design, pertinent codes and regulations, and the manufacturers' recommendations.

B. Discrepancies:

- 1. In the event of discrepancy, immediately notify the Owner.
- 2. Do not proceed with installation in areas of discrepancy until all such discrepancies are fully resolved.
- 3. Failure to notify the Owner and give written notice of discrepancies shall constitute acceptance by the Installer of existing conditions as fit and proper to receive its Work.

3.2 INSTALLATION

A. Supply and install items of Spray Ground equipment in strict accordance with applicable codes and regulations, the original design, and the manufacturer's published recommendations, anchoring firmly and securely for long life under hard use.

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- B. Coordinate with other trades to insure all imbedded items are set plumb and flush. Railing ends must have anchor sockets and escutcheon plates. Be certain that deck equipment and railings are properly bonded prior to imbedding.
- C. All mechanical equipment shall be braced and/or anchored to resist horizontal force acting in any direction using the criteria shown on the Drawings.

3.3 EQUIPMENT ACTIVATION

- A. Start Up:
 - 1. Retain a qualified chemistry consultant, familiar with the operation and maintenance of aquatic facilities, to supervise and properly balance the Spray Ground water chemistry.
 - 2. Demonstrate to the Owner's Representative and to all appropriate officials (including State of California) that all systems are fully operational and that calcium hardness, total alkalinity, chlorine residual and pH levels are within the specified limits.
 - 3. Standards: Contractor shall furnish labor and chemicals as required to condition the water properly to the following specifications:
 - a. Calcium Hardness: 150-300 ppm

b. Total Alkalinity:	100-125 ppm
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- c. Chlorine residual: 2.0-5.0 ppm
- d. pH 7.4-7.6
- B. All water chemistry and filtration mechanical equipment shall be operational upon filling of the balance tank. Chemicals and other related support items as supplied by the Contractor, shall be in supply at start-up.
- C. Start up and provide qualified personnel to operate the Spray Ground mechanical equipment for a period not less than fourteen (14) days after the Spray Ground systems are placed in operation, or until the Owner takes occupancy of the facility or letter of substantial completion. During this time, Contractor shall instruct and supervise the Owner's personnel in the various operating and maintenance techniques involved. Contractor shall insure that the Spray Ground filtration equipment is continuously running during the initial fourteen (14) day period. Contractor shall be responsible for supply of chemicals during this not less than fourteen (14) day period and at the time of turnover to Owner, chemical storage tanks shall be full. Owner's personnel shall be fully trained and capable of assuming Spray Ground maintenance tasks; training may begin prior to Owner taking occupancy.

3.4 CLEAN-UP

A. Upon completion of Spray Ground equipment, remove all debris, materials and equipment occasioned by this Work to the approval of the Owner.

END OF SECTION

SECTION 131107 SPRAY GROUND MECHANICAL

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Spray Ground mechanical piping as indicated on the Drawings for circulation and filtration systems, Spray Ground water heating systems, chemical control systems, booster pump systems and appurtenances.
- B. Domestic water system from points of connection within Spray Ground mechanical equipment room to make-up water system.
- C. Filter backwash piping to point of connection with backwash retention pit as required.

1.2 QUALITY ASSURANCE

- A. Qualifications of Workers:
 - 1. The entity performing the work for this Section (Contractor License E) shall have been successfully engaged with a C-53 license as an RME or RMO for at least the past four (4) years immediately prior to the commencement of the work. The Qualified contractor Shall submit documentation of a minimum of three (3) interactive spray ground play equipment and climb-on structure installations completed in the last four (4) years.
 - 2. For actual construction operations, use only trained and experienced workers with a minimum of three (3) years experience with the materials and methods specified.
 - 3. Provide at least one person who shall be present at all times during execution of the work of this Section, with a minimum of five (5) years experience with the type of materials being installed, the referenced standards, and who shall direct all Work performed under this Section.
- B. Standards:
 - 1. All equipment supplied or work performed shall comply with regulations governing public Spray Ground areas.
 - 2. Work shall be performed in accordance with the applicable editions of all National, State and local codes, laws, regulations and ordinances, including the following:
 - a. American National Standards Institute (ANSI).
 - b. American Society for Testing Materials (ASTM).
 - c. American Waterworks Association (AWWA).
 - d. American Welding Society (AWS).
 - 3. Do not construe anything in the Drawings or Specifications to permit Work not conforming to these requirements.

1.3 SUBMITTALS AND SUBSTITUTIONS

- A. Provide submittals in conformance with the requirements of Section 013300.
- B. Required submittals include:
 - 1. Pipe and Fittings as specified in Article 2.2 of this Section.
 - 2. Valves as specified in Article 2.3 of this Section.

- 3. Pressure / Vacuum Gauges as specified in Article 2.4 of this Section.
- 4. Pipe Hangers and Supports as specified in Article 2.5 of this Section.
- 5. Sleeves and Waterstops as specified in Article 2.6 of this Section.
- C. Submit proof of qualifications as specified in Article 1.2.A of this Section.

1.4 PRODUCT HANDLING

- A. Delivery: Deliver all materials to the Project Site in the manufacturer's original unopened containers with all labels intact and legible.
- B. Storage: Store all materials under cover in a manner to prevent damage and contamination, and store only the specified materials at the Project site.
- C. Protection: Use all means necessary to protect the spray ground mechanical items before, during and after installation and to protect the installed Work specified in other Sections.
- D. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's Representative and at no additional cost to the Owner.

1.5 JOB CONDITIONS

A. Cooperate with entities performing Work specified in other Sections to so that no conflict of new construction or occupied space may occur. Should any installation Work be done without such craft coordination, that Work so installed shall be removed and re-installed.

PART 2 - PRODUCTS

2.1 PRODUCT QUALITY

A. Materials and equipment shall be new, of the best quality for the purpose intended, and shall be clearly marked with the manufacturer's name and nameplate data or stamp and rating. As far as practicable, materials and equipment shall be of one manufacturer.

2.2 PIPE AND FITTINGS

- A. PVC Schedule 40: Type 1, normal impact, NSF approved for solvent welding applications, ASTM Specification D-1785, color shall be white. Dura, Lasco, or equal.
- B. PVC Schedule 80: Type 1, normal impact, NSF approved for solvent welding applications, ASTM Specification D-1785, color shall be gray. Dura, Lasco, or equal.
- C. PVC SDR35: Conforming to ATSM D-1784, use with epoxy coated bell and spigot-type fittings or epoxy coated mechanical joint by flange adapters with epoxy coated cast iron fittings as specified in Article 2.2 (F), below. Johns-Manville "Big Blue", Diamond Plastics, or equal.

- D. Copper Tubing: ASTM Specification B-88, hard drawn, with ANSI Standard B16.22 wrot copper fittings.
- E. Steel: ASTM Specification A-120, Schedule 40 black or galvanized pipe with ASTM A-47 150 lb. banded malleable iron threaded fittings.
- F. Cast Iron: ASTM Specification B16.1, cast iron flanged fittings, provide epoxy coating as required for use with chlorinated water.
- G. CPVC Schedule 80: Type I normal impact, NSF approved for solvent welding applications, ASTM specification D-1785, color shall be 'Gray'.

2.3 VALVES

- A. Ball Valves:
 - For pool system: True-Union design, PTFE seat material with FPM or FKM Double O-ring stem seals, locking handle, NSF certified. PVC schedule 80 body for below grade installation. PVC Schedule 80 body for above grade installation. Furnish ball valves on all pip diameters 2 ¹/₂" or less with a rating of at least 200psi at 73° F, Asahi, Nibco, Ipex or Georg Fischer.
 - 2. For copper pipe system: 3-piece full-port bronze body valve with Teflon seat, 'Apollo', 'Nibco' or equal.
- B. Butterfly Valves:
 - 1. Epoxy coated cast or ductile iron body, 316 stainless steel disc and stem, viton seat material, furnish hand wheel/gear operators on all valves 8" and larger. DeZurick, or lpex.
 - PVC body, PVC disc and EPDM construction suitable for chlorinated water applications. Stem shall be of 316 stainless steel and non-wetted. Valves shall be self-gasketed design with a convex sealing arrangement. Valves 1-1/2" – 10" shall be rated to 150 psi and 12" valves shall be rated to 100 psi at 70°F. Asahi Pool-Pro, or equal.
- C. Check Valves: Wafer-type, epoxy coated cast or ductile iron body, 316 stainless steel plates and shaft, viton seat material. Centerline, Metraflex, or equal.
- D. RP Backflow Preventer: Febco #835-B for 2" and smaller; #825 for 2-1/2" and larger. Febco, Watts, or equal.
- E. Make-up Water Control: Cla-Val make-up water control valve with bronze body, bronze trim, globe pattern and Buna-N rubber seals suitable for a wet pit installation. Water level float control materials to consist of bronze/brass with stainless steel wetted parts and Buna-N rubber seals.
- F. System to include: 100-01 Hytrol valve, CF1-C1KX float control, X46A flow clean strainers, and copper tubing with brass fittings. Float linkage and float rod shall be PVC and brass. Base plate shall be 316 stainless steel. The plastic float shall be provided with 8' PVC rod and stops and a brass counterweight. Provide model #124-01 AKX available KSI (714) 754-4044, 2" line size.

2.4 PRESSURE / VACUUM GAUGES

A. Furnish and install pressure and vacuum gauges on the discharge and suction sides of all pumps. 2-2 ½" dial, bottom connection, chrome ring and shut-off cock and snubber. Ranges shall be selected to indicate between mid-point and two-thirds of maximum range under design conditions. Marsh, Trerice, or equal.

2.5 PIPE HANGERS AND SUPPORTS

- A. General:
 - 1. The requirements of this Section relates to various requirements of the Agreement, General and Supplementary Conditions, Specifications, Drawings, and modifying documents which are part of the Construction Contract. Responsibility for coordination of all such applicable requirements will be that of the Contractor.
- B. Description:
 - 1. This section provides guidelines and limitations for the support of all mechanical, electrical, plumbing or architectural items from the building structure, and for the seismic bracing of such items.
 - 2. Design and install all support and bracing systems as required for the spray ground systems. Provide for attachment to portions of the building structure capable of bearing the loads imposed. Design these systems to not overstress the building structure.
- C. Quality Assurance:
 - 1. Design and install all support systems to comply with the requirements of the 2022 California Building Code, Chapter 16A.
 - 2. Seismic bracing is to be designed by a professional engineer licensed in the State of California.
- D. Submittals:
 - 1. Submit shop drawings for all substructures and attachment methods.
 - 2. Submit proposed alternative methods of attachment for review and approval by the Architects, prior to deviating from the requirements given below.
 - 3. For all pipe hangers and support systems, submit structural calculations and details which include all resultant forces applied to the building structure and are prepared and signed by the Contractor's licensed California professional engineer. Calculations will be reviewed for compliance with design criteria, not for arithmetic.
- E. Materials:
 - 1. Use Kin-Line, Grinnel, or approved equal.
 - 2. Support all pipelines individually with hangers, each branch having at least one hanger. Lateral brace as noted and required.
 - 3. Support piping near floor with steel stanchions welded to end plates secured to pipe and floor.
 - 4. Support vertical piping at each floor level. Install coupling in piping at each support. Coupling shall rest on and transmit load to support. Isolate copper from steel supports with vinyl electrician's tape around pipe and coupling.
 - 5. Use Stoneman "Trisolator," Unistrut, or approved equal, isolators at each hanger and other support points on bare copper tubing system.

- 6. For PVC pipe, space hangers four (4) feet apart for pipe sizes 1" and under, five (5) feet apart for pipe sizes 1-1/4" to 2", and six (6) feet apart for pipe sizes over 2". Space hangers for horizontal pipes at a maximum of six (6) feet for copper 2" and smaller and for steel 1-1/4" and smaller; ten (10) feet for copper 2-1/2" and larger and for steel 1-1/2" and larger.
- 7. Size hanger rods, screws, bolts, nuts, etc., according to manufacturer's sizing charts.
- 8. Trapeze hangers may be used for parallel lines.
- 9. Use galvanized or stainless steel hangers, attachments, rods, nuts, bolts, and other accessories in spray ground mechanical room, high humidity areas, or where exposed to weather. Hot dip galvanize all items which are not factory furnished. Plating for hinged movements must be done at the factory.
- 10. Lateral Bracing: To prevent swaying of the piping systems, provide angle iron bracing and anchor into wall or overhead framing. Piping shall be braced or anchored in such a way as to resist a horizontal force of 50% of its operating weight in any direction.
- 11. Do not use wire or other makeshift devices for hangers.
- 12. Furnish all substructures and fasteners required to comply with the limitations given below. Use material as specified in the various sections and as appropriate to their use.
- 13. Install stainless steel or FRP Unistrut, pipe clamps/hangers, supports/bracing with stainless steel hardware in the chemical storage rooms, surge/balance tanks, or any other corrosive environment.
- F. Guidelines & Limitations:
 - 1. Each Contractor will coordinate the load requirements from all subcontractors so that no combination of loads overstresses the building structure or exceed the limitations given below.
 - 2. Concrete Structure:
 - a. Support all loads hung from concrete structure with cast-in-place inserts, unless drilled-in anchors are specifically approved in writing prior to placing the concrete.
 - b. Concrete anchors must not penetrate into reinforcing bars. Where the anchors boring indicates the presence of reinforcing bar, patch hole with an epoxy type grout and relocate anchor 12 diameters away.
 - c. Individual expansion anchors cannot support any loads greater than 300 pounds or manufacturer's specified load capacity without approval.
 - 3. Steel Structure:

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- a. Hang no more than 20 pounds per metal deck rib in any span.
- b. At beams, hang all beam loads greater than 40 pounds concentric to beam, not off the flanges.
- c. Attached no loads to the beams or girders greater than the following without specific approval from the architect.
 - Roof beams and girders: 300-pound point load or 600-pound total load for a single span.
- G. Seismic Bracing:
 - 1. Design and install seismic bracing to not ground out vibration and sound isolation systems.
 - 2. All items of mechanical and electrical equipment 60" or more in height are to be seismically braced whether such bracing is shown or not.

2.6 SLEEVES AND WATERSTOPS

- A. Provide sleeves where work of this Section passes through fire rated partitions, floors and ceilings, concrete slabs or exterior of structure. Caulk clearance space using sealant appropriate for application in conformance with manufacturer's recommendations and Title 24 of California Code of Regulations. 3m, Dow Corning, or equal. In lieu of sleeves and caulking, "Link Seal" products may be used.
- B. Provide prefabricated waterstops as indicated on the Drawings at all pipe penetrations through structures containing stored water (i.e., Spray Ground, balance tanks, etc.) to insure leak-proof seals.

PART 3 - EXECUTION

- 3.1 SURFACE CONDITIONS
 - A. Inspection:
 - 1. Prior to Work of this Section, carefully inspect the installed Work of other trades and verify that such work is complete to the point where this installation may properly commence.
 - 2. Verify that items of this Section may be installed in accordance with the original design and referenced standards.
 - B. Discrepancies:
 - 1. In the event of discrepancy, immediately notify the Owner.
 - 2. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.
 - 3. Failure to notify the Owner and give written notice of discrepancies shall constitute acceptance by the Contractor of existing conditions as fit and proper to receive his work.

3.2 ABBREVIATIONS AND SYMBOLS

A. Abbreviations and symbols on the Drawings are those most commonly used. Obtain clarification from the Owner on any questionable items before bid.

3.3 GENERAL PIPING REQUIREMENTS

- A. Size any section of pipe for which size is not indicated or any intermediate section erroneously shown undersized the same size as the largest pipe connecting to it. Sizes listed are nominal.
- B. Cut pipe accurately to job measurements and install without springing or forcing, true to line and grade, generally square with building and/or structures and adequately supported to prevent undue stress on pipe, fittings and accessories.
- C. Make changes of direction with manufactured fittings. Street ells, bushings, reducing flanges, close nipples or bending of pipe is not allowed.
- D. Use great care to install piping in accordance with best practice. Plastic pipe shall be "snaked" in trenches to allow for thermal expansion.

- E. All above grade, below grade and buried or imbedded PVC shall be installed using solvent weld fittings. Also, each and every fitting and pipe end shall be prepared with solvent primer. Fittings shall be joined individually and with enough time between assembly of adjacent joints to allow them to seal solidly. After joining, an even ring of primer must be visible around the entire fitting. If any fittings are installed without visible primer, the fitting shall be removed and discarded and piping recut, rechamfered, and joint made up again using a new fitting. All procedures, methods and techniques used to make up solvent weld joints shall be in strict accordance with manufacturer's recommendations.
- F. Arrange pipe and hangers to allow for expansion, contraction and structural settlement. No pipe shall contact structure except penetrations as shown on the Drawings.
- G. Provide dielectric connections between copper and dissimilar metals. In copper systems, threaded piping including connections to equipment shall be brass pipe and fittings. Install dielectric connections in vertical sections of piping only.
- H. Run pipe full size through shut-off valves, balancing valves, etc. Change pipe size within three (3) pipe diameters of final connection to control valves, fixtures and other equipment.
- I. Provide unions or flanges at connections to equipment, on service side of valves and elsewhere as required to facilitate ease of maintenance.
- J. Locate equipment shut-off valves as close to equipment as possible maintaining easy valve access.
- K. Make all connections between domestic water systems and equipment or face piping with approved backflow prevention devices as required.
- L. All PVC pipe exposed to direct sunlight shall be painted with two coats of Exterior Acrylic Semi-Gloss Paint, Sherwin Williams or equal. Color to be selected by the Architect. Prior to painting the PVC pipes, the exterior of all PVC pipes shall be wiped with Methyl Ethyl Ketone, or an approved equal, to remove the glaze from the pipes.
- M. The main drain pipe must run either level or uphill from the main drain sump, through the surge pit (if applicable) and then to the circulation pump.

3.4 TRENCH EXCAVATION AND BACKFILL

- A. Excavation:
 - 1. Excavate and backfill trenches as required for the Work of this Section. Conform with all applicable codes.
 - 2. The Contractor shall perform all excavation of every description and of whatever materials encountered, to the depths indicated on the Drawings or as necessary. The Contractor shall dispose of the excavated materials not required or suitable for backfill as directed and shall perform such grading as may be necessary to prevent surface water from flowing into the trenches. The Contractor shall provide adequate equipment for the removal of storm or subsurface waters which may accumulate in the excavated areas.
- B. Trenching:

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- 1. Excavate trenches to lines and grades as indicated on the Drawings and with banks as nearly vertical as practicable.
- 2. Bottoms of trenches shall be accurately graded to provide uniform bearing on undisturbed soil for the entire length of each section of pipe.
- 3. The width of the trench at and below the top of the pipe shall be such that the clear space between the barrel of the pipe and the trench wall shall not exceed 8" on either side of the pipe. The width of trench above the top of pipe may be wider if necessary.
- 4. Over-depth excavations shall be filled with tamped sand to required grades.
- 5. Excavations of five (5) feet or more in depth shall be shored or supported in conformance with rules, and regulations of State and Federal Governments. Shoring shall be constructed, maintained and removed in a manner to prevent caving of the excavation walls or other load on the pipe.
- C. Backfilling:
 - Material for backfilling of pipes shall be approved granular material less than two (2) inches in diameter obtained from the excavation, sand or an approved import fill. No material of a perishable, spongy or otherwise unsuitable nature shall be used as backfill.
 - 2. Backfilling of pipe trenches shall commence immediately after installation and testing to preclude damage to the installed pipe. Backfill around pipe shall be carefully placed so as not to displace or damage the pipe and shall be carried up symmetrically on each side of the pipe to one foot above the top of the pipe. The material shall be carefully compacted or consolidated before additional backfill is placed.
 - 3. Backfill above an elevation of one foot above the top of pipe in conformance with requirements of Section 131101, "Spray Ground Excavation". Material for balance of backfill shall be approved granular material less than six (6) inches in diameter taken from the excavation.
 - 4. Unless otherwise indicated on the Drawings, all pipe shall have a minimum of eighteen (18) inches of cover.

3.5 GENERAL EQUIPMENT REQUIREMENTS

- A. Position equipment to result in good appearance and easy access to all components for maintenance and repairs.
- B. Install piping, flues, breeching and ducts so that they do not interfere with equipment access.
- C. Install level, secure and out of moisture. Provide shims, anchors, support straps, angles, grouted bases, or other items as required to accomplish proper installation.
- D. All screws, nuts, bolts and washers shall be galvanized, cadmium plated or stainless steel. After fabrication, hot-dip galvanize unfinished ferrous items for outdoor, below grade or other use subject to moisture.
- E. Extend 1/2" Schedule 40 black steel pipe lubrication tubes from all hard-to-reach locations to front of equipment or to access points. Terminate with proper type of lubrication fitting.
3.6 VALVES AND STRAINERS

- A. If no shut-off is indicated, provide ball valves at inlet connections and balance valves at outlet connections to fixtures and equipment. Provide proper valve trim for service intended.
- B. Use no solder end valves unless noted otherwise; provide adapters in copper tubing systems.
- C. Locate valves with stems above horizontal plane of pipe. In general, locate valves within six (6) feet of floor, out from under equipment, in accessible locations with adequate clearance around hand wheels or levers for easy operation.
- D. Provide all valves, cocks and strainers, full pipe size unless indicated otherwise.
- E. Provide hand wheel operators on all valves 6" and larger, under 6" lever operators may be used.
- F. Provide tool operated valve with stainless steel shaft extension and 'on deck' tool operation for surge chamber butterfly isolation valve.

3.7 IDENTIFICATION OF PIPING

- A. Identify each valve by a numbered brass tag with hole and brass chain mounted on valve stem or handle. Tag to be a minimum of 1" in diameter and numbers at least 1/4" high stamped into tag. Valves and plumbing lines shall be labeled clearly with the source or destination descriptions.
- B. Install an identification chart in a plastic or glass framed enclosure which schematically illustrates the proper operation of all piping systems and indicates number and location of all valves and control devices within the system.
- C. The direction of flow for the recirculation equipment shall be labeled clearly with directional symbols such as arrows on all piping in the equipment area. Where the recirculation equipment for more than one pool is located on site, the equipment shall be marked as to which pool the system serves.

3.8 TESTS

- A. Perform tests in presence of Owner with no pressure loss or noticeable leaks.
- B. Do not include valves and equipment in tests. Include connection to previously tested sections if systems are tested in sections.

C.	Perform tests as follows:				
	<u>System</u>	Test Pressure	Test Medium	Duration	
	Spray Ground Piping	50 psig	Water*	4 hours	
	Domestic Water	150 psig	Water*	4 hours	
	*Never test PVC pipe or fittings with air or other gases, always use water.				

3.9 PIPE MATERIAL APPLICATION

- A. PVC Schedule 40: Below grade Spray Ground piping and domestic water piping up to 12" line size; use standard solvent weld fittings.
- B. PVC Schedule 80: Above grade swimming pool piping up to 12" line size; use solvent weld Schedule 80 or epoxy coated cast iron fittings.
- C. Type L Hard Copper: Above grade domestic water piping.
- D. CPVC Schedule 80; Heater Piping.
- E. Schedule 40 Steel: Natural gas piping.

3.10 CUTTING AND DRILLING

A. Cutting or drilling necessary for installation of Work of this Section shall be done only with approval of the Owner.

3.11 CLOSING-IN OF UNINSPECTED WORK

A. Do not cover or enclose Work before testing and inspection. Re-open Work prematurely closed and restore all Work damaged.

3.12 QUIETNESS

A. Quietness is a requirement. Eliminate noise, other than that caused by specified equipment operating at optimum conditions, as directed by the Owner.

3.13 FLUSHING OF LINES

A. Flush or blow out pipes free from foreign substances before installing valves, stops or making final connections. Clean piping systems of dirt and dust prior to initial start-up.

3.14 CLEAN-UP

- A. After all Work has been tested and approved, the Spray Ground Contractor shall thoroughly clean all parts of the equipment installations, including all pipe and fittings in the spray ground mechanical room. Exposed parts shall be cleaned of cement, plaster and other materials and all grease and oil spots removed with solvent.
- B. The Spray Ground Contractor shall remove debris from the Project site. Cartons, boxes, packing crates and excess materials not used, occasioned by this work shall be disposed of to the satisfaction of the Owner.
- C. If the above requirements of clean-up are not performed to the satisfaction of the Owner, the Owner reserves the right to order the work done, the cost of which shall be borne by the Spray Ground Contractor.

END OF SECTION

SECTION 131108 SPRAY GROUND ELECTRICAL

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Provide labor, materials and equipment as required to install the spray ground electrical system including but not limited to:
 - 1. A complete and operable system of service equipment, switchboards, panelboards, conduits, switches, time clocks and wiring for power and lighting, motor control centers.
 - 2. Junction and/or pull boxes, conduits, disconnects, starters, contactors, wiring and connection of all motors and mechanical equipment, including connection and wiring of line voltage controls associated with the mechanical systems.
 - 3. A complete Emergency Stop System as required by DOSH or the Dept of Environmental Health.
 - 4. Complete grounding system as required and shown on the Drawings.
 - 5. Complete equipotential bonding system as required and shown on the Drawings and in accordance with National Electric Code Article 680.
 - 6. Adjusting and preliminary operation of the completed electrical system as described in Article 3.6, A of this Section.
 - 7. Cleaning of all completed Work and installation adjustment of all trim and decorative items.

1.2 QUALITY ASSURANCE

- A. Qualifications of Workers:
 - The entity performing the work for this Section (Contractor License E) shall have been successfully engaged with a C-53 license as an RME or RMO for at least the past four (4) years immediately prior to the commencement of the work. The Qualified contractor Shall submit documentation of a minimum of three (3) interactive spray ground play equipment and climb-on structure installations completed in the last four (4) years.
 - 2. For actual construction operations, use only trained and experienced workers with a minimum of three (3) years experience with the materials and methods specified.
 - 3. Provide at least one person who shall be present at all times during execution of the work of this Section, with a minimum of five (5) years experience with the type of materials being installed, the referenced standards, and who shall direct all Work performed under this Section.
- B. Ordinances and Codes: Materials and construction shall conform with all applicable code requirements, including:
 - National Electrical Code, latest edition; Electrical Safety Orders of the State of California; Department of Industrial Relations; regulations of the State Fire Marshal; rules and regulations of the Board of Underwriters of the Pacific, UL 50, 50E and NEMA 250 rating.
 - 2. Chapter 31 of California Building Code, 2022 edition.
- C. Verification of Conditions:

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- 1. The locations shown on the Drawings are diagrammatic only and the exact finish location of equipment and materials cannot be indicated. Therefore, locations of all Work and equipment shall be verified to avoid interferences, preserve head room and keep openings and passageways clear. Changes shall be made in locations of equipment and materials which may be necessary to accomplish these purposes.
- D. Preliminary Operations and Testing:
 - 1. Motor driven equipment shall be tested for correct rotation and completion of all connections.

1.3 SUBMITTALS AND SUBSTITUTIONS

- A. Provide submittals in conformance with the requirements of Section 013300. Requests for substitutions shall conform with requirements of Article 1.10.A of Section 131100.
- B. Required submittals include:
 - 1. Conduit and Fittings as specified in Article 2.2 of this Section.
 - 2. Panelboards as specified in Article 2.8 of this Section.
 - 3. Circuit Breakers as specified in Article 2.9 of this Section.
 - 4. Motor Starters as specified in Article 2.12 and 2.13 of this Section.
 - 5. Fuses as specified in Article 2.15 of this Section.
 - 6. Time Clocks as specified in Article 2.16 of this Section.
 - 7. Ground Fault Circuit Interrupters as specified in Article 2.17 of this Section.
 - 8. NEMA Type 4x corrosion resistant UL 50, 50E & NEMA 250 rating for enclosures, cabinets and boxes as specified in Article 2.11 & 2.18 of this Section.
- C. Submit proof of qualifications as specified in Article 1.2.A of this Section.

1.4 PRODUCT HANDLING

- A. Delivery: Deliver all materials to the Project Site in the manufacturer's original unopened containers with all labels intact and legible.
- B. Storage: Store all materials under cover in a manner to prevent damage and contamination, and store only the specified materials at the Project site.
- C. Protection: Use all means necessary to protect spray ground electrical materials before, during, and after installation and to protect the installed Work specified in other Sections.

PART 2 - PRODUCTS

- 2.1 MATERIALS, GENERAL
 - A. Materials shall be new, in unbroken packages and bear the U.L. label of approval.
 - B. Equipment of one type shall be by same manufacturer. One type of equipment for classifications such as:
 - 1. Switchboards, panels, buss duct, disconnect switches and allied items.
 - 2. Conduit.
 - 3. Wire.

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- 4. Conduit fittings.
- 5. Fixtures of the same general type.
- 6. Wiring devices.

2.2 CONDUIT AND FITTINGS

- A. Conduit within or under buildings or where exposed outdoors shall be rigid metal threaded, hot dipped galvanized, or U.L. approved plastic except where noted otherwise on the Drawings. Metallic conduit shall be of the same metal between outlets or terminals.
- B. Use flexible metallic conduit only for short connections of motors and where specifically called for on Drawings. Maximum length shall be 40". Use only liquid tight flexible metal conduit. Install an unbroken #12 AWG insulated copper grounding conductor in each liquid tight flexible conduit with permanent connection at motor junction box and service panel ground.
- C. Protect, before installation, metallic conduit runs in all slabs laid on grade or in contact with the earth or exposed in damp locations, with two (2) heavy coats of asphaltum rust-resisting compound.
- D. Encase conduits 2-1/2" or larger run underground, outside, or under buildings, in concrete envelopes a minimum of 3" thick, except as indicated otherwise on Drawings or stubouts. Conduits 2 and smaller laid 18" below finish surface in soil.
- E. Low voltage runs underground outside buildings, 1-1/4" or smaller, may be G.I. or sherardized steel conduit, with machine applied wrapping equal to double wrap or Scotch-Wrap #50 tape, half lapped and quadrupled at joints in lieu of concrete encasement.
- F. Service conduits through foundations or concrete members shall run through metal sleeves with adequate clearances for full movement of the conduit. Do not run conduits through footings.
- G. Secure conduits run exposed on surfaces with one hole heavy-duty straps or fasten with matching fittings to inserts or trapezes, parallel to building walls and ceilings.
- H. Cap all conduit or duct stub-outs with standard factory caps; except cap threaded steel conduit with B.I. water pipe caps in outdoor locations.
- I. Use conduit fittings as manufactured by Crouse-Hinds Company, Appleton Electric Co., or approved equal.
- J. Employ U.L. liquid tight fittings for use with liquid tight flexible metal conduit.
- K. Use unions as manufactured by Appleton, O-Z/Gedney, or approved equal. The use of running threads will not be permitted.
- L. Exposed conduit and fittings in chemical rooms shall be nonmetallic rigid polyvinyl chloride, corrosion resistant rated suitable for installation in corrosive environments and in accordance with the latest NEC requirements.

2.3 EQUIPOTENTIAL BONDING/GROUNDING

A. Bond together and ground to a common ground at a single point all metallic conduit, piping systems, pool reinforcing steel, metal parts of ladders, lifeguard stands, handrails and their supports and the like. The solid copper bonding conductor shall not be smaller than #8 copper. Provide equipotential bonding per Article 680 of the National Electrical Code. In instances where no deck reinforcement is present, Contractor shall provide a minimum of three feet of equipotential bonding material in conformance with Code. All bonding items shall be inspected prior to concrete pour.

2.4 WIRING CONNECTIONS

- A. Make connections without strain on conductors, allowing the conductors to take a natural position after connections or taps are made. Include all strand of wire in making the connection.
- B. Make connections for wiring by one of the following means:
 - 1. Make all taps or connections to conductors with compression type connectors except those smaller than #8 B&S gauge may have soldered connections. Solderless connections for #10 AWG or smaller may be used and shall be "Scotchlok", Buchanan, or approved equal. For #8 AWG or larger, they shall be T&B "LockTite", Burndy "Versitaps", or approved equal.
 - 2. All cable or conductor terminal lugs shall be Burndy "Quicklug", Ilsco, or approved equal. Two piece stamped lugs and solder lugs will not be approved.
 - 3. Paint taped splices in damp or outdoor locations with two (2) coats of insulating paint.
 - 4. Tag all branch circuit wires with circuit number at the panelboard and at each point of use with linen or plastic tags.

2.5 CONDUCTORS

A. Copper RHW or THW. Do not make splices between boxes.

2.6 COLOR CODING

- A. Neutrals (identified conductors shall be white).
- B. Phase conductors shall be red for phase B; blue for phase C.
- C. Green shall be used for mechanical equipment and receptacle grounds only.

2.7 MOTOR WIRING

- A. Make final connections to motors with the required AWG (Minimum #12), Flamenol machine tool wire, 19 strand. Control wiring for equipment shall be Flamenol machine tool wire, 19 strand of required AWG. Provide corrosion resistant junction boxes at each item of equipment to change from standard building wiring to machine tool wire.
- B. Phase motors as proper in direction of rotation.

2.8 PANELBOARDS

- A. Panelboards shall be flush or surface mounting as indicated with circuit breakers as shown on panel schedule, hinged lockable doors, index card holders and proper bussing.
- B. Where indicated on the drawings, panelboards shall be furnished with subfeed breakers and/or lugs, split bussing, contractors, time switches, relays, etc., as required.
- C. All panelboards shall be keyed alike.
- D. All panelboard enclosures shall be corrosion resistant rated NEMA 4X in accordance with the latest NEC requirements.
- E. Furnish corrosion resistant panelboard enclosures and terminal cabinets with Yale 46515 flush locks and LL806 keys except where indicated otherwise herein. Fasten the trim to panel boards and terminal cabinet by means of concealed, bolted or screwed fasteners accessible only when the door is open.
- F. Panelboards 208/120 volt, three phase, 4 wire, S/N or 120/240 volt, single phase, 3 wire, S/N.

Panelboard types as manufactured by: Westinghouse General Electric Square D

Type B10B Type NLAB Type NQOB

G. Panelboards for 480/277 volt, three panes, 4 wire, S/N.

Panelboard types asmanufactured by:

Westinghouse	TypePow-R-Line2
General Electric	Type AE
Square D	Type NEHB
Sylvania	Type NH1B
I.T.E.	Type Approved Equal

- H. Panelboard for bussing sizes thru 400 amp shall be 20" wide surface mounted type. Recess mounted type shall have a 20" wide (maximum) recess metal enclosure with trim plate cover extending 1" on all sides of enclosure. Depth shall be 5-3/4" nominal. Height of panel as required for devices.
- I. Provide 6" additional gutter space in all panels where double lugs are required, or where cable size exceeds bus size. Minimum bottom gutter space shall be 6" high. 12" additional gutter space may be required for aluminum feeders where used.
- J. Panelboards shown on the drawings with relays, time clocks or other control devices shall have a separate metal barriered compartment mounted above panel with separate hinged locking door to match panelboard. Provide mounting sub-base in cabinet for control devices and wiring terminal strips.
- K. Panelboard shall have a circuit index card holder removable type, with clear plastic cover. Index card shall have numbers imprinted to match circuit breaker numbers.

2.9 CIRCUIT BREAKERS

- A. Breakers shall have a minimum short circuit interrupting rating of 10,000A symmetrical for panelboard voltage thru 240 volt and 14000A for panelboards thru 600 volts or as specified on the drawings. In no case shall the interrupting rating be less than the bus withstand rating unless noted otherwise on the drawings.
- B. Circuit breakers as manufactured by the following companies only are acceptable:
 - 1. General Electric Company
 - 2. Square D Company
 - 3. Westinghouse Company
 - 4. I.T.E. Company
- C. Circuit breakers shall be arranged in the panels so that the breakers of the proper trip settings and numbers correspond to the numbering in the panel schedules on the drawings. Circuit numbers of breakers shall be black-on-white micarta tabs or other previously approved method. Circuit number tabs which can readily be changed from front of panel will not be accepted. Circuit number tabs shall not be attached to or be a part of the breaker.
- D. Where two or three pole breakers occur in the panels, they shall be common trip units. Single pole breakers with tie-bar between handles will not be accepted.
- E. All circuit breakers shall be padlockable in the "off" position. Locking facilities shall be riveted or mechanically attached to the circuit breaker (submit sample for approval). Other means of attachment shall not be accepted without prior written approval of Architect.
- F. Where branch circuit breakers supply the power to motors and signal systems, the breakers shall be furnished with lockout clips, mounted in the "on" position. The breakers shall be able to trip automatically with lockout clips in place.
- G. Panelboard circuit breakers shall be bolt-on type.

2.10 BUSSING

- A. Bussing shall be rectangular cross section copper, or full-length silver or tin-plated aluminum.
- B. Bussing shall be braces to withstand symmetrical short circuit ratings as follows or as noted on drawings. In no case shall bus short circuit bracing be less than specified circuit breakers.
- C. Each panelboard shall be equipped with a ground bus secured to the interior of the enclosure. The bus shall have a separate lug for each ground conductor. No more than one conductor shall be installed per lug.
- 2.11 POOL MECHANICAL EQUIPMENT ENCLOSURES, TERMINAL CABINETS & MISC CABINETS
 - A. All pool mechanical equipment enclosures, terminal cabinets and miscellaneous cabinets in the pool mechanical room or chemical storage rooms shall be corrosion

resistant rated in accordance with the latest NEC requirements. Enclosures and all cabinets shall be flush mounted (except where noted a surface) of the size indicated on the drawings, and complete with hinged lockable doors and the number of 2-way screw terminals required for termination of all conductors. Terminal cabinet locks to operated form same key used for panelboards. The trim to terminal cabinets shall be fastened by means of concealed bolted or screwed fasteners accessible behind door to terminal cabinets. Terminal cabinets shall have 5/8" plywood backing.

B. Provide engraved nameplate on each enclosure and cabinet indicating its designation and system (i.e., Spray Ground - Panel 'SG').

2.12 MOTOR CONTROL INDIVIDUAL STARTERS

- A. Manual Motor Starters:
 - 1. Provide flush or surface mounting manual motor starters with number of poles and size of thermal overload heaters as required for the motor being controlled (equipped with overload heaters, one for each motor lead). Back boxes shall be supplied with all flush mounting starters whether they are toggle type requiring only a 4" square outlet box or the larger type requiring a special box and cover designed to accept the particular unit. All box types shall be corrosion resistant rated in accordance with the latest NEC requirements.
 - 2. Unless otherwise noted on the drawings, all manual starters for single phase motors, smaller than 1 h.p., shall be the compact toggle type. Manual starters for all single phase motors, 1 to 5 h.p., and all three phase motors up to 5 h.p. shall be the heavy duty type.
 - 3. Where manual motor starter is shown with pilot light, the pilot light shall be installed in a separate outlet box adjacent to the starter outlet, and engraved nameplate in indicate function of pilot light.

Manufacturer	Single Phase 1HP and Below	Others
Arrow Hart	Type RL	Type LL
General Electric	CR 101	Class CR 1062
I.T.E.	Class C10, C11 or C12	Class C20
Square D Company	Class 2510, Type A	Class 2510, Type B & C
Westinghouse	Type MS	Type A100
Allen Bradley	Approved Equal	Approved Equal.

4. The following motor starters as manufactured by:

- B. Individual Magnetic Motor Starters:
 - 1. Magnetic motor starters shall be A.C. line voltage, across-the-line units in a corrosion resistant rated enclosure in accordance with the latest NEC requirements.
 - 2. All starters located outside of a building whether or not indicated shall be W.P. (weatherproof), and all starters noted W.P. shall be furnished in a corrosion resistant rated stainless steel enclosure in accordance with the latest NEC requirements.
 - 3. Starter shall be horsepower rated for the motor controlled, and shall be equipped with properly sized overload elements. Every pole shall be with overload element.
 - 4. Verify the exact motor current and voltage characteristics with the Contractor supplying the motor before installation of a starter.

 Each starter shall be equipped as required. 	with "Hand-Off-Auto" switch or stop-start pushbutton				
 Coils shall be designed to opera built-in-under the voltage releas the line voltage drops below no 	te on voltage indicated on control diagrams and have se for coil circuit to drop motor starter off the line when rmal operating voltage.				
7. The coil control circuit shall be i	The coil control circuit shall be independently fused, sized to protect coil.				
8. Starters to be equipped with feature.	 Starters to be equipped with running pilot light indication with a "Push-to-Test' feature. 				
 Magnetic starters shall have a minimum of two auxiliary contacts. Additional aux contacts shall be provided as required to comply with the requirements of the diagrams on the electrical and mechanical drawings and the description of function in the Mechanical Section of the Specifications. 					
 Starters shall comply with NEMA on drawings. 	A standards, size and horsepower ratings as indicated				
11. The following types of magnetic	c motor starters as manufactured by:				
Manufacture	Туре				
General Electric	Class CR 106				

General Electric	Class CR 106
I.T.E.	Class A20
Square D Company	Class 8536
Westinghouse	Type A200 (Size 4 Max.) or
	Class II-200 (Sizes 5-8)

2.13 INDIVIDUAL COMBINATION MOTOR STARTERS

- A. Combination starter shall incorporate fused disconnect switch and individual magnetic motor starter. Combination starters shall be mounted in a corrosion resistant rated enclosure in accordance with the latest NEC requirements.
- B. Starters shall comply with NEMA standards, size and horsepower ratings as indicated on drawings General Electric, Square D, Westinghouse or I.T.E.
- C. The disconnect handle used on combination starters shall control the disconnect device with the door opened or closed. The disconnect handle shall be clearly marked as to whether the disconnect device is "ON" or "OFF", and shall include a two-color handle grip, the black side visible in the "OFF" position indicating a safe condition, and the red side visible in the "ON" position indicating an unsafe or danger condition.
- D. All starters used in combination starters shall be manufactured in accordance with the latest published NEMA standards, sizes, and horsepower ratings. These starters shall be furnished with three melting alloy type thermal overload relays.
- E. Thermal units shall be of one-piece construction and interchangeable. The starter shall be inoperative if a thermal unit is removed.

2.14 MOTOR CONTROL CENTER, INTERLOCKS AND CONTROL DEVICES

- A. Refer to mechanical and plumbing drawings and specifications and provide all control devices including timeswitches, relays and interconnection of starters as required.
- B. Mount all relays and timeswitches in a separate compartment in motor control center unless otherwise indicated.

C. Whether shown on mechanical and plumbing drawings or control center schedules or not, where motors are controlled by external devices (i.e., thermostats, relays, float or pressure switches, etc.) or interlocked with other motors, each motor starter to be equipped with a "Hand-Off-Auto" selector switch in starter cover. Other starters equipped with a "Start' Stop" pushbutton station in starter cover. The Contractor shall be responsible to submit a complete and detailed set of shop drawings, electrical schematic design along with electrical component cut sheets from the MCC panel or the interlock control device manufacturer. RSD Total Control: Allan Pearson 949-380-7878, South Coast Controls: Anthony Ellis 714-998-5656, H2O Integration Controls, Mike Macri, 253-244-1576 or approved equal.

2.15 FUSES

A. Fuses shall be dual element, current limiting type, U.L. Class RK5 unless otherwise indicated on the drawings. Provide one spare set of fuses of each size and type in each motor control center.

2.16 TIME CLOCKS

- A. Time clocks shall be provided for all spray ground circulation pumps not controlled by filter microprocessors.
- B. Contacts shall have a minimum rating of 40 amperes at 277V.
- C. Timing motor shall be heavy duty synchronous, self-starting, high torque type, and shall be rated at 120, 208, 240, 277 volt 60 Hz.
- D. Motor shall operate normally at temperature range of -60 degrees Fahrenheit to +120 degrees Fahrenheit.
- E. Dial shall be 3" diameter, clearly calibrated with day/night zones and 24-hour rotation, with gear to provide one revolution yearly which automatically varies the on/off settings each day according to seasonal changes. Day and month of the year shall show clearly through calendar window on the dial.
- F. Time clocks shall be equipped with 7-spoke omitting wheel marked with days of the week.
- G. Time clocks shall be housed in a corrosion resistant rated enclosure in accordance with the latest NEC requirements.
- H. Acceptable manufacturers are Intermatic, Tork, Paragon, or approved equal.

2.17 GROUND FAULT CIRCUIT INTERRUPTERS

- A. Minimum rating shall be 20 amperes, 125V, 5 milliampere trip setting, Class A per UL943.
- B. Manufacturer to be Crouse-Hinds, Leviton, or approved equal.

2.18 BOXES

- A. Boxes shall be of the size required by ordinances or larger, must be corrosion resistant in accordance with the latest NEC requirements where concealed or exposed on ceilings or walls.
- B. Outlets to be surface where wiring is exposed and flush in areas where conduit is concealed.
- C. Provide surface outlets with proper corrosion resistant surface covers. Box and cover shall be deep enough to provide at least 1/4" clearance between back of device and back of box. Where box contains more than one device, use a corrosion resistant rated gang box with proper cover in accordance with the latest NEC requirements. Surface outlet boxes shall be of the threaded hub type wherever below 8'0".
- D. If necessary for cable installation, additional pull boxes or junction boxes may be installed in accessible locations. Exposed pull boxes and junction boxes shall be corrosion resistant rated in accordance with the latest NEC requirements.
- E. Where exposed to weather pull boxes larger than outlet boxes are required, galvanized code gauge sheet steel boxes may be used with covers attached by brass machine screws may be used. Boxes exposed to the weather shall be approved for the purpose, and conduit entrances shall be on the bottom made by means of an interchangeable hub with gasket and adapter nut. Pull boxes not shown on Drawings may be added only after approval of size and location is obtained.
- F. For outlets exposed to weather or where noted, cast outlet boxes shall be Crouse-Hinds, Appleton, or approved equal. Boxes shall have proper number and size hubs. Device plates, covers, adapters and boxes shall be as manufactured by Crouse-Hinds, Appleton, or approved equal.
- G. Exposed junction boxes, outlet boxes and pull boxes for pool chemical rooms shall be non -metallic suitable for a corrosive environment and in accordance with the latest NEC requirements.

2.19 IDENTIFICATION MARKINGS

- A. Plainly mark all motor and electrical appliance control equipment indicating the equipment controlled with engraved metal tags.
- B. Provide laminated plastic nameplates on panelboards on the outside of the door at the top indicating panel designation and feeder source.
- C. Provide laminated plastic nameplates on distribution switchboards and motor control centers at the top center indicating panel designation and feeder source.
- D. Identify each distribution switchboard and motor control center circuit breaker with a laminated plastic nameplate indicating its' use.
- E. Type panelboard directories on the forms provided with the equipment, indicating the use of each branch circuit breaker.

F. Fasten all laminated plastic nameplates to surfaces with two (2) or more screws.

2.20 EMERGENCY STOP BUTTON(S)

A. 2¹/₂" diameter Red mushroom momentary contact switch, with pushbutton operator, in a Nema 4 weatherproof junction box as required by DOSH and/or the Dept. of Environmental Health. Provide a manual reset in the pool mechanical room.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify conditions at the Project site before submitting bid. Be responsible for providing all necessary wiring for the new electrical systems. Wherever wiring is being disrupted due to remodeling or changes, reconnect existing and provide new wiring circuits to accomplish a fully operable system at no additional cost to the Owner.

3.2 COORDINATION

A. The Drawings are essentially diagrammatic and indicate the desired location, size, routes, connection points, etc., and are to be followed as closely as possible. Proper judgment must be exercised in executing the Work so as to provide the best possible installation in the available space and to overcome difficulties, limitations or interference wherever encountered. Be responsible for the correct placement of this Work, the proper location and connection in relation to Work of other trades, for determining the exact location of all conduits, outlets and equipment, and for installing the conduits in such a manner as to conform to the structure, avoid obstruction, preserve headroom and keep openings and passageways clear. Particular attention is directed to the close coordination required on exposed Work. Locations shown on Architectural or Mechanical Drawings if different than those shown on Electrical Drawings should be communicated to the Owner's Representative in writing for clarification.

3.3 INSTALLATION

- A. Trenching and Backfill: Conform with requirements of Section 131101. Provide minimum cover as required by Code.
- B. Conduit Installation:
 - 1. Conduit and metallic raceway systems shall be mechanically and electrically continuous from sources of current to all outlets in a manner to provide a continuous grounding path. Close ends of conduit during construction to prevent entrance of dirt or moisture.
 - 2. Securely fasten conduit to the building construction within three feet of each outlet and within every ten feet thereafter. Secure it to boxes, cabinets, pull boxes, terminals with two locknuts and ends equipped with bushings or a terminal fitting. Cut square with ends carefully reamed.
 - 3. Make bends or elbows so that the conduit will not be injured or flattened.
 - 4. Use insulated metallic bushings in all places where bushings are required.
 - 5. Run exposed conduits level or plumb and parallel to the construction members of the building. No cutting across or diagonal runs will be permitted. Neatly

surmount structural obstructions encountered on conduit runs by the use of fittings or pull boxes.

- 6. Identify feeder conduits by stamped metal tags secured to exposed section of conduit in main or sub-panels.
- 7. Make up all threaded conduit joints gas and watertight with conductive sealer except conduit above ground in dry indoor locations.
- 8. Rigidly support all boxes independently of the conduit system.
- C. Connections to Equipment:
 - 1. Fully connect, in an approved manner, all electrical outlets, apparatus, motors, equipment, fixtures, wiring devices and appliances whether they are installed under the Electrical Contract or not, which require electrical connections, to the corresponding electrical system outlet.
 - 2. Where the Work of this Section requires connections to be made to equipment that is furnished and set-in-place under other Sections, obtain such roughing-in dimensions from the manufacturer or supplier of each item as required and assume full responsibility for the installation of the connections thereto.

3.4 ADJUSTMENT AND CLEAN-UP

- A. Preliminary Operation: Should the Owner's Representative deem it necessary to operate the electrical installation or any part thereof prior to Substantial Completion of the Work, consent to such preliminary operation and supervise conduction of same. Subcontractor shall pay all costs occasioned by such operation. Preliminary operation shall not be construed as an acceptance of any Work installed under this Contract.
- B. Clean-up: Upon completion of the Work of this Section, immediately remove all spray ground electrical materials, debris and rubbish occasioned by this Work to the approval of the Owner's Representative.

END OF SECTION

SECTION 13 34 23

PRE-ENGINEERED BUILDING

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work shall include furnishing the sealed architectural, structural, mechanical, and electrical plan sets and furnishing the structural, mechanical, and electrical building components as a complete, pre-designed building package as shown on drawings and as specified herein.

1.2 GENERAL REQUIREMENTS

- A. Packaged building design and engineering and furnishing all specified building package components shall be supplied by Romtec, Inc., or pre-approved alternate, hereafter designated as the *building supplier*.
- B. The *building supplier* shall be a single source design, engineering, and manufacturing firm who shall meet all the following requirements.
- C. The packaged building shall be a current standard product of *building supplier*.
- D. **Building supplier** shall be regularly engaged in and have at least ten (10) years of experience in packaged building engineering, design, supply, and construction.
- E. The *building supplier* must meet or exceed the product specifications. The Romtec, Inc. building package is an approved guide and example.
- F. Alternate *building suppliers* shall demonstrate that they have designed, engineered, produced, delivered, and constructed at minimum ten (10) functioning site-built buildings of similar type. Project completion dates and a reference contact from the owner of each project must be provided.
- G. Alternate **building suppliers** must disclose all instances of any prior municipal reviewer or landscape architect's rejection of the same or similar product as an "or equal" to the specified basis of design building package.
- H. Bidders who propose and alternate *building supplier* other than Romtec, Inc. are required to provide a complete submittal package minimum of ten (10) calendar days prior to the bid opening date with full sealed plan sets, calculations, and all pre-engineered structural items.
- I. Any products proposed as "or equal" that are not as specified must be specifically listed in the alternate **building supplier** submittal package and accompanied by manufacturers data sheets for review. These products will be approved or denied prior to the bid opening. Incomplete submittals will be rejected and returned to the bidder.
- J. The building and its concrete footings, foundation, and slab are to be engineered by the **building supplier** to meet site-specific conditions, including wind and snow loading, local frost depth, and ground conditions.
- K. Fasteners that are normally included with individual components, as we all any atypical fasteners, shall be supplied by *building supplier*.
- L. Building is to be designed and constructed to meet local codes and approvals for permanent structures. Any building that is temporary, permanently relocatable, prefabricated modular, an offsite constructed product, or constructed of precast material is not an accepted equal to permanent, onsite, conventional construction.
- M. No approval by any external entity will override the local building authority's codes and inspections. Seals meant for modular homes and production plant certifications will not

be allowed in lieu of sealed plans from a licensed engineer and conventional inspection during construction.

- N. Building sidings, treatments, and roofing are to be as specified. Precast buildings with painted textures are not considered architecturally equivalent.
- O. The *building supplier* shall provide complete, code-compliant building plans including plans, elevations, sections, and details, under seal of a National Kitchen and Bathroom Association (NKBA) certified technical designer.
- P. The *building supplier* shall provide complete structural calculations meeting code for design loads and seismic design under seal of a professional Engineer with current license in the state where the project is located.
- Q. The reviewing authority reserves the right to review or reject all submittals at its sole discretion.
- R. All work and materials shall comply with current industry building codes and regulations for the state where the project is located.
- S. Americans with Disabilities Act Accessibility Guidelines (ADAAG) will be followed in design, manufacture, and construction.

1.3 APPROVED MANUFACTURERS

- A. Romtec, Inc., 18240 North Bank Rd. Roseburg, OR. 97470 Tel: 541-496-9678; Fax: 541-496-0182; Email: <u>risales@romtec.com</u> Web: <u>www.Romtec.com</u>
- B. Requests for substitutions will be considered in accordance with provisions of Part 1.

1.4 DEFERRED SUBMITTAL REQUIREMENTS

- A. Submittal documents for deferred submittal items shall be submitted to the building official for review and approval by the project architect, and not by the individual sub-contractor / consultant.
- B. Deferred submittal documents in addition to the seal of the responsible engineer, shall bear the shop drawing approval stamps of the project architect, engineer of record, and the general contractor on all sheets of plans and cover of the calculations.
- C. Submittal documents for deferred submittal items shall be submitted in a timely manner that allows for a minimum of thirty calendar days for the initial plan review turn-around.
- D. Deferred submittal items shall not be fabricated / installed until their design and submittal documents have been approved by the building official.
- E. Provide two copies of deferred submittal documents for final approval.

1.5 DESIGN AND SUBMITTALS

- A. **Romtec's** work shall include the design of the architectural, mechanical, structural, and electrical components that will be required for this building.
- B. The building will be designed as a complete building package to be delivered to the job site for construction on-site by the *building installer* and/or *contractor*.
- C. **Romtec** shall submit the packaged restroom building preliminary Scope of Supply and Design Submittal (SSDS), including the building plan view and elevation drawings.
- D. **Romtec** will provide complete submittal documentation in the **Romtec's** standard electronic submittal format for review.
- E. The preliminary SSDS will be reviewed by relevant parties and returned to *Romtec* with any required revisions to the terms, product data sheets, and/or building plan view and elevation drawings noted as comments.

- F. **Romtec** shall make any required corrections or revisions and resubmit the preliminary SSDS until the preliminary SSDS is approved by the relevant parties.
- G. Once the preliminary SSDS has been approved, *Romtec* will provide full sealed plan sets stamped by an engineer licensed in the state that the building is located for review by the permitting authority.
- H. Up to three (3) wet stamped sets of the plans and structural calculations shall be provided by *Romtec* before any additional fees apply. Standard plan set size is 11" x 17".
- I. Permitting authority will review the full sealed plan set and return with any required revisions or corrections noted as comments.
- J. **Romtec** shall provide one full round of sealed plan revisions in response to permitting authority comments before any additional fees are allowed.
- K. The following sections shall be included in *Romtec's* preliminary Scope of Supply and Design Submittal. Incomplete submittals will be rejected and returned for revision.
 - 1. INTRODUCTION
 - 2. BUILDING DESIGN
 - a. SUPPLIED ITEMS
 - b. EXCLUDED ITEMS
 - c. PLAN VIEW AND ELEVATION DRAWINGS
 - 3. PRODUCT DATA
 - WARRANTY & LIMITATIONS
 <u>Note</u>: Overall site plan is not part of *Romtec's* scope.

PART 2 – PRODUCTS

- 2.1 BUILDING DESCRIPTION
 - A. Refer to plans for quantities, dimensions, locations, and installation methods for the materials and items described in this section.
 - B. Building dimensions shall match what is indicated on the drawings.
 - C. *Romtec* will supply the building package products to owner.
 - D. **Owner** will supply the **Romtec** building package products to **building installer** and/or **contractor**.

2.2 ELECTRICAL

- A. Interior and exterior light fixtures
 - 1. Exterior lights to be LED downlights with cast-aluminum housing with corrosionresistant paint in dark bronze. Polycarbonate lens.
 - 2. Exterior lights controlled by EK4336S photocell.
 - 3. Interior recessed 6" round wafer LED light fixtures.
 - 4. Restroom lights controlled by switch (switch by installer).
- B. Main breaker panel.
 - 1. Breaker Panel shall be 100 Amp, single-phase, rain tight.

<u>Note</u>: Breaker panel shall be sized to accept only the loads of the Romtec electrical fixture package. Romtec should modify the main breaker panel as needed to be most efficient based on any design changes.

2.3 STRUCTURE

- A. Concrete Masonry Units (CMU).
 - 1. Walls shall be constructed of 8"W x 16"L x 8"H smooth-face mortar joint concrete masonry units (concrete blocks).
 - 2. Blocks shall be manufactured to ASTM C90 designation for load bearing concrete masonry units.
 - 3. Block color to be *Gray*.
- B. Exterior wall finish shall be fiber cement board and batten.
 - 1. Exterior siding accent to be stone veneer.
- C. Kick proof wall vents.
 - 1. Pre-assembled steel frame with 10-gauge, 1" square lock joint wire weave mesh and interior louver with integral insect screen.
 - 2. Vents and frames are powder coated *black*.
- D. Door system components
 - 1. Doors shall be Steelcraft® SL18 standard laminated honeycomb core and 18-gauge galvanized steel.
 - 2. Door frame shall be pre-welded Steelcraft® 3-Sided flush frame, 16-gauge galvannealed A-60 steel.
 - 3. Doors and frames to be powder coated *black*.
 - 4. Masonry door clips (3/16" dia.) for door frame shall be fitted between the doorframe and concrete blocks to bond frame to zzzwall. Door clips allow full internal grouting of the frame during installation.
 - 5. Hager 5100 Series Grade 1 door closer is constructed of cast iron, which makes it ideal for heavy duty, high use and abusive environments.
 - 6. Doors to have pull handles with stainless steel protection plates.

2.4 ROOFING

- A. Roof system.
 - 1. Building supplier shall provide the following items:
 - a. Batt insulation.
 - b. 1"x4" cedar trim.
 - c. Simpson anchors/ties.
 - d. Roof sheathing.
 - e. Lumber for truss blocking, top-of-wall blocking, eave/vent blocking.
 - f. Vents.
 - g. Ice and water shield.
 - h. Interior trim boards.
- B. Roofing to be Fabral, 29-gauge, GrandRib3 with exposed fasteners.
 - 1. Roofing color to be selected by owner from manufacturer's standard color chart.

PART 3 – EXECUTION

3.1 BUILDING INSTALLER SCOPE ITEMS

The installing contractor or subcontractor, hereafter designated as the *building installer*, is responsible for building package installation. *Building installer* work will generally include foundation/pad construction and building package assembly/construction. *Note*: *Romtec's* scope is separate from the *building installer's* scope. *Romtec, Inc., is the*

<u>Note</u>: **Romtec's** scope is separate from the **building installer's** scope. Romtec, Inc., is the approved building package supplier, not a designated **building installer.**

- A. Construction Submittals
 - 1. If required by owner and/or reviewing authority, building installer shall submit product data sheets and relevant information about the specified building installer supplied products below for review and approval.
- B. Warranty
 - Building installer's work shall be warranted against defects in materials and workmanship for a period of not less than one (1) year from the date of acceptance. Acceptance is the date that installation work for the building package is completed, including any relevant final punch list. If final acceptance of the completed building is delayed for reasons beyond building installer's control, the warranty shall be one (1) year from the completion of building installer's installation work and demobilization.
 - 2. Building installer shall pass through to owner all relevant manufacturers warranties for individual products and components supplied by building installer.
- C. Structure
 - 1. Masonry (concrete) grout shall be supplied and installed by building installer.
 - a. Grout shall have a minimum compressive strength of 2,500 psi at 28 days, 9+/- 1" slump, with max $\frac{1}{2}$ " aggregate, or as required in final approved plans.
 - b. Fine or coarse gout may be used in accordance with 2009 UBC.
 - c. All CMU block must be fully grouted and may not be wetted. <u>Note:</u> if required for installation, building installer will be responsible for providing appropriate equipment and labor for notching CMU block for bond beams, cutting CMU block to make any required shapes, and/or grinding CMU block for fixture mounting.
 - d. Provide the following or an approved equal:
 - i. Commercial Grade Quikrete: Non-Shrink Precision Grout
 - ii. Quikrete Non-Shrink Grout complies with the physical requirements of ASTM C1107
 - 2. Rebar for walls shall be supplied and installed by the building installer.
 - a. Provide the following or an approved equal:
 - i. All walls shall have # 4 and # 5 rebar. See final approved plans for spacing.
 - ii. All rebar used in the building must meet ASTM A615 manufacturing standards and is to be placed per the final approved plans.
 - 3. Interior block wall finish shall be latex epoxy paint supplied and installed by the building installer.
 - a. Provide the following or an approved equal:
 - i. Sherwin Williams Pro Industrial Pre-Catalyzed Water Based Epoxy
 - 4. Interior ceiling finish shall be painted gypsum board supplied by building installer. Color to be selected by Owner.

- a. Gypsum Board, Regular Core, ASTM C1396/C1396M.
- 5. Interior floors to be sealed concrete finish supplied by the building installer.
 - a. Provide the following or an approved equal:
 - i. Sealkrete Clear Seal, Concrete Protective Sealer
 - ii. ASTM G-53 ultraviolet resistance: excellent
 - iii. ASTM D-1640: dry-to-touch 15 min; dry to recoat 2 hours; dry to light foot traffic 24 hours; dry to vehicular traffic 72 hours
 - iv. ASTM D-3359B intercoat adhesion: excellent
 - v. ASTM D-3363 Konig hardness
- 6. Sealant for all exposed wood shall be supplied and installed by building installer.a. Provide the following or an approved equal:
 - Provide the following or an approved equal:
 - i. Thompson's® Waterseal® Clear Wood Sealer
 - ii. Exceeds industry standard for ASTM-D4446 for waterproofing wood
- 7. Sealant for all exterior exposed CMU block is required, to be supplied and installed by building installer.
 - a. Provide the following or an approved equal:
 - i. Blok-Lok™ with Graffiti Control
 - ii. Water Abs CMU ASTM C140-75: 98.6% Effective
 - iii. Water Vapor Trans ASTM D-1653-71: 100% Vapor Perm
 - iv. Water Repellency ASTM C67-87: 98.6% Effective
 - v. Weathering ASTM G-53: 3,500 Hours No Change
 - vi. Surface Burning ASTM E84: Flame Spread 0, Smoke Development 0
 - vii. Maximum Scrubbing Cycles: 35
 - viii. ASTM D6578: Level 2
- 8. Gutters and downspouts are supplied and installed by building installer.
 - a. Provide the following or an approved equal:
 - i. Aluminum Gutter Coil
 - ii. Aluminum Downspout Coil
 - iii. Hang Fast Gutter hanger
 - iv. Aluminum Green Gutter Screens
- D. Electrical
 - 1. Electrical rough-in, installation and trim shall be provided by the building installer.
 - a. All underground and/or overhead service to building shall be as specified in the final site plan.
 - b. Building installer is responsible for all necessary wire, connectors, grounding, conduit, and related items to install the building package electrical components and meet all relevant national, state, and local codes
 - c. Building installer shall supply and install all switches and outlets required to complete the building package installation.
- E. Cast-in-place Concrete for Building exterior
 - 1. All equipment, labor, trades, and materials for cast-in-place concrete shall be provided by the building installer.
 - a. Included all materials and labor for building package foundations/footings and interior slabs.

- 2. Footings for the building package are to be dug by the building installer and poured on-site to meet local code for permanent structures. A prefabricated, modular mat placed on compacted base is not an accepted equal to a site specific, site poured, engineered foundation.
- 3. Engineered fill shall be ³/₄" minus crushed aggregate around footings, foundations, and slabs, or as required in the final approved plans.
- 4. Slab vapor barrier shall be 6-mil continuous plastic under the concrete slab, or as required in the final approved plans.
- 5. The foundation shall be installed as designed with all cast in-place concrete poured to dimensions specified, or as required in the final plans.
 - a. Footings will be built to minimum 24" depth or greater if required by local frost depth or permitting authority
 - b. Minimum compressive strength of foundation concrete shall be 3,000 psi at 28 days, 4" +/-1" slump, with max ³/₄" aggregate, cured in accordance with ACI 308, or as required in approved final plans.
 - c. Slabs shall have a fine broom finish with joints required in flat work as shown on plans.
 - d. Steel rebar shall be installed as specified in final plans.
- 6. Building installer shall supply and install concrete slab sealer.
 - a. Seal Krete by Rustoleum or approved equal.
 - b. Concrete slab sealer shall be a water-based, transparent curing, sealing and dust proofing compound with two (2) coats to be applied per manufacturer's instructions.
- F. Other Materials & Equipment
 - 1. Unless otherwise specified, the following products shall be supplied by the building installer.
 - a. Building package installation
 - b. Cast-in-place concrete foundations, footings, interior slabs
 - c. Concrete slab sealer
 - d. Mortar
 - e. Concrete grout
 - f. Rebar
 - g. Latex epoxy paint
 - h. Caulk for siding
 - i. Electrical rough-in installation and trim
 - j. Switches and outlets
 - k. Typical fasteners; for example: roofing nails, staples, etc.
 - I. Fasteners not included in product packaging
 - m. Wood sealant for all decking, glulam beams, posts, and extensions
 - n. All other items within the building footprint indicated on final plans or required by building codes to complete installation of the building package which are not specifically stated as supplied by owner or contractor.

3.2 CONTRACTOR SCOPE ITEMS

The items in this section may be provided by the same *building installer* as defined in Section 3.1 above (typically when a single entity is acting as both the *building installer* and *contractor*), or the items in this section may be provided by a separate entity such as a general contractor or site contractor, hereafter designated as *contractor* (typically when the *building installer* is a separate subcontractor). *Contractor* work will generally include site preparation

and grading, excavations for structures, backfill and/or structural backfill, and any site or utility work outside the building package footprint.

Items in this section are generally to be completed prior to *building installer* beginning its installation work described in Section 3.1 above.

- A. Construction Submittals
 - 1. If required by owner and/or reviewing authority, contractor shall submit product data sheets and relevant information about the specified contractor supplied products below for review and approval.
- B. Warranty
 - Building installer's work shall be warranted against defects in materials and workmanship for a period of not less than one (1) year from the date of acceptance. Acceptance is the date that installation work for the building package is completed, including any relevant final punch list. If final acceptance of the completed building is delayed for reasons beyond building installer's control, the warranty shall be one (1) year from the completion of building installer's installation work and demobilization.
 - 2. Building installer shall pass through to owner all relevant manufacturers warranties for individual products and components supplied by *building installer*.
- C. Electrical
 - 1. Incoming electrical utility lines to within approximately 10' of the building shall be provided by the contractor.
 - a. All underground and/or overhead service to building shall be as specified in the final site plan.
 - b. Electrical meter base and all rough wiring, switches, plugs, and circuit breakers shall be as shown on final plans.
 - c. Contractor supplies and installs the meter base and meter.
- D. Cast-in-place Concrete for Building exterior
 - 1. All equipment, labor, trades, and materials shall be supplied by the contractor.
 - a. Included all materials and labor for exterior/entry slabs and sidewalks.
 - 2. Refer to drawings for sidewalks and entry slabs.
 - a. Minimum concrete compressive strength of 2,500 psi at 28 days.
 - b. Remesh or rebar reinforcement shall be usen in sidewalks.
 - c. All sidewalks shall be finished with a fine broom with control joints installed per the final approved site plan.
- E. Other Materials & Equipment
 - 1. Unless otherwise specified, the following products shall be supplied by the contractor.
 - a. All items not specifically listed as supplied by owner or building installer.
 - b. Any item listed as supplied by "contractor" or "others".
 - 2. Unless specified in the plans or submittals, contractor supplies the following (if applicable):
 - a. Incoming electrical, water, sewer, and gas utilities.
 - b. Asphalt paving
 - c. Masonry pavers
 - d. Sidewalks
 - e. Landscaping
 - f. Site grading

- g. Exterior/entry slabs
- h. Branch circuit breakers
- i. Irrigation equipment
- j. Fire alarm and fire suppression equipment
- k. Lighting equipment not attached to the building
- I. All other items exterior of the building footprint indicated on final plans or required by building codes which are not specifically stated as supplied by owner or building installer.

3.3 OWNER SCOPE ITEMS

- A. Ongoing Maintenance
 - 1. Owner is responsible for ongoing maintenance of the completed restroom building after completion of work by building installer and contractor.
- B. Site Plan
 - 1. Owner (or owner's site engineer) is responsible for providing the final approved site plan to Romtec and/or building installer.
- C. Special Inspection
 - 1. If required, special inspection(s) services shall be provided by the owner.
 - 2. If special inspection(s) are required by the permitting authority or relevant agency(ies), then Romtec, building installer, and/or contractor shall provide reasonable assistance to the owner to accommodate the special inspection(s).
- D. Delivery, Storage, and Handling
 - 1. Owner will coordinate with Romtec, building installer, and/or contractor to receive delivery of the building package onsite.

3.4 ROMTEC DELIVERY, STORAGE, AND HANDLING

- A. **Romtec's** freight shall be based on delivering the product on a 48' to 53' flatbed or van truck and trailers, or as close to those dimensions as can legally access the site. Overall dimensions of the truck and trailers allowed to access the site are: 70' overall length, 102" wide and 168" high.
- B. **Romtec** shall deliver organized building package components in stages as shrinkwrapped pallets that correspond to a typical sequence of construction. A bill of material stating the stages of palletized components shall be included with every delivery.
 - 1. Stage 1 pallets shall include structural components such as block, frames, vents, beams, connectors, trusses, etc.
 - 2. Stage 2 pallets shall include second stage structural components such as filler wall material, windows, skylights, roofing, etc.
 - 3. Stage 3 pallets shall include structural finish components such as siding material, tile, doors etc.
- C. **Romtec** shall coordinate the delivery with the receiving entity (**owner**, **building installer**, and/or **contractor**) as appropriate.

3.5 ROMTEC WARRANTY

- A. The building package and all associated components provided by *Romtec* shall be warranted against defects in materials and workmanship for a period of not less than one (1) year from the date of acceptance. Acceptance is the date of delivery of the building package, or, if delivery is delayed for any reason beyond *Romtec's* control, the date that the building and all its associated components were ready to deliver.
- B. Romtec shall pass through to owner all relevant manufacturers warranties for individual products and components of the building package.

END OF SECTION

SECTION 220523.12

BALL VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. CPVC ball valves.

1.2 DEFINITIONS

- A. CWP: Cold working pressure.
- B. RPTFE: Reinforced polytetrafluoroethylene.
- C. WOG: Water, oil, gas.

1.3 ACTION SUBMITTALS

- A. Product Data:
 - 1. CPVC ball valves.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
 - 1. Protect internal parts against rust and corrosion.
 - 2. Protect threads, flange faces, and soldered ends.
 - 3. Set ball valves open to minimize exposure of functional surfaces.
- B. Use the following precautions during storage:
 - 1. Maintain valve end protection.
 - 2. Store valves indoors and maintain at higher-than-ambient-dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.
- C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use operating handles or stems as lifting or rigging points.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

A. Obtain each type of valve from single source from single manufacturer.

2.2 CPVC BALL VALVES

- A. CPVC Union Ball Valves:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. American Valve, Inc.
 - b. Hayward Flow Control; Hayward Industries, Inc.
 - c. Jomar Valve.
 - d. Red-White Valve Corp.
 - e. Thermoplastic Valves, Inc.
 - 2. Standard: MSS SP-122.
 - 3. Pressure Rating and Temperature: 150 psig at 73 deg F.
 - 4. Body Material: CPVC.
 - 5. Body Design: Union type.
 - 6. End Connections for Valves NPS 2 (DN 50) and Smaller: Detachable, socket.
 - 7. Ball: CPVC; full port.
 - 8. Seals: PTFE or EPDM-rubber O-rings.
 - 9. Handle: Tee shaped.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
- B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
- C. Examine threads on valve and mating pipe for form and cleanliness.
- D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.
- E. Do not attempt to repair defective valves; replace with new valves. Remove defective valves from site.

3.2 INSTALLATION OF VALVES

- A. Install valves with unions or flanges at each piece of equipment arranged to allow space for service, maintenance, and equipment removal without system shutdown.
- B. Provide support to piping adjacent to valves such that no force is imposed upon valves.
- C. Locate valves for easy access.
- D. For valves in horizontal piping, install valves with stem at or above center of pipe.
- E. Install valves in position to allow full valve actuation movement.
- F. Valve Tags: Comply with requirements in Section 220553 "Identification for Plumbing Piping and Equipment" for valve tags and schedules.
- G. Adhere to manufacturer's written installation instructions. When soldering or brazing valves, do not heat valves above maximum permitted temperature. Do not use solder with melting point temperature above valve manufacturer's recommended maximum.

3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service, but before final adjusting and balancing. Replace valves exhibiting leakage.

END OF SECTION 220523.12

SECTION 220529

HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fiberglass pipe hangers.
- 1.2 ACTION SUBMITTALS
 - A. Product Data: For each type of product.

PART 2 - PRODUCTS

- 2.1 FIBERGLASS PIPE HANGERS
 - A. Clevis-Type, Fiberglass Pipe Hangers:
 - 1. Description: Similar to MSS SP-58, Type 1 steel pipe hanger, except hanger is made of fiberglass or fiberglass-reinforced resin.
 - 2. Hanger Rods: Continuous-thread rod, washer, and nuts made of fiberglass.
 - 3. Flammability: ASTM D635, ASTM E84, UL 94.
 - B. Strap-Type, Fiberglass Pipe Hangers:
 - 1. Description: Similar to MSS SP-58, Type 9 or Type 10 steel pipe hanger, except hanger is made of fiberglass-reinforced resin.
 - a. Flammability: ASTM D635, ASTM E84, UL 94.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping materials and installation, for penetrations through fire-rated walls, ceilings, and assemblies.
- B. 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.

3.2 INSTALLATION OF HANGERS AND SUPPORTS

- A. Fiberglass Pipe-Hanger Installation: Comply with applicable portions of MSS SP-58. Install hangers and attachments as required to properly support piping from building structure.
- B. Pipe-Positioning-System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture.
- C. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.
- D. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
- E. Install lateral bracing with pipe hangers and supports to prevent swaying.
- F. Load Distribution: Install hangers and supports, so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
- G. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

3.3 ADJUSTING

- A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.
- B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

END OF SECTION 220529

SECTION 220553

IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe labels.
 - 2. Valve tags.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Valve-numbering scheme.
- C. Valve Schedules: For each piping system. Include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 PIPE LABELS

- A. General Requirements for Manufactured Pipe Labels: Preprinted, color coded, with lettering indicating service and showing flow direction in accordance with ASME A13.1.
- B. Letter and Background Color: As indicated for specific application under Part 3.
- C. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.
- D. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings. Also include:
 - 1. Pipe size.
 - 2. Flow-Direction Arrows: Include flow-direction arrows on distribution piping. Arrows may be either integral with label or applied separately.
 - 3. Lettering Size: Size letters in accordance with ASME A13.1 for piping.

2.2 VALVE TAGS

- A. Description: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2inch numbers.
 - 1. Tag Material: Stainless steel, 0.024-inch minimum thickness, with predrilled or stamped holes for attachment hardware.
 - 2. Fasteners: Stainless steel beaded chain.

- B. Letter and Background Color: As indicated for specific application under Part 3.
- C. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.
 - 1. Include valve-tag schedule in operation and maintenance data.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of incompatible primers, paints, and encapsulants, as well as dirt, oil, grease, release agents, and other substances that could impair bond of identification devices.

3.2 INSTALLATION, GENERAL REQUIREMENTS

- A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- B. Coordinate installation of identifying devices with locations of access panels and doors.
- C. Install identifying devices before installing acoustical ceilings and similar concealment.
- D. Locate identifying devices so that they are readily visible from the point of normal approach.

3.3 INSTALLATION OF PIPE LABELS

- A. Install pipe labels showing service and flow direction with permanent adhesive on pipes.
- B. Pipe-Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:
 - 1. Within 3 ft. of each valve and control device.
 - 2. At access doors, manholes, and similar access points that permit view of concealed piping.
 - 3. Within 3 ft. of equipment items and other points of origination and termination.
 - 4. Spaced at maximum intervals of 25 ft. along each run. Reduce intervals to 10 ft. in areas of congested piping and equipment.
- C. Do not apply plastic pipe labels or plastic tapes directly to bare pipes conveying fluids at temperatures of 125 deg F or higher. Where these pipes are to remain uninsulated, use a short section of insulation or use stenciled labels.
- D. Flow-Direction Flow Arrows: Use arrows, in compliance with ASME A13.1, to indicate direction of flow in pipes, including pipes where flow is allowed in both directions.
- E. Pipe-Label Color Schedule:

- 1. Domestic Cold-Water Piping: White letters on an ANSI Z535.1 safety-green background.
- 2. Sanitary Waste Piping: White letters on a black background.
- 3. Nonpotable Cold Water: Black letters on an ANSI Z535.1 safety-yellow background.

3.4 INSTALLATION OF VALVE TAGS

- A. Install tags on valves and control devices in piping systems, except check valves, valves within factory-fabricated equipment units, shutoff valves, faucets, convenience and lawn-watering hose connections, and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule in the operating and maintenance manual.
- B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in "Valve-Tag Size and Shape" Subparagraph below:
 - 1. Valve-Tag Size and Shape:
 - a. Domestic Cold Water: 1-1/2 inches, round.
 - b. Nonpotable Cold Water: 1-1/2 inches, round.
 - 2. Valve-Tag Colors:
 - a. For each piping system, use the same lettering and background coloring system on valve tags as used in the piping system labels and background.

END OF SECTION 220553

SECTION 221116

DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. CPVC piping domestic water.
 - 2. Piping joining materials domestic water.
- B. Related Requirements:
 - 1. Section 331415 "Site Water Distribution Piping" for water-service piping outside the building from source to the point where water-service piping enters the building.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- 1.3 INFORMATIONAL SUBMITTALS
 - A. System purging and disinfecting activities report.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Domestic water piping, tubing, fittings, joints, and appurtenances intended to convey or dispense water for human consumption are to comply with the U.S. Safe Drinking Water Act, with requirements of authorities having jurisdiction, and with NSF 61 and NSF 372, or be certified in compliance with NSF 61 and NSF 372 by an ANSI-accredited third-party certification body, in that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.

2.2 PIPING MATERIALS

A. Potable-water piping and components are to comply with NSF 14, NSF 61, and NSF 372.

2.3 CPVC PIPING - DOMESTIC WATER

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1. Charlotte Pipe and Foundry Company.

- 2. IPEX USA LLC.
- 3. Spears Manufacturing Company.
- B. Source Limitations: Obtain CPVC piping from single manufacturer.
- C. CPVC Pipe: ASTM F441/F441M, with wall thickness as indicated in "Piping Applications" Article.
 - 1. CPVC Socket Fittings: ASTM F438 for Schedule 40 and ASTM F439 for Schedule 80.
 - 2. CPVC Threaded Fittings: ASTM F437, Schedule 80.

2.4 PIPING JOINING MATERIALS - DOMESTIC WATER

- A. Solvent Cements for Joining CPVC Piping and Tubing: ASTM F493.
- B. Adhesive Primer for Joining CPVC Piping and Tubing: ASTM F565.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS

- A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.
- B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.
- C. Under-building-slab, domestic water, building-service piping, NPS 3 (DN 80) and smaller is to be the following:
 - 1. CPVC, Schedule 80; socket fittings; and solvent-cemented joints.
- D. Aboveground domestic water piping, NPS 2 (DN 50) and smaller is to be the following:
 1. CPVC, Schedule 40; socket fittings; and solvent-cemented joints.

3.2 EARTHWORK

A. Comply with requirements in Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

3.3 INSTALLATION OF PIPING

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install valves in accordance with Section 220523.12 "Ball Valves for Plumbing Piping."

- C. Install water-pressure-reducing valves downstream from shutoff valves. Comply with requirements for pressure-reducing valves in Section 221119 "Domestic Water Piping Specialties."
- D. Install domestic water piping level and plumb.
- E. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.
- F. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- G. Install piping to permit valve servicing.
- H. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.
- I. Install piping free of sags and bends.
- J. Install fittings for changes in direction and branch connections.
- K. Install sleeves for piping penetrations of walls, ceilings, and floors.

3.4 JOINT CONSTRUCTION

- A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- C. Joint Construction for Solvent-Cemented Plastic Piping: Clean and dry joining surfaces. Join pipe and fittings in accordance with the following:
 - 1. Comply with ASTM F402 for safe-handling practice of cleaners, primers, and solvent cements. Apply primer.
 - 2. CPVC Piping: Join in accordance with ASTM D2846/D2846M.

3.5 INSTALLATION OF HANGERS AND SUPPORTS

- A. Comply with requirements for hangers, supports, and anchor devices in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment."
- B. Install vinyl-coated hangers for CPVC pipe, with maximum horizontal spacing and minimum rod diameters, to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- C. Support horizontal piping within 12 inches of each fitting.
- D. Support vertical runs of CPVC pipe to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

3.6 PIPING CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.
- C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

3.7 IDENTIFICATION

A. Identify system components. Comply with requirements for identification materials and installation in Section 220553 "Identification for Plumbing Piping and Equipment."

3.8 CLEANING

- A. Clean and disinfect potable domestic water piping as follows:
 - 1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
 - 2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:
 - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - b. Fill and isolate system in accordance with either of the following:
 - 1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours.
 - 2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours.
 - c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
 - d. Repeat procedures if biological examination shows contamination.
 - e. Submit water samples in sterile bottles to authorities having jurisdiction.
- B. Clean non-potable domestic water piping as follows:
 - 1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
 - 2. Use purging procedures prescribed by authorities having jurisdiction or; if methods are not prescribed, follow procedures described below:
 - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - b. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.
- C. Prepare and submit reports of purging and disinfecting activities. Include copies of watersample approvals from authorities having jurisdiction.
D. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.9 ADJUSTING

- A. Perform the following adjustments before operation:
 - 1. Close drain valves, hydrants, and hose bibbs.
 - 2. Open shutoff valves to fully open position.
 - 3. Open throttling valves to proper setting.
 - 4. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.
 - a. Manually adjust ball-type balancing valves in hot-water-circulation return piping to provide hot-water flow in each branch.
 - b. Adjust calibrated balancing valves to flows indicated.
 - 5. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
 - 6. Remove and clean strainer screens. Close drain valves and replace drain plugs.
 - 7. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
 - 8. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.10 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 - 1. Piping Inspections:
 - a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
 - b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
 - 1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after installation and before setting fixtures.
 - Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.
 - c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
 - d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
 - 2. Piping Tests:
 - a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
 - b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.

- c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
- d. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
- e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
- f. Prepare reports for tests and for corrective action required.
- B. Domestic water piping will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 221116

SECTION 221119

DOMESTIC WATER PIPING SPECIALTIES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Backflow preventers.
 - 2. Water pressure-reducing valves.
 - 3. Hose bibbs.
 - 4. Water-hammer arresters.
 - 5. Trap-seal primer device.
- B. Related Requirements:
 - 1. Section 221116 "Domestic Water Piping."
- 1.2 ACTION SUBMITTALS
 - A. Product Data: For each type of product.
- 1.3 CLOSEOUT SUBMITTALS
 - A. Operation and Maintenance Data: For domestic water piping specialties to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. Domestic water piping specialties intended to convey or dispense water for human consumption are to comply with the SDWA, requirements of authorities having jurisdiction, and NSF 61 and NSF 372, or to be certified in compliance with NSF 61 and NSF 372 by an American National Standards Institute (ANSI)-accredited third-party certification body that the weighted average lead content at wetted surfaces is less than or equal to 0.25 percent.

2.2 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 150 psig unless otherwise indicated.

2.3 BACKFLOW PREVENTERS

- A. Reduced-Pressure-Principle Backflow Preventers:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Apollo Valves; a part of Aalberts Integrated Piping Systems.
 - b. WATTS; A Watts Water Technologies Company.
 - c. Zurn Industries, LLC.
 - 2. Standard: ASSE 1013.
 - 3. Operation: Continuous-pressure applications.
 - 4. Pressure Loss: 12 psig maximum, through middle third of flow range.
 - 5. Size: NPS 2.
 - 6. Design Flow Rate: 100 gpm.
 - 7. Body: Cast silicon copper alloy for NPS 2 and smaller.
 - 8. End Connections: Threaded for NPS 2 and smaller.
 - 9. Configuration: Designed for horizontal, straight-through flow.
 - 10. Accessories:
 - a. Valves NPS 2 (DN 50) and Smaller: Ball type with threaded ends on inlet and outlet.
 - b. Air-Gap Fitting: ASME A112.1.2, matching backflow-preventer connection.

2.4 WATER PRESSURE-REDUCING VALVES

- A. Water Regulators:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Apollo Valves; a part of Aalberts Integrated Piping Systems.
 - b. WATTS; A Watts Water Technologies Company.
 - c. Zurn Industries, LLC.
 - 2. Standard: ASSE 1003.
 - 3. Pressure Rating: Initial working pressure of 150 psig.
 - 4. Size: NPS 2.
 - 5. Design Flow Rate: 100 gpm.
 - 6. Design Inlet Pressure: 80 psig.
 - 7. Design Outlet Pressure Setting: 60 psig.
 - 8. Body: Bronze for NPS 2 and smaller.
 - 9. End Connections: Threaded or solder for NPS 2 and smaller.
- 2.5 HOSE BIBBS
 - A. Hose Bibbs:

- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Acorn Engineering Company.
 - b. Jay R. Smith Mfg Co; a division of Morris Group International.
 - c. WATTS; A Watts Water Technologies Company.
 - d. Zurn Industries, LLC.
- 2. Standard: ASME A112.18.1 for sediment faucets.
- 3. Body Material: Bronze.
- 4. Seat: Bronze, replaceable.
- 5. Supply Connections: NPS 1/2 or NPS 3/4 threaded or solder-joint inlet.
- 6. Outlet Connection: Garden-hose thread complying with ASME B1.20.7.
- 7. Pressure Rating: 125 psig.
- 8. Vacuum Breaker: Integral[or field-installation,] nonremovable, drainable, hoseconnection vacuum breaker complying with ASSE 1011.
- 9. Finish for Equipment Rooms: Rough bronze, or chrome or nickel plated.
- 10. Operation for Equipment Rooms: Operating key.
- 11. Include operating key with each operating-key hose bibb.
- 12. Include wall flange with each chrome- or nickel-plated hose bibb.

2.6 WATER-HAMMER ARRESTERS

- A. Water-Hammer Arresters:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Jay R. Smith Mfg Co; a division of Morris Group International.
 - b. Precision Plumbing Products.
 - c. Sioux Chief Manufacturing Company, Inc.
 - d. WATTS; A Watts Water Technologies Company.
 - e. Zurn Industries, LLC.
 - 2. Standard: ASSE 1010 or PDI-WH 201.
 - 3. Type: Metal bellows.
 - 4. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

2.7 TRAP-SEAL PRIMER DEVICE

- A. Supply-Type, Trap-Seal Primer Device:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Jay R. Smith Mfg Co; a division of Morris Group International.
 - b. Precision Plumbing Products.
 - c. Sioux Chief Manufacturing Company, Inc.
 - d. WATTS; A Watts Water Technologies Company.
 - e. Zurn Industries, LLC.

- 2. Standard: ASSE 1018.
- 3. Pressure Rating: 125 psig minimum.
- 4. Body: Bronze.
- 5. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
- 6. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.
- 7. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

PART 3 - EXECUTION

3.1 INSTALLATION OF PIPING SPECIALTIES

- A. Backflow Preventers: Install in each water supply to mechanical equipment and systems and to other equipment and water systems that may be sources of contamination. Comply with authorities having jurisdiction.
 - 1. Locate backflow preventers in same room as connected equipment or system.
 - 2. Install drain for backflow preventers with atmospheric-vent drain connection with air-gap fitting, fixed air-gap fitting, or equivalent positive pipe separation of at least two pipe diameters in drain piping and pipe-to-floor drain. Locate air-gap device attached to or under backflow preventer. Simple air breaks are unacceptable for this application.
 - 3. Do not install bypass piping around backflow preventers.
- B. Water Regulators: Install with inlet and outlet shutoff valves[and bypass with memory-stop balancing valve]. Install pressure gauges on inlet and outlet.
- C. Water-Hammer Arresters: Install in water piping in accordance with PDI-WH 201.
- D. Supply-Type, Trap-Seal Primer Device: Install with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.

3.2 PIPING CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. When installing piping specialties adjacent to equipment and machines, allow space for service and maintenance.

3.3 IDENTIFICATION

- A. Plastic Labels for Equipment: Install engraved plastic-laminate equipment nameplate or sign on or near each of the following:
 - 1. Backflow preventers.
 - 2. Water pressure-reducing valves.
 - 3. Trap-seal primer device.
- B. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to

identifying unit. Nameplates and signs are specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.4 ADJUSTING

- A. Set field-adjustable pressure set points of water pressure-reducing valves.
- B. Adjust each reduced-pressure-principle backflow preventer in accordance with manufacturer's written instructions, authorities having jurisdiction and the device's reference standard.

3.5 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections[with the assistance of a factory-authorized service representative].
 - 1. Test each pressure vacuum breaker and reduced-pressure-principle backflow preventer according to authorities having jurisdiction and the device's reference standard.
 - 2. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 - 3. Operational Test: After electrical circuitry has been energized, start units to confirm unit operation.
 - 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Domestic water piping specialties will be considered defective if they do not pass tests and inspections.
- C. Prepare test and inspection reports.

END OF SECTION 221119

SECTION 221316

SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. PVC pipe and fittings.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 FIELD CONDITIONS

- A. Interruption of Existing Sanitary Waste Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service in accordance with requirements indicated:
 - 1. Notify Construction Manager no fewer than two days in advance of proposed interruption of sanitary waste service.
 - 2. Do not proceed with interruption of sanitary waste service without Owner's written permission.

1.4 WARRANTY

A. Listed manufacturers to provide labeling and warranty of their respective products.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Components and installation are capable of withstanding the following minimum working pressure unless otherwise indicated:
 - 1. Soil, Waste, and Vent Piping: 10 ft. head of water.

2.2 PIPING MATERIALS

- A. Piping materials to bear label, stamp, or other markings of specified testing agency.
- B. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

- 2.3 PVC and CPVC PIPE AND FITTINGS
 - A. Comply with NSF 14 for plastic piping components. Include "NSF-dwv" marking for plastic drain, waste, and vent piping and "NSF-sewer" marking for plastic sewer piping.
 - B. Solid-Wall PVC and CPVC Pipe: ASTM D2665 drain, waste, and vent.
 - C. PVC and CPVC Socket Fittings: ASTM D2665, made in accordance with ASTM D3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.
 - D. Adhesive Primer: ASTM F656.
 - E. Solvent Cement: ASTM D2564.

PART 3 - EXECUTION

3.1 EARTH MOVING

A. Comply with requirements for excavating, trenching, and backfilling specified in Section 312000 "Earth Moving."

3.2 INSTALLATION OF PIPING

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems.
 - 1. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations.
 - 2. Install piping as indicated unless deviations to layout are approved on coordination drawings.
- B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping to allow application of insulation.
- J. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends.

- 1. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical.
- 2. Use long-turn, double Y-branch, and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe.
 - a. Straight tees, elbows, and crosses may be used on vent lines.
- 3. Do not change direction of flow more than 90 degrees.
- 4. Use proper size of standard increasers and reducers if pipes of different sizes are connected.
 - a. Reducing size of waste piping in direction of flow is prohibited.
- K. Lay buried building waste piping beginning at low point of each system.
 - 1. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream.
 - 2. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
 - 3. Maintain swab in piping and pull past each joint as completed.
- L. Install soil and waste and vent piping at the following minimum slopes unless otherwise indicated:
 - 1. Building Sanitary Waste: Two percent downward in direction of flow for piping NPS 3 and smaller; 2 percent (or as shown on plan) downward in direction of flow for piping NPS 4 and larger.
 - 2. Horizontal Sanitary Waste Piping: Two percent (or as shown on plan) downward in direction of flow.
 - 3. Vent Piping: One percent down toward vertical fixture vent or toward vent stack.
- M. Install aboveground PVC piping in accordance with ASTM D2665.
- N. Install underground PVC piping in accordance with ASTM D2321.
- O. Plumbing Specialties:
 - 1. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary waste gravity-flow piping.
 - a. Install cleanout fitting with closure plug inside the building in sanitary drainage force-main piping.
 - b. Comply with requirements for cleanouts specified in Section 221319 "Sanitary Waste Piping Specialties."
 - 2. Install drains in sanitary waste gravity-flow piping.
 - a. Comply with requirements for drains specified in Section 221319 "Sanitary Waste Piping Specialties."
- P. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

3.3 JOINT CONSTRUCTION

- A. Plastic, Nonpressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings in accordance with the following:
 - 1. Comply with ASTM F402 for safe-handling practice of cleaners, primers, and solvent cements.
 - 2. PVC Piping: Join in accordance with ASTM D2855 and ASTM D2665 appendixes.

3.4 INSTALLATION OF HANGERS AND SUPPORTS

- A. Comply with requirements for pipe hanger and support devices and installation specified in Section 220529 "Hangers and Supports for Plumbing Piping and Equipment".
 - 1. Install fiberglass pipe hangers for horizontal piping in corrosive environments.
 - 2. Install stainless steel pipe support clamps for vertical piping in corrosive environments.
 - 3. Vertical Piping: MSS Type 8 or Type 42 clamps.
 - 4. Install individual, straight, horizontal piping runs:
 - a. 100 Ft. (30 m) and Less: MSS Type 1, adjustable clevis hangers.
 - 5. Multiple, Straight, Horizontal Piping Runs 100 Ft. (30 m) or Longer: MSS Type 44 pipe rolls. Support pipe rolls on trapeze.
- B. Install hangers for PVC piping, with maximum horizontal spacing and minimum rod diameters, to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.
- C. Support horizontal piping and tubing within 12 inches of each fitting and coupling.
- D. Support vertical runs of PVC piping to comply with manufacturer's written instructions, locally enforced codes, and authorities having jurisdiction requirements, whichever are most stringent.

3.5 CONNECTIONS

- A. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.
- C. Connect waste and vent piping to the following:
 - 1. Plumbing Fixtures: Connect waste piping in sizes indicated, but not smaller than required by plumbing code.
 - 2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
 - 3. Plumbing Specialties: Connect waste and vent piping in sizes indicated, but not smaller than required by plumbing code.
 - 4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.
 - 5. Comply with requirements for cleanouts and drains specified in Section 221319 "Sanitary Waste Piping Specialties."
 - 6. Equipment: Connect waste piping as indicated.

- a. Provide shutoff valve if indicated and union for each connection.
- b. Use flanges instead of unions for connections NPS 2-1/2 and larger.
- D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.
- E. Make connections in accordance with the following unless otherwise indicated:
 - 1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
 - 2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.

3.6 IDENTIFICATION

- A. Identify exposed sanitary waste and vent piping.
- B. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.7 FIELD QUALITY CONTROL

- A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.
 - 1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
 - 2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
- B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.
- C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
- D. Test sanitary waste and vent piping in accordance with procedures of authorities having jurisdiction or, in absence of published procedures, as follows:
 - 1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired.
 - a. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
 - 2. Leave uncovered and unconcealed new, altered, extended, or replaced waste and vent piping until it has been tested and approved.
 - a. Expose work that was covered or concealed before it was tested.
 - 3. Roughing-in Plumbing Test Procedure: Test waste and vent piping except outside leaders on completion of roughing-in.

- a. Close openings in piping system and fill with water to point of overflow, but not less than 10 ft. head of water.
- b. From 15 minutes before inspection starts to completion of inspection, water level must not drop.
- c. Inspect joints for leaks.
- 4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight.
 - a. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1 inch wg.
 - b. Use U-tube or manometer inserted in trap of water closet to measure this pressure.
 - c. Air pressure must remain constant without introducing additional air throughout period of inspection.
 - d. Inspect plumbing fixture connections for gas and water leaks.
- 5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
- 6. Prepare reports for tests and required corrective action.

3.8 CLEANING AND PROTECTION

- A. Clean interior of piping. Remove dirt and debris as work progresses.
- B. Protect sanitary waste and vent piping during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.
- C. Place plugs in ends of uncompleted piping at end of day and when work stops.
- D. Exposed Plastic Piping: Protect PVC plumbing vents exposed to sunlight with two coats of water-based latex paint.
- E. Repair damage to adjacent materials caused by waste and vent piping installation.

END OF SECTION 221316

SECTION 221319

SANITARY WASTE PIPING SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Cleanouts.
 - 2. Miscellaneous sanitary drainage piping specialties.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTIONS

- A. Sanitary waste piping specialties shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF 14 for plastic sanitary waste piping specialty components.

2.2 CLEANOUTS

- A. Cast-Iron Exposed Floor Cleanouts <Insert drawing designation, if any>:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Jay R. Smith Mfg Co; a division of Morris Group International.
 - b. Sioux Chief Manufacturing Company, Inc.
 - c. WATTS; A Watts Water Technologies Company.
 - d. Zurn Industries, LLC.
 - 2. Standard: ASME A112.36.2M for adjustable housing cleanout.
 - 3. Size: Same as connected branch.
 - 4. Body or Ferrule: Cast iron.

- 5. Closure: Plastic plug.
- 6. Adjustable Housing Material: Cast iron with setscrews or other device.
- 7. Frame and Cover Material and Finish: Stainless steel.
- 8. Frame and Cover Shape: Round.
- 9. Top-Loading Classification: Heavy Duty.
- B. Plastic Floor Cleanouts:
 - 1. Size: Same as connected branch.
 - 2. Body: PVC.
 - 3. Closure Plug: PVC.
 - 4. Riser: Drainage pipe fitting and riser to cleanout of same material as drainage piping.

2.3 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

- A. Floor-Drain, Trap-Seal Primer Fittings <Insert drawing designation, if any>:
 - 1. Description: Cast iron, with threaded inlet and threaded or spigot outlet, and trap-seal primer valve connection.
 - 2. Size: Same as floor drain outlet with NPS 1/2 side inlet.
- B. Vent Caps:
 - 1. Description: Cast-iron body with threaded or hub inlet and vandal-proof design. Include vented hood and setscrews to secure to vent pipe.
 - 2. Size: Same as connected stack vent or vent stack.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:
 - 1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
 - 2. Locate at each change in direction of piping greater than 45 degrees.
 - 3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
 - 4. Locate at base of each vertical soil and waste stack.
- B. For floor cleanouts for piping below floors, install cleanout deck plates with top flush with finished floor.
- C. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.
- D. Install floor-drain, trap-seal primer fittings on inlet to floor drains that require trap-seal primer connection.
 - 1. Exception: Fitting may be omitted if trap has trap-seal primer connection.
 - 2. Size: Same as floor drain inlet.

E. Install vent caps on each vent pipe passing through roof.

3.2 PIPING CONNECTIONS

- A. Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to equipment, to allow service and maintenance.

3.3 LABELING AND IDENTIFYING

- A. Distinguish among multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations, in addition to identifying unit.
 - 1. Nameplates and signs are specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.4 PROTECTION

- A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 221319

SECTION 221319.13

SANITARY DRAINS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Floor drains.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 DRAIN ASSEMBLIES

- A. Sanitary drains shall bear label, stamp, or other markings of specified testing agency.
- B. Comply with NSF 14 for plastic sanitary piping specialty components.

2.2 FLOOR DRAINS

- A. Cast-Iron Floor Drains:
 - 1. <Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Jay R. Smith Mfg Co; a division of Morris Group International.
 - b. Sioux Chief Manufacturing Company, Inc.
 - c. WATTS; A Watts Water Technologies Company.
 - d. Zurn Industries, LLC.
 - 2. Standard: ASME A112.6.3.
 - 3. Pattern: Floor drain.
 - 4. Body Material: PVC.
 - 5. Seepage Flange: Required.
 - 6. Anchor Flange: Required.

- 7. Clamping Device: Required.
- 8. Sediment Bucket: Required.
- 9. Top or Strainer Material: Stainless steel.
- 10. Top of Body and Strainer Finish: Stainless steel.
- 11. Top Shape: Round.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install floor drains at low points of surface areas to be drained. Set grates of drains flush with finished floor, unless otherwise indicated.
 - 1. Position floor drains for easy access and maintenance.
 - 2. Set floor drains below elevation of surrounding finished floor to allow floor drainage.
 - 3. Set with grates depressed according to the following drainage area radii:
 - a. Radius, 30 Inches or Less: Equivalent to 1 percent slope, but not less than 1/4inch total depression.
 - b. Radius, 30 to 60 Inches: Equivalent to 1 percent slope.
 - c. Radius, 60 Inches or Larger: Equivalent to 1 percent slope, but not greater than 1inch total depression.
 - 4. Install floor-drain flashing collar or flange, so no leakage occurs between drain and adjoining flooring.
 - a. Maintain integrity of waterproof membranes where penetrated.
 - 5. Install individual traps for floor drains connected to sanitary building drain, unless otherwise indicated.

3.2 CONNECTIONS

- A. Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Comply with requirements in Section 221319 "Sanitary Waste Piping Specialties" for backwater valves, air admittance devices and miscellaneous sanitary drainage piping specialties.
- C. Install piping adjacent to equipment to allow service and maintenance.

3.3 PROTECTION

- A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.
- B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION 221319.13

Section 26 00 00 ELECTRICAL

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall furnish all labor, materials, equipment, tools, and transportation necessary for the complete installation of the electrical system.
 - 1. This includes the installation or modification of electrical service, distribution, lighting, power, grounding, and control systems as indicated in the project plans.
- B. Contractor Responsibility: Contractor to furnish all electrical bulk materials including conductors, cables, lighting and other equipment as specified herein. Contractor shall at all times follow applicable laws and regulations including all OSHA construction-site specific requirements. Per CEC 110.12 Contractor shall all electrical equipment in a neat and workmanlike manner. At the end of each day, contractor shall clean the work site of all debris, scrap or waste material produced by Contractor.
- C. Contractor shall perform all work shown on electrical sheets marked "E-XX" including:
 - 1. Tie-in with direct bus-tap of existing main switchboard.
 - 2. Installation of new enclosed circuit breaker in proximity of existing main switchboard.
 - 3. Installation of Feeder circuit to new Splashpad Mechanical room.
 - 4. Installation of dry-type transformer in new Splashpad Mechanical room.
 - 5. Installation of (1) new lighting circuit and (3) linear LED light fixtures.
 - 6. Alternate Bid Scope = (5) linear LED light fixtures.
- D. Contractor to coordinate additional electrical scope (if any) with Splashpad vendor. Where Splashpad or other equipment manufacturer specifications differ from these specifications, the more stringent specification shall be used. Where specifications are in conflict, equipment manufacturer's recommendations shall be used per CEC 110.3(B).
- E. Permit Requirements: Electrical Building Permit: contractor to ensure AHJ approved engineering drawings are provided before commencement of construction.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Institute of Electrical and Electronics Engineers (IEEE)

1.3 DEFINITIONS

- A. Panelboard: Fed from main switchboard or another panelboard and feeds branch circuits or feeders.
- B. Dedicated Circuit: A branch circuit which will serve only one load or group of loads.
- C. Interrupting Rating: Maximum fault current, in RMS symmetrical amperes at maximum listed voltage, that a device will interrupt (open) to clear a faulted circuit. Device must still be operational aGer interrupting fault.
- D. Main Switchboard: Switching, disconnecting, over current and metering equipment rated 600 volts or less, which feeds panelboards or motor control centers.
- E. Motor Control Center: A structure which groups and houses several "modular" type motor controllers. It may also contain fusible disconnects, small transformers, and panelboards.
- F. Power Conditioning: May be applied to any circuit (usually to individual pieces of equipment) and must be selected and sized for exact load it serves. A voltage regulator, isolation transformer, or variable frequency drives are types of power conditioning.
- G. Surge Suppression: May be applied to any circuit and consists of varistors and /or similar type suppressors with a maximum clamping voltage of approximately 260VAC for 120VAC circuits. Devices are bi-directional. Suppression is applied between all conductors. These devices protect against transient voltage spikes and minor lightning strikes.
- H. Uninterruptable Power Supply: Furnishes power to load even on complete loss of mains power. Will supply power for a limited time, to allow an orderly shutdown of equipment without causing damage, or loss of data.
- I. Withstand Rating: Maximum fault current, at maximum rated voltage, in RMS symmetrical amperes that a device can withstand (pass) during a fault and function aGer fault is cleared. Sometimes listed as Short Circuit Current Rating (SCCR).
- J. OSHA: The United States Occupational Safety and Health Administration
- K. NRTL: A Nationally Recognized Testing Laboratory certified by OSHA. OSHA maintains a list of certified NRTLs at the

following website: https://www.osha.gov/nationally-recognized-testing-laboratory-program/current-list-of-nrtls

1.4 SUBMITTALS

- A. Materials List: Include wiring, conduits, switches, panels, circuit breakers, and control components.
- B. Manufacturer's Data: Submit manufacturer's catalog cuts, specifications, and operating instructions for all equipment listed.
- C. Shop Drawings: Provide detailed drawings of the electrical system, including wiring diagrams, panel schedules, and equipment locations.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging.
- B. Store materials in a dry, secure location to prevent damage or deterioration.
- C. Handle materials carefully to avoid damage during installation.

PART 2 - PRODUCTS

2.1 ELECTRICAL SYSTEM COMPONENTS

- A. Wiring: Copper conductors with insulation suitable for the application.
- B. Conduits: Rigid metal conduit (RMC), electrical metallic tubing (EMT), or other approved conduits.
- C. Switches and Receptacles: Heavy-duty, commercial-grade devices.
- D. Panels and Circuit Breakers: Suitable for the electrical loads and compliant with NEC standards.
- E. Lighting Fixtures: As specified in the project plans.
- F. Grounding Equipment: Ground rods, clamps, and conductors as required by code.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install all wiring, conduits, and electrical components in accordance with the project plans and NEC requirements.
- B. Ensure that all connections are secure and that all components are properly supported.
- C. Install grounding system and ensure it complies with NEC standards.

3.2 Testing and Inspection

- A. Test all electrical systems for proper operation and compliance with specifications.
- B. Perform insulation resistance tests, continuity tests, and voltage tests.
- C. Coordinate inspections with the project inspector and correct any deficiencies noted.

3.3 Commissioning

- A. Provide a complete demonstration of the electrical system to the owner's representative.
- B. Provide training to the owner's maintenance staff on the operation and maintenance of the electrical system.
- C. Submit as-built drawings and operation manuals to the owner.

END OF SECTION 26 00 00

Section 26 01 00 OPERATION AND MAINTENANCE OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall provide operation and maintenance services for the electrical systems, including all necessary labor, materials, equipment, and tools.
- B. This includes regular inspections, testing, preventive maintenance, and repair services to ensure the electrical systems operate efficiently and safely.
- C. Normal Service is 480 volts served from the Electric Utility.
- D. Transformer's secondary voltage is preferred to be 208Y/120 volt. Required 120/208 volt systems should be achieved through dry type step-down transformers located adjacent to the 120/208 volt power panels.
- E. The use of isolation transformers, variable speed drives or other Power Conditioning equipment is per design drawings.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Institute of Electrical and Electronics Engineers (IEEE)

1.3 SUBMITTALS

- A. Maintenance Schedule: Detailed schedule outlining regular inspection and maintenance activities.
- B. Maintenance Logs: Records of all maintenance activities, including inspections, tests, repairs, and replacements.
- C. Manufacturer's Instructions: Submit manufacturer's operation and maintenance instructions for all equipment covered under this section.

1.4 QUALIFICATIONS

- A. Personnel: Technicians performing maintenance work shall be certified and trained in accordance with applicable standards and regulations.
- B. Experience: Contractor must have a proven track record of maintaining similar electrical systems.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Replacement Parts: All replacement parts shall be identical or equivalent to the original components and approved by the system manufacturer.
- B. Lubricants and Cleaning Agents: Use only those recommended by the equipment manufacturer and suitable for the specific application.

PART 3 - EXECUTION

3.1 INSPECTION AND TESTING

- A. Perform regular inspections and tests as specified in the maintenance schedule.
- B. Conduct visual inspections of all electrical components, checking for signs of wear, damage, or corrosion.
- C. Test circuit breakers, switches, and other control devices to ensure proper operation.

3.2 PREVENTIVE MAINTENANCE

- A. Clean and lubricate equipment as necessary to prevent premature wear and ensure smooth operation.
- B. Tighten all electrical connections to prevent loose connections and potential electrical faults.
- C. Replace worn or damaged components promptly to avoid system failure.

3.3 REPAIRS AND REPLACEMENTS

A. Perform repairs and replacements as needed to maintain the electrical system in optimal working condition.

- B. Ensure that all repairs and replacements comply with NEC and manufacturer's specifications.
- C. Document all repairs and replacements in the maintenance logs.

3.4 TRAINING

- A. Provide training to the owner's maintenance staff on the proper operation and maintenance of the electrical systems.
- B. Include instructions on troubleshooting common issues and performing routine maintenance tasks.

3.5 REPORTING

- A. Submit detailed maintenance logs and reports to the owner on a regular basis, including findings from inspections, tests, and maintenance activities.
- B. Notify the owner of any major issues or required repairs promptly.

END OF SECTION 26 01 00

Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall provide all labor, materials, tools, and equipment necessary to complete the common work for electrical systems as specified in the project documents.
- B. This includes the installation, testing, and commissioning of electrical systems and components that are common to multiple electrical sections.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Institute of Electrical and Electronics Engineers (IEEE)

1.3 SUBMITTALS

- A. Materials List: Include cables, conduits, fittings, junction boxes, and other common electrical components.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and operating instructions for all products listed.
- C. Shop Drawings: Provide detailed drawings showing the layout, routing, and connections of common electrical work.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

PART 2 - PRODUCTS

2.1 ELECTRICAL SYSTEM COMPONENTS

- A. Wiring: Copper conductors with insulation suitable for the specific application.
- B. Conduits: Rigid metal conduit (RMC), electrical metallic tubing (EMT), or other approved conduit types.
- C. Fittings: Compatible with the selected conduit types and suitable for the intended use.
- D. Junction Boxes: NEMA-rated boxes appropriate for the environment and application.
- E. Support Systems: Struts, brackets, hangers, and other hardware necessary for supporting electrical components.
- F. PVC conduit under "Slab on Grade" construction must be in sand fill 6" below slab.
- G. Empty Conduit Systems:
 - 1. Provide polypropylene pull rope in each conduit.
 - 2. Provide plastic plugs or covers, for all openings, to keep system clean.
 - 3. Provide a minimum of three $\frac{3}{2}$ conduits routed to an accessible ceiling space for each flush mounted panel.
 - 4. For periods of construction delay or inactivity extending beyond one (1) week, unfinished conduit systems shall be treated as Empty. Conduit shall be capped/plugged with pull rope for the duration of the period of inactivity.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The use of direct burial wire is not allowed.
- B. Install wiring, conduits, junction boxes, and other common electrical components in accordance with the project plans and NEC requirements.
- C. Ensure all connections are secure and properly supported to prevent damage and ensure reliable operation.
- D. Coordinate installation with other trades to avoid conflicts and ensure compatibility with other systems.
- E. In general, voltage drops shall follow N.E.C. guidelines.
- F. Do not use "shared" or "common" neutrals on any 208/120V or 480/277V receptacle or lighting circuit. Install a neutral conductor for each phase wire in single phase service, or in each branch circuit for multi-phase branch circuits requiring neutral conductors.

3.2 TESTING AND INSPECTION

- A. In general, all materials shall be inspected and approved and listed by Underwriters Laboratories and bear UL label or UL recognized component label, where labeling services for that type material is available.
- B. Product listing by an NRTL other than UL is acceptable with Engineer's written authorization. Unlisted Electrical Equipment is not acceptable.
- C. Test all installed components for proper operation and compliance with specifications.
- D. Perform continuity tests, insulation resistance tests, and voltage tests as required.
- E. Coordinate inspections with the project inspector and correct any deficiencies noted.

3.3 COMMISSIONING

- A. Provide a complete demonstration of the common electrical work to the owner's representative.
- B. Ensure all systems are fully operational and compliant with project specifications and applicable codes.
- C. Submit as-built drawings and operation manuals to the owner.

3.4 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.

END OF SECTION 26 05 00

26 05 19 LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall furnish and install low-voltage electrical power conductors and cables as specified in the project documents.
- B. This includes all necessary labor, materials, equipment, tools, and services required for the complete installation of low-voltage wiring systems.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Institute of Electrical and Electronics Engineers (IEEE)

1.3 SUBMITTALS

- A. Materials List: Include all types and sizes of conductors and cables to be used.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and operating instructions for all products listed.
- C. Test Reports: Provide test reports for all conductors and cables, demonstrating compliance with specified standards.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver conductors and cables to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

- A. Conductors: Copper conductors with insulation suitable for the specific application, meeting NEC requirements.
- B. Cables: Multi-conductor cables with insulation and jacket materials suitable for the installation environment and electrical load.
- C. All wire shall be copper unless otherwise noted. Wire shall be stranded (#12 and above) or solid (#14 and smaller), unless otherwise noted.
- D. If Aluminum Conductors are Specified, terminations must be listed for use with Aluminum Conductors. Non-petroleum antioxidant (e.g. Noalox) shall be used if required or suggested by the manufacturer of the conductor or termination equipment.
- E. All low voltage (600V rated) conductors shall be THHN/THWN conductors in MC cable or in conduit systems.
- F. Grounding Conductors shall be bare copper or have green insulation in sizes #14 through #6, conductors #4 or larger may be "black" with green or green/yellow tape markers.
- G. Neutral Conductors (Current Carrying Grounded Conductors) shall have white or grey insulation in sizes #14 through #6, conductors #4 or larger may be "black" with white or grey tape markers.

2.2 INSULATION AND JACKET MATERIALS

- A. Insulation: Thermoplastic or thermoset insulation materials rated for the intended voltage and temperature.
- B. Jacket: Non-metallic sheathing or other protective jackets as specified.
- C. 75ºC. Minimum insulation rating.

2.3 ACCESSORIES

- A. Connectors and Terminations: Compression connectors, lugs, and other approved termination devices suitable for the conductor sizes and applications.
- B. Supports and Fasteners: Approved supports, clamps, and fasteners to secure conductors and cables in place.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install conductors and cables in accordance with project plans, specifications, and NEC requirements.
- B. Route conductors and cables in a neat and workmanlike manner, avoiding sharp bends and stress points.
- C. Provide adequate support and protection to prevent damage during and aGer installation.

3.2 TESTING

- A. Test all conductors and cables for continuity, insulation resistance, and proper phasing before energizing.
- B. Perform tests in accordance with specified standards and provide test reports to the project inspector.

3.3 CONNECTIONS AND TERMINATIONS

- A. Make all connections and terminations using approved devices and techniques to ensure reliable and secure electrical connections.
- B. Ensure all terminations are properly insulated and protected against moisture and mechanical damage.

3.4 DOCUMENTATION

- A. Provide as-built drawings showing the routing and installation of all conductors and cables.
- B. Submit test reports, operation manuals, and other relevant documentation to the owner.

3.5 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.

END OF SECTION 26 05 19

26 05 26 **GROUNDING AND BONDING FOR ELECTRICAL** SYSTEMS

PART 1 - GENERAL

SCOPE OF WORK 1.1

- The contractor shall provide all labor, materials, equipment, and services necessary for grounding and bonding of electrical Α. systems as specified in the project documents.
- Β. This includes the installation of grounding electrodes, conductors, bonding jumpers, and other components to ensure a safe and effective grounding system.
- C. This section is for power circuits only. Do not use these requirements for communications, control, internet, telephone, or other similar circuits.

1.2 REFERENCES

- Α. National Electrical Code (NEC)
- Β. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Institute of Electrical and Electronics Engineers (IEEE)

1.3 **SUBMITTALS**

- Α. Materials List: Include all grounding and bonding materials and components to be used.
- Β. Manufacturer's Data: Submit catalog cuts, specifications, and installation instructions for all products listed.
- C. Test Reports: Provide test reports for grounding system components demonstrating compliance with specified standards.

1.4 **DELIVERY, STORAGE, AND HANDLING**

- Α. Deliver materials to the project site in original, unopened packaging with labels intact.
- Β. Store materials in a dry, secure area to prevent damage and deterioration.
- С. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

1.5 QUALITY ASSURANCE

- Α. Contractor shall have a valid C10 Electrical Contractor's license
- B All work shall be performed by qualified electricians familiar with NEC and other applicable standards.

PART 2 - PRODUCTS

2.1 **GROUNDING SYSTEM COMPONENTS**

- Α. Grounding Electrodes: Copper-clad steel or other approved materials, meeting NEC requirements.
- Β. Grounding Conductors: Copper conductors sized in accordance with NEC requirements.
- C. Bonding Jumpers: Copper jumpers for bonding metal parts and ensuring electrical continuity.
- D. Ground Rods: UL-listed copper-clad steel rods, 8 or 10 feet in length.

2.2 ACCESSORIES

- Α. Grounding Clamps: Approved clamps suitable for connecting grounding conductors to electrodes and other components.
- Exothermic Welding Materials: Suitable for making permanent, corrosion-resistant connections. Β.

PART 3 - EXECUTION

3.1 INSTALLATION

- Α. Install grounding electrodes, conductors, and bonding jumpers in accordance with the project plans, specifications, and NEC requirements.
- Β. Ensure all connections are secure and that all components are properly supported and protected from mechanical damage.
- C. Install ground rods to a minimum depth of 8 feet or as specified in the project documents.
- Install equipment grounding conductor with all surface raceway systems. Bond as follows: D. **BVARA RPP**

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- E. One or two piece raceway bond at every box.
- F. Outlets bond each to box.
- G. Install equipment grounding conductor in ALL conduit runs and in all multi-conductor cables.

3.2 TESTING

- A. Test the grounding system for continuity and resistance to ensure compliance with NEC and project specifications.
- B. Perform ground resistance tests using approved methods and equipment, and provide test reports to the project inspector.
- C. At new services, test service resistance to ground and add additional grounding electrodes as required to achieve minimum 25 Ohms to ground.
- D. When adding circuits to existing Main Switchboard, test service resistance to ground and additional grounding electrodes as required to achieve minimum 25 Ohms to ground

3.3 CONNECTIONS AND BONDING

- A. Make all grounding and bonding connections using approved methods, including mechanical connectors and exothermic welding.
- B. Ensure all metal parts of the electrical system, including raceways, enclosures, and equipment, are properly bonded to the grounding system.

3.4 DOCUMENTATION

- A. Provide as-built drawings showing the layout and installation of all grounding and bonding components.
- B. Submit test reports, operation manuals, and other relevant documentation to the owner.

3.5 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.

END OF SECTION 32 11 23

26 05 33.13 CONDUIT FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

2.1 SCOPE OF WORK

- A. The contractor shall provide all labor, materials, equipment, and services necessary for the installation of conduit systems for electrical systems as specified in the project documents.
- B. This includes the installation of conduit, fittings, supports, and accessories necessary to complete the conduit system.

2.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Institute of Electrical and Electronics Engineers (IEEE)

2.3 SUBMITTALS

- A. Materials List: Include all types and sizes of conduit, fittings, and accessories to be used.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and installation instructions for all products listed.
- C. Shop Drawings: Provide detailed drawings showing the layout, routing, and connections of conduit systems.

2.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

2.5 QUALITY ASSURANCE

- A. Contractor shall have a valid C10 Electrical Contractor's License
- B. All work shall be performed by qualified electricians familiar with NEC and other applicable standards.

PART 2 - PRODUCTS

3.1 CONDUIT

- A. Rigid Metal Conduit (RMC): Hot-dip galvanized steel or stainless steel conduit, meeting NEC and UL requirements.
- B. Electrical Metallic Tubing (EMT): Galvanized steel or aluminum tubing, meeting NEC and UL requirements.
- C. Flexible Metal Conduit (FMC): Galvanized steel or aluminum flexible conduit, meeting NEC and UL requirements.
- D. Liquidtight Flexible Metal Conduit (LFMC): Galvanized steel core with a liquidtight jacket, meeting NEC and UL requirements.
- E. The following types of conduits or multi-conductor cables shall be used:
 - 2. Inside buildings: type MC cable
 - 3. Inside buildings, or above ground outdoors: type EMT, RMC, IMC
 - a. Type EMT conduit shall not be used where exposed to physical damage.
 - 4. Underground type PVC schedule 40 Conduit, or PVC coated RMC or IMC conduit.
 - a. Uncoated metal conduit shall not be used underground or where otherwise exposed to corrosive environments
- F. All underground conduits be PVC Schedule 40 or heavier. Convert to type RMC before penetrating walls or floor. Where subject to physical damage, PVC Schedule 40 shall be replaced with PVC Schedule 80, RMC, or PVC coated RMC.
- G. Flexible conduit or flexible multi-conductor cables shall be used to connect to vibrating or other equipment where flexible connections are required. Conduit or cable to be liquid tight when located in wet or damp locations (including all outdoor locations).
- H. Flexible conduit or multi-conductor cables are required for light fixtures in suspended or open ceilings.
- I. ¾" minimum size conduit for electrical system.
- J. No indent fittings.
- K. Provide "locator wire" buried with all non-metallic conduit or duct.

3.2 FITTINGS ACCESSORIES

- A. Conduit Fittings: Compatible with the selected conduit types and suitable for the intended use.
- B. Junction Boxes: NEMA-rated boxes appropriate for the environment and application.
- C. Conduit Supports: Struts, brackets, hangers, and other hardware necessary for supporting conduit systems.

PART 3 - EXECUTION

4.1 INSTALLATION

- A. Install conduit systems in accordance with project plans, specifications, and NEC requirements.
- B. Route conduit in a neat and workmanlike manner, avoiding sharp bends and stress points.
- C. Provide adequate support and protection to prevent damage during and aGer installation.

4.2 CONNECTIONS AND TERMINATIONS

- A. Make all conduit connections and terminations using approved methods and materials to ensure reliable and secure connections.
- B. Ensure all connections are properly insulated and protected against moisture and mechanical damage.

4.3 TESTING AND INSPECTION

- A. Test conduit systems for continuity and proper installation before installing conductors.
- B. Perform inspections to ensure compliance with project specifications and NEC requirements.
- C. Coordinate inspections with the project inspector and correct any deficiencies noted.

4.4 DOCUMENTATION

- A. Provide as-built drawings showing the layout and installation of all conduit systems.
- B. Submit test reports, operation manuals, and other relevant documentation to the owner.

4.5 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.

END OF SECTION 26 05 33.13

26 05 33.16 BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall provide all labor, materials, equipment, and services necessary for the installation of boxes for electrical systems as specified in the project documents.
- B. This includes the installation of junction boxes, outlet boxes, pull boxes, and other related components.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Institute of Electrical and Electronics Engineers (IEEE)

1.3 SUBMITTALS

- A. Materials List: Include all types and sizes of boxes and related components to be used.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and installation instructions for all products listed.
- C. Shop Drawings: Provide detailed drawings showing the layout and locations of boxes.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

1.5 QUALITY ASSURANCE

- A. Contractor shall have a valid C10 Electrical Contractor's License
- B. All work shall be performed by qualified electricians familiar with NEC and other applicable standards.

PART 2 - PRODUCTS

2.1 BOXES

- A. Junction Boxes: NEMA-rated boxes made of steel, aluminum, or non-metallic materials as specified.
- B. Outlet Boxes: Boxes suitable for mounting devices such as switches and receptacles.
- C. Pull Boxes: Boxes designed for pulling and splicing conductors, made of materials suitable for the application environment.

2.2 ACCESSORIES

- A. Box Covers: Matching covers for each type of box, providing secure closure and protection.
- B. Mounting Hardware: Brackets, clamps, and other hardware necessary for secure installation of boxes.
- C. Gaskets and Seals: Weatherproofing materials for boxes installed in outdoor or damp locations.
- D. Only grounding type receptacles acceptable. Minimum general-purpose receptacles, gray 20 amp, with stainless steel covers.
- E. Switches:
 - 1. Rated 20 Amp. at 277v. (minimum), with stainless steel covers.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install boxes in accordance with project plans, specifications, and NEC requirements.
- B. Ensure boxes are securely mounted and aligned with finished surfaces.
- C. Provide adequate support and protection to prevent damage during and aGer installation.
- D. Provide 120-volt convenience receptacles at each landing level in stairwells, and in corridors, spaced not over 50 feet apart.
- E. The use of "Common" or "Shared" neutrals on 120VAC convenience receptacle circuits is prohibited.

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- F. Mounting heights (Unless Otherwise Noted):
 - 1. Switches = +42 inch AFF to device centerline.
 - 2. Wall receptacles = +18 inch AFF to device centerline.
- G. Device boxes are to be rigidly supported.
- H. Where electrical equipment is mounted on exterior walls below grade or other damp locations, mount on standoffs.
- I. The use of box extension rings is only allowed with written permission.

3.2 CONNECTIONS AND TERMINATIONS

- A. Make all connections and terminations inside boxes using approved methods and materials.
- B. Ensure all connections are properly insulated and protected against moisture and mechanical damage.

3.3 TESTING AND INSPECTION

- A. Test boxes for proper installation and secure mounting before connecting conductors.
- B. Perform inspections to ensure compliance with project specifications and NEC requirements.
- C. Coordinate inspections with the project inspector and correct any deficiencies noted.

3.4 DOCUMENTATION

- A. Provide as-built drawings showing the layout and installation of all boxes.
- B. Submit test reports, operation manuals, and other relevant documentation to the owner.

3.5 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.

END OF SECTION 26 05 33.16

26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall provide all labor, materials, equipment, and services necessary for the identification of electrical systems as specified in the project documents.
- B. This includes labeling, marking, and color coding of electrical components to ensure proper identification and safety.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Institute of Electrical and Electronics Engineers (IEEE)

1.3 SUBMITTALS

- A. Materials List: Include all labels, tags, markers, and other identification materials to be used.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and installation instructions for all products listed.
- C. Shop Drawings: Provide detailed drawings showing the layout and locations of identification materials.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

1.5 QUALITY ASSURANCE

- A. Contractor shall have a valid C10 Electrical Contractor's License.
- B. All work shall be performed by qualified electricians familiar with NEC and other applicable standards.

PART 2 - PRODUCTS

2.1 IDENTIFICATION MATERIALS

- A. Labels: Pre-printed or custom-printed labels with permanent adhesive, suitable for the environment in which they will be used.
- B. Nameplate construction shall be laminated phenolic plastic, black front and back with white core, with lettering engraved through the outer covering. Lettering shall be 3/16 inches high at push-button station starter, receptacles and similar devices where the nameplate is attached to the device plate. At all other locations, lettering shall be 1/4 inch high unless otherwise detailed on the drawings.
 - 1. Other types and sizes of signage may be used (if appropriate and approved by Owner's Representative).
 - Tags: Durable, weather-resistant tags for identifying equipment and components.
- D. Markers: Color-coded markers for identifying conductors and cables.

PART 3 - EXECUTION

C.

3.1 INSTALLATION

- A. Install identification materials in accordance with project plans, specifications, and NEC requirements.
- B. Ensure labels and tags are securely attached and clearly visible.
- C. Apply color-coded markers to conductors and cables in accordance with the identification scheme specified.

3.2 LABELING AND MARKING

- A. In general, the following items shall be equipped with nameplates:
 - 1. All motor starters, motor controls, motor control centers, push-button stations, control panels and time switches.
 - 2. Disconnect switchboards, circuit breakers, contactors or relays in separate enclosures. Power receptacles where the nominal voltage between any contact is greater than 150V to ground. Use at least 1 1/8" x 2 1/4" signs.

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- 3. Nameplate inscription: Nameplate shall adequately describe the function or use of the particular equipment involved. Nameplate for panelboards and switchboards shall include the panel designation voltage and phase of the supply, and where the circuit feeding panel originates.
- 4. When equipment has more than one source of power, i.e.: separate control power source. The location of all power sources shall be CLEARLY identified at the equipment location. i.e.: Nameplate on door, etc.
- 5. Mark all wires in panelboards with the circuit number they serve.
- B. Mark all conductors and cables with color-coded markers at both ends and at all termination points.
- C. Use tags to identify control wiring, instrumentation wiring, and other special systems.

3.3 TESTING AND INSPECTION

- A. Inspect all identification materials to ensure they are properly installed and legible.
- B. Perform inspections to ensure compliance with project specifications and NEC requirements.
- C. Coordinate inspections with the project inspector and correct any deficiencies noted.

3.4 DOCUMENTATION

- A. Provide as-built drawings showing the locations and types of identification materials installed.
- B. Submit a detailed identification schedule, including descriptions and locations of all labels, tags, markers, and plates.
- C. Provide operation manuals and other relevant documentation to the owner.

3.5 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.

END OF SECTION 26 05 53

26 21 00 LOW-VOLTAGE ELECTRICAL SERVICE ENTRANCE

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall provide all labor, materials, equipment, and services necessary for the installation of the low-voltage electrical service entrance as specified in the project documents.
- B. This includes the installation of service entrance conductors, disconnects, metering equipment, and related components.
- C. Normally underground services.
- D. Normal distribution is 480V, 3Ph. 4w. 60Hz.
- E. Minimum SCCR of 480V distribution equipment shall be 25kA, minimum SCCR of 208Y/120V equipment served by transformers 75kVA and lower shall be 10kA

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Institute of Electrical and Electronics Engineers (IEEE)

1.3 SUBMITTALS

- A. Materials List: Include all types and sizes of conductors, disconnects, metering equipment, and related components.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and installation instructions for all products listed.
- C. Shop Drawings: Provide detailed drawings showing the layout and locations of service entrance components.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

1.5 QUALITY ASSURANCE

- A. Contractor shall have a valid C10 Electrical Contractor's License.
- B. All work shall be performed by qualified electricians familiar with NEC and other applicable standards.

PART 2 - PRODUCTS

2.1 SERVICE ENTRANCE CONDUCTORS

A. Conductors: Copper conductors with insulation suitable for the specific application, meeting NEC requirements.

2.2 DISCONNECTS AND METERING EQUIPMENT

- A. Disconnects: Heavy-duty, NEMA-rated disconnect switches suitable for the service entrance rating.
- B. Metering Equipment: Utility-approved metering devices and enclosures.

2.3 ENCLOSURES AND ACCESSORIES

- A. Enclosures: NEMA-rated enclosures appropriate for the installation environment.
- B. Accessories: Mounting brackets, clamps, and other hardware necessary for secure installation.

PART 3 - EXECUTION

2.4 INSTALLATION

- A. Install service entrance conductors, disconnects, metering equipment, and enclosures in accordance with project plans, specifications, and NEC requirements.
- B. Ensure all connections are secure and that all components are properly supported and protected from mechanical damage.

2.5 TESTING AND INSPECTION

- A. Test all service entrance components for proper operation and compliance with specifications.
- B. Perform inspections to ensure compliance with project specifications and NEC requirements.
- C. Coordinate inspections with the project inspector and correct any deficiencies noted.

2.6 CONNECTIONS AND TERMINATIONS

- A. Make all connections and terminations using approved methods and materials to ensure reliable and secure electrical connections.
- B. Ensure all terminations are properly insulated and protected against moisture and mechanical damage.

2.7 DOCUMENTATION

- A. Provide as-built drawings showing the layout and installation of all service entrance components.
- B. Submit test reports, operation manuals, and other relevant documentation to the owner.

2.8 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.
26 24 13 SWITCHBOARDS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall provide all labor, materials, equipment, and services necessary for the installation of switchboards as specified in the project documents.
- B. This includes the installation, testing, and commissioning of switchboards and related components.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Institute of Electrical and Electronics Engineers (IEEE)

1.3 SUBMITTALS

- A. Materials List: Include all switchboards, circuit breakers, instrumentation, and related components.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and installation instructions for all products listed.
- C. Shop Drawings: Provide detailed drawings showing the layout and connections of switchboards.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

1.5 QUALITY ASSURANCE

- A. Contractor shall have a valid C10 Electrical Contractor's License.
- B. All work shall be performed by qualified electricians familiar with NEC and other applicable standards.

PART 2 - PRODUCTS

2.1 SWITCHBOARDS

- A. Switchboards: NEMA-rated, factory-assembled switchboards suitable for the service conditions and load requirements.
- B. Circuit Breakers: Molded case or insulated case circuit breakers, as specified, with trip settings suitable for the load.
- C. Acceptable Manufacturer: General Electric, Schnider Electric/Square D, Siemens, Eaton/Cutler-Hammer.
- D. Copper Buss bars only.

2.2 INSTRUMENTATION AND ACCESSORIES

- A. Instrumentation: Voltmeters, ammeters, frequency meters, and other instruments as specified.
- B. Enclosures: NEMA-rated enclosures appropriate for the installation environment.
- C. Accessories: Mounting hardware, bus bars, and other components necessary for a complete installation.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install switchboards in accordance with project plans, specifications, and NEC requirements.
- B. Ensure switchboards are securely mounted and properly aligned.
- C. Provide adequate support and protection to prevent damage during and aGer installation.
- D. Provide 25% additional breaker "growth space" minimum.

3.2 CONNECTIONS AND TERMINATIONS

A. Make all electrical connections and terminations using approved methods and materials to ensure reliable and secure connections.

B. Ensure all terminations are properly insulated and protected against moisture and mechanical damage.

3.3 TESTING AND INSPECTION

- A. Test switchboards for proper operation and compliance with specifications.
- B. Perform insulation resistance tests, continuity tests, and functional tests.
- C. Coordinate inspections with the project inspector and correct any deficiencies noted.

3.4 COMMISSIONING

- A. Provide a complete demonstration of the switchboard operation to the owner's representative.
- B. Ensure all switchboards are fully operational and compliant with project specifications and applicable codes.
- C. Submit as-built drawings and operation manuals to the owner.
- D. CLEANUP
- E. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- F. Leave the work area in a clean and orderly condition.

END OF SECTION 26 24 13

SECTION 26 24 16 PANELBOARDS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall provide all labor, materials, equipment, and services necessary for the installation of panelboards as specified in the project documents.
- B. This includes the installation, testing, and commissioning of panelboards and related components.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Institute of Electrical and Electronics Engineers (IEEE)

1.3 SUBMITTALS

- A. Materials List: Include all panelboards, circuit breakers, instrumentation, and related components.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and installation instructions for all products listed.
- C. Shop Drawings: Provide detailed drawings showing the layout and connections of panelboards.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

1.5 QUALITY ASSURANCE

- A. Contractor shall have a valid C10 Electrical Contractor's License.
- B. All work shall be performed by qualified electricians familiar with NEC and other applicable standards.

PART 2 - PRODUCTS

2.1 PANELBOARDS

- A. Panelboards: NEMA-rated, factory-assembled panelboards suitable for the service conditions and load requirements.
- B. Circuit Breakers: Molded case or insulated case circuit breakers, as specified, with trip settings suitable for the load.
- C. Door-in-door construction, with key locks.
- D. All breakers rated 60/75°C. and 10,000 A.I.C. (minimum). Bolt on type only.
- E. Provide both equipment ground bar (bolted to enclosure). Isolated ground bar (insulated) when shown.
- F. Typewritten directory card with final room numbers. Provide copy in O&M manuals.
- G. Specify minimum "Equipment Short Circuit Rating".
- H. Provide a minimum of 10% additional "spare" 20 amp. Single pole breakers plus 15% additional "blank" spaces for future.
- I. Use minimum 42 circuit panel unless otherwise noted.
- J. Copper buss bars only.
- K. Acceptable Manufacturer: General Electric, Schnider Electric/Square D, Siemens, Eaton/Cutler-Hammer.
- L. Flush mounted panels to have: (3 ¾" conduit) to an accessible J-box above liG-out ceilings or below access floors.

2.2 INSTRUMENTATION AND ACCESSORIES

- A. Instrumentation: Voltmeters, ammeters, frequency meters, and other instruments as specified.
- B. Enclosures: NEMA-rated enclosures appropriate for the installation environment.
- C. Accessories: Mounting hardware, bus bars, and other components necessary for a complete installation.

PART 3 - EXECUTION

2.3 INSTALLATION

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- A. Install panelboards in accordance with project plans, specifications, and NEC requirements.
- B. Ensure panelboards are securely mounted and properly aligned.
- C. Provide adequate support and protection to prevent damage during and aGer installation.

2.4 CONNECTIONS AND TERMINATIONS

- A. Make all electrical connections and terminations using approved methods and materials to ensure reliable and secure connections.
- B. Ensure all terminations are properly insulated and protected against moisture and mechanical damage.

2.5 TESTING AND INSPECTION

- A. Test panelboards for proper operation and compliance with specifications.
- B. Perform insulation resistance tests, continuity tests, and functional tests.
- C. Coordinate inspections with the project inspector and correct any deficiencies noted.

2.6 COMMISSIONING

- A. Provide a complete demonstration of the panelboard operation to the owner's representative.
- B. Ensure all panelboards are fully operational and compliant with project specifications and applicable codes.
- C. Submit as-built drawings and operation manuals to the owner.

2.7 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.

END OF SECTION 26 24 16

SECTION 26 28 16 ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall provide all labor, materials, equipment, and services necessary for the installation of enclosed switches and circuit breakers as specified in the project documents.
- B. This includes the installation, testing, and commissioning of enclosed switches, circuit breakers, and related components.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Institute of Electrical and Electronics Engineers (IEEE)

1.3 SUBMITTALS

- A. Materials List: Include all types and sizes of enclosed switches, circuit breakers, and related components.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and installation instructions for all products listed.
- C. Shop Drawings: Provide detailed drawings showing the layout and connections of enclosed switches and circuit breakers.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

1.5 QUALITY ASSURANCE

- A. Contractor shall have a valid C10 Electrical Contractor's License.
- B. All work shall be performed by qualified electricians familiar with NEC and other applicable standards.

PART 2 - PRODUCTS

2.1 ENCLOSED SWITCHES AND CIRCUIT BREAKERS

- A. Enclosed Switches: NEMA-rated, heavy-duty switches suitable for the service conditions and load requirements.
- B. Circuit Breakers: Molded case or insulated case circuit breakers, as specified, with trip settings suitable for the load.
- C. Enclosures shall be NEMA 3R or NEMA enclosure rated for outdoor use.
- D. Unless otherwise noted in Engineering Drawings, Circuit Breaker shall be thermal-magnetic type circuit breakers for less than 800A, Electronic Trip with Ground Fault Protection for circuit breakers greater than 800A.
- E. Acceptable Manufacturer: General Electric, Schnider Electric/Square D, Siemens, Eaton/Cutler-Hammer.
- F. Enclosed Circuit Breakers shall include, at a minimum one (1) normally open and one (1) normally closed auxiliary contact.
- G. Where noted in Engineering drawings, include shunt trip with 120V AC coil. Not required where not specified.

2.2 ENCLOSURES AND ACCESSORIES

- A. Enclosures: NEMA-rated enclosures appropriate for the installation environment.
- B. Accessories: Mounting hardware, bus bars, and other components necessary for a complete installation.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install enclosed switches and circuit breakers in accordance with project plans, specifications, and NEC requirements.
- B. Ensure switches and circuit breakers are securely mounted and properly aligned.
- C. Provide adequate support and protection to prevent damage during and aGer installation.

3.2 CONNECTIONS AND TERMINATIONS

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- A. Make all electrical connections and terminations using approved methods and materials to ensure reliable and secure connections.
- B. Ensure all terminations are properly insulated and protected against moisture and mechanical damage.

3.3 TESTING AND INSPECTION

- A. Test enclosed switches and circuit breakers for proper operation and compliance with specifications.
- B. Perform insulation resistance tests, continuity tests, and functional tests.
- C. Coordinate inspections with the project inspector and correct any deficiencies noted.

3.4 COMMISSIONING

- A. Provide a complete demonstration of the enclosed switches and circuit breakers operation to the owner's representative.
- B. Ensure all components are fully operational and compliant with project specifications and applicable codes.
- C. Submit as-built drawings and operation manuals to the owner.

3.5 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.

END OF SECTION 26 28 16

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall provide all labor, materials, equipment, and services necessary for the installation of the lighting systems as specified in the project documents.
- B. This includes the installation of lighting fixtures, controls, wiring, and related components.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Illuminating Engineering Society (IES)

1.3 SUBMITTALS

- A. Materials List: Include all lighting fixtures, lamps, ballasts, controls, and related components.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and installation instructions for all products listed.
- C. Shop Drawings: Provide detailed drawings showing the layout and connections of lighting systems.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

1.5 QUALITY ASSURANCE

- A. Contractor shall have a valid C10 Electrical Contractor's License.
- B. All work shall be performed by qualified electricians familiar with NEC and other applicable standards.

PART 2 - PRODUCTS

2.1 LIGHTING FIXTURES

- A. Fixtures: Provide lighting fixtures as specified in the project documents, suitable for the service conditions and lighting requirements.
- B. Lamps: High-efficiency lamps compatible with the specified fixtures, providing the required light output and color temperature.
- C. Ballasts: Electronic or magnetic ballasts, as specified, suitable for the lamps and fixtures.
- D. LED lighting shall be used exclusively.
- E. Place lighting on 120 volt system do not use 480Y/277V system for lighting.
- F. Publicly accessible exterior lighting to be controlled by timer switch with limited 1 hour duration. Additional photocell may be used in series.
- G. Non-accessible light switching shall be by photocell control only.

2.2 CONTROLS

- A. Lighting Controls: Dimmers, occupancy sensors, timers, and other controls as specified to ensure energy-efficient operation of the lighting systems.
- B. Control Panels: Panels for central control and monitoring of lighting systems, as specified.

2.3 ACCESSORIES

- A. Mounting Hardware: Brackets, clamps, and other hardware necessary for secure installation of lighting fixtures.
- B. Wiring: Copper conductors with insulation suitable for the specific application, meeting NEC requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install lighting fixtures, controls, and related components in accordance with project plans, specifications, and NEC requirements.
- B. Ensure all fixtures are securely mounted and properly aligned.
- C. Provide adequate support and protection to prevent damage during and aGer installation.
- D. In general, occupancy sensors (manual on, auto off) are to be used in all spaces except mechanical rooms, tunnels, corridors and similar type spaces. Mechanical rooms and tunnels shall have toggle switches.
- E. In general, all light fixtures shall be installed so re-lamping can take place using a 6 Ft. ladder. Any deviation from this shall be reviewed with the Owner.
- F. In suspended ceilings, branch circuits are not allowed in fixtures.

3.2 CONNECTIONS AND TERMINATIONS

- A. Make all electrical connections and terminations using approved methods and materials to ensure reliable and secure connections.
- B. Ensure all terminations are properly insulated and protected against moisture and mechanical damage.

3.3 TESTING AND INSPECTION

- A. Test lighting systems for proper operation and compliance with specifications.
- B. Perform insulation resistance tests, continuity tests, and functional tests.
- C. Coordinate inspections with the project inspector and correct any deficiencies noted.

3.4 COMMISSIONING

- A. Provide a complete demonstration of the lighting system operation to the owner's representative.
- B. Ensure all lighting systems are fully operational and compliant with project specifications and applicable codes.
- C. Submit as-built drawings and operation manuals to the owner.

3.5 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.

END OF SECTION 26 50 00

SECTION 26 51 13 INTERIOR LIGHTING FIXTURES, LAMPS, AND BALLASTS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall provide all labor, materials, equipment, and services necessary for the installation of interior lighting fixtures, lamps, and ballasts as specified in the project documents.
- B. This includes the installation, testing, and commissioning of lighting fixtures, lamps, ballasts, and related components.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Illuminating Engineering Society (IES)

1.3 SUBMITTALS

- A. Materials List: Include all types and sizes of lighting fixtures, lamps, ballasts, and related components.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and installation instructions for all products listed.
- C. Shop Drawings: Provide detailed drawings showing the layout and connections of interior lighting systems.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

1.5 QUALITY ASSURANCE

- A. Contractor shall have a valid C10 Electrical Contractor's License.
- B. All work shall be performed by qualified electricians familiar with NEC and other applicable standards.

PART 2 - PRODUCTS

2.1 LIGHTING FIXTURES

- A. Fixtures: Provide lighting fixtures as specified in the project documents, suitable for the service conditions and lighting requirements.
- B. Lamps: High-efficiency lamps compatible with the specified fixtures, providing the required light output and color temperature.
- C. Ballasts: Electronic or magnetic ballasts, as specified, suitable for the lamps and fixtures.
- D. Furnished and installed by Contractor.
- E. All interior and exterior light fixtures are to be LED. LED fixtures to have 5 year minimum warranty on light source and driver.

2.2 ACCESSORIES

- A. Mounting Hardware: Brackets, clamps, and other hardware necessary for secure installation of lighting fixtures.
- B. Wiring: Copper conductors with insulation suitable for the specific application, meeting NEC requirements.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install lighting fixtures, lamps, ballasts, and related components in accordance with project plans, specifications, and NEC requirements.
- B. Ensure all fixtures are securely mounted and properly aligned.
- C. Provide adequate support and protection to prevent damage during and aGer installation.

3.2 CONNECTIONS AND TERMINATIONS

- A. Make all electrical connections and terminations using approved methods and materials to ensure reliable and secure connections.
- B. Ensure all terminations are properly insulated and protected against moisture and mechanical damage.

3.3 TESTING AND INSPECTION

- A. Test lighting systems for proper operation and compliance with specifications.
- B. Perform insulation resistance tests, continuity tests, and functional tests.
- C. Coordinate inspections with the project inspector and correct any deficiencies noted.

3.4 COMMISSIONING

- A. Provide a complete demonstration of the lighting system operation to the owner's representative.
- B. Ensure all lighting systems are fully operational and compliant with project specifications and applicable codes.
- C. Submit as-built drawings and operation manuals to the owner.

3.5 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.

END OF SECTION 26 51 13

SECTION 26 53 00 EXIT SIGNS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall provide all labor, materials, equipment, and services necessary for the installation of exit signs as specified in the project documents.
- B. This includes the installation, testing, and commissioning of exit signs and related components.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. International Building Code (IBC)
- E. National Fire Protection Association (NFPA)

1.3 SUBMITTALS

- A. Materials List: Include all types and sizes of exit signs and related components.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and installation instructions for all products listed.
- C. Shop Drawings: Provide detailed drawings showing the layout and locations of exit signs.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

1.5 QUALITY ASSURANCE

- A. Co Contractor shall have a valid C10 Electrical Contractor's License.
- B. All work shall be performed by qualified electricians familiar with NEC and other applicable standards.

PART 2 - PRODUCTS

2.1 EXIT SIGNS

A. Exit Signs: LED or incandescent exit signs as specified, suitable for the service conditions and installation environment.
B. Emergency Power: Exit signs with battery backup or connected to emergency power circuits to ensure operation during power outages.

2.2 MOUNTING AND ACCESSORIES

- A. Mounting Hardware: Brackets, clamps, and other hardware necessary for secure installation of exit signs.
- B. Lettering: Signs with illuminated lettering as specified, ensuring visibility in both normal and emergency conditions.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install exit signs in accordance with project plans, specifications, and NEC requirements.
- B. Ensure signs are securely mounted and properly aligned.
- C. Provide adequate support and protection to prevent damage during and aGer installation.
- D. Artificially illuminated by LED panels. (Not radioactive).
- E. Individual battery pack emergency lighting, and exit signs, to be powered from the unswitched portion of lighting circuit feeding area served.

3.2 CONNECTIONS AND TERMINATIONS

- A. Make all electrical connections and terminations using approved methods and materials to ensure reliable and secure connections.
- B. Ensure all terminations are properly insulated and protected against moisture and mechanical damage.

3.3 TESTING AND INSPECTION

- A. Test exit signs for proper operation and compliance with specifications.
- B. Perform illumination tests, continuity tests, and functional tests.
- C. Coordinate inspections with the project inspector and correct any deficiencies noted.

3.4 COMMISSIONING

- A. Provide a complete demonstration of the exit sign operation to the owner's representative.
- B. Ensure all exit signs are fully operational and compliant with project specifications and applicable codes.
- C. Submit as-built drawings and operation manuals to the owner.

3.5 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.

END OF SECTION 26 53 00

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. The contractor shall provide all labor, materials, equipment, and services necessary for the installation of outdoor lighting systems as specified in the project documents.
- B. This includes the installation, testing, and commissioning of lighting fixtures, poles, controls, wiring, and related components for outdoor areas.

1.2 REFERENCES

- A. National Electrical Code (NEC)
- B. Underwriters Laboratories (UL)
- C. National Electrical Manufacturers Association (NEMA)
- D. Illuminating Engineering Society (IES)

1.3 SUBMITTALS

- A. Materials List: Include all types and sizes of lighting fixtures, poles, lamps, ballasts, controls, and related components.
- B. Manufacturer's Data: Submit catalog cuts, specifications, and installation instructions for all products listed.
- C. Shop Drawings: Provide detailed drawings showing the layout and connections of outdoor lighting systems.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the project site in original, unopened packaging with labels intact.
- B. Store materials in a dry, secure area to prevent damage and deterioration.
- C. Handle materials in accordance with the manufacturer's recommendations to avoid damage during installation.

1.5 QUALITY ASSURANCE

- A. Contractor shall have a valid C10 Electrical Contractor's License.
- B. All work shall be performed by qualified electricians familiar with NEC and other applicable standards.

PART 2 - PRODUCTS

2.1 LIGHTING FIXTURES

- A. Fixtures: Provide lighting fixtures as specified in the project documents, suitable for outdoor service conditions and lighting requirements.
- B. Lamps: High-efficiency lamps compatible with the specified fixtures, providing the required light output and color temperature.
 - 1. Furnished and installed by Contractor.
 - 2. All interior and exterior light fixtures are to be LED. LED fixtures to have 5 year minimum warranty on light source and driver.
- C. Lamps and Fixtures shall be as specified in the Fixture Schedule on Construction Drawings.
- D. Ballasts: Electronic or magnetic ballasts, as specified, suitable for the lamps and fixtures.

2.2 POLES AND MOUNTING HARDWARE

- A. Poles: Galvanized steel, aluminum, or other approved materials, designed for the specified height and wind loading requirements.
- B. Mounting Hardware: Brackets, clamps, and other hardware necessary for secure installation of lighting fixtures on poles.

2.3 CONTROLS

- A. Lighting Controls: Photocells, timers, and other controls as specified to ensure energy-efficient operation of the outdoor lighting systems.
- B. Control Panels: Panels for central control and monitoring of outdoor lighting systems, as specified.

2.4 ACCESSORIES

- A. Wiring: Copper conductors with insulation suitable for the specific application, meeting NEC requirements.
- B. Bases and Foundations: Concrete bases or other approved foundations for secure installation of poles.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install outdoor lighting fixtures, poles, controls, and related components in accordance with project plans, specifications, and NEC requirements.
- B. Ensure all fixtures and poles are securely mounted and properly aligned.
- C. Provide adequate support and protection to prevent damage during and aGer installation.

3.2 CONNECTIONS AND TERMINATIONS

- A. Make all electrical connections and terminations using approved methods and materials to ensure reliable and secure connections.
- B. Ensure all terminations are properly insulated and protected against moisture and mechanical damage.

3.3 TESTING AND INSPECTION

- A. Test outdoor lighting systems for proper operation and compliance with specifications.
- B. Perform illumination tests, continuity tests, and functional tests.
- C. Coordinate inspections with the project inspector and correct any deficiencies noted.

3.4 COMMISSIONING

- A. Provide a complete demonstration of the outdoor lighting system operation to the owner's representative.
- B. Ensure all outdoor lighting systems are fully operational and compliant with project specifications and applicable codes.
- C. Submit as-built drawings and operation manuals to the owner.

3.5 CLEANUP

- A. Remove all debris, scrap materials, and tools from the project site upon completion of the work.
- B. Leave the work area in a clean and orderly condition.

END OF SECTION 26 56 00

SECTION 311000 SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes: Site clearing of designated site improvements and landscaping.
- B. Geotechnical Report: Kern County commissioned a geotechnical report in accordance with the requirements of the CBC. This report is a part of the Contract Documents. The report is available for Contractor's examination.
 - 1. Geotechnical Report Publication Information:
 - a. Title: Geotechnical Investigation for the Buena Vista Aquatic Recreational Area
 - b. Date: August 16, 2023
 - c. Author: Soils Engineering, Inc.
 - d. Document / Project Number: 23-18994

1.3 SCOPE OF WORK

The work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of "site clearing," complete as shown on the drawings and as specified herein.

- 1.4 RELATED SECTIONS
 - A. Section 312000 for "Earth Moving"
 - B. Section 312000 for "Earth Moving" Subsection 3.2 "Erosion and Sedimentation Control"

PART 2 - PRODUCTS

2.1 Materials

- A. General: See recommendations in the Geotech Investigation. If any conflicts arise between these specifications and the Geotechnical report, the Geotechnical report shall prevail.
- B. Tree protection fencing: High visibility, AASHTO M 45.
- C. Erosion control matting: Biodegradable, compliant with ASTM D6459.
- D. Dust control materials: Water or approved dust palliative.

PART 3 - EXECUTION

- 3.1 Preparation
 - A. Verify existing site conditions, notify the Engineer of conflicts or discrepancies.
 - B. Mark clearing limits clearly before starting operations.

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3.2 Site Clearing Operations

- A. Tree and Vegetation Protection:
 - 1. Identify trees and vegetation designated to remain.
 - 2. Install tree protection fencing around designated areas.
 - 3. Perform selective pruning as recommended by a certified arborist.
- B. Clearing and Grubbing:
 - 1. Remove trees, stumps, roots, brush, and debris within clearing limits.
 - 2. Clear topsoil, storing it for reuse if required.
 - 3. Grind stumps to at least 6 inches below existing grade.
- C. Debris Management:
 - 1. Segregate recyclable materials from general debris.
 - 2. Legally dispose of all cleared materials at approved disposal sites.
- D. Erosion and Sedimentation Control:
 - 1. Install temporary erosion and sediment control devices before land disturbance.
 - 2. Maintain control devices until permanent systems are in place.
 - 3. Control dust during site clearing with water or approved dust palliatives.
- E. Site Restoration:

1. Restore disturbed areas not included in construction to original or specified condition.

- 2. About-spread stockpiled topsoil over disturbed areas.
- F. Protection:
 - 1. Protect adjacent property, structures, benchmarks, and monuments during site clearing operations.
 - 2. Relocate temporary structures, fencing, and site improvements scheduled for reuse.

END OF SECTION 31 10 00

SECTION 312000 EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Excavating and filling for rough grading the Site.
 - 2. Preparing subgrades for slabs-on-grade, walks, pavements, playgrounds.
 - 3. Excavating and backfilling for buildings and structures.
 - 4. Excavating and backfilling trenches for utilities and pits for buried utility structures.
 - 5. Erosion and Sedimentation Control
- B. Geotechnical Report: Kern County commissioned a geotechnical report in accordance with the requirements of the CBC. This report is a part of the Contract Documents. The report is available for Contractor's examination.
 - 1. Geotechnical Report Publication Information:
 - a. Title: Geotechnical Investigation for the Buena Vista Aquatic Recreational Area
 - b. Date: August 16, 2023
 - c. Author: Soils Engineering, Inc.
 - d. Document / Project Number: 23-18994

1.3 SCOPE OF WORK

The work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of "earth moving," complete as shown on the drawings and as specified herein.

- 1.4 RELATED SECTIONS
 - 1. Section 033000 for "Cast-in-Place Concrete"
 - 2. Section 321000 Bases and Paving
 - 3. Section 321123 Aggregate Base Course
 - 4. Section 321216 Asphalt Paving
 - 5. Section 331000 Water Utilities
 - 6. Section 333100 Sanitary Sewage Piping
 - 7. Section 353100 for "Pre-Manufactured Slope Protection (Flexamat)"

1.5 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
 - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Aggregate layer placed between the subbase course, or the subgrade if there is no subbase course, and hot-mix asphalt paving or concrete paving.

- C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course (Capillary Break): Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
- F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Kern County Construction Manager. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
 - 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
 - 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Kern County. Unauthorized excavation, as well as remedial work directed by Kern County Construction Manager, shall be without additional compensation.
- G. Fill: Soil materials used to raise existing grades.
- H. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or 3/4 cu. yd. for footing, trench, and pit excavation that cannot be removed by rock-excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:
 - 1. Equipment for Footing, Trench, and Pit Excavation: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch-maximum-width, short-tip-radius rock bucket; rated at not less than 138-hp flywheel power with bucket-curling force of not less than 28,700 lbf and stick-crowd force of not less than 18,400 lbf with extra-long reach boom.
 - 2. Equipment for Bulk Excavation: Late-model, track-mounted loader; rated at not less than 230-hp flywheel power and developing a minimum of 47,992-lbf breakout force with a general-purpose bare bucket.
- I. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- J. Subbase Course: Aggregate layer placed between the subgrade and base course for asphalt or concrete pavement.
- K. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase or base course if there is no subbase, drainage fill, drainage course, or topsoil materials.
- L. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.6 PRE-GRADING MEETINGS

- A. Pre-grading Conference: Conduct pre-excavation conference at Project site.
 - 1. Review methods and procedures related to earthmoving, including:
 - a. Personnel and equipment needed to make progress and avoid delays.
 - b. Coordination of Work with utility locator service.
 - c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
 - d. Extent of trenching.
 - e. Field quality control.
- 1.7 INFORMATIONAL SUBMITTALS
 - A. Qualification Data: For qualified testing agency.
 - B. Refer to Section 01 33 00, Submittal Procedures, for submittal requirements and procedures.
 - C. Compaction Reports: For bottom of excavations and engineered fill.
 - D. Retain "Material Test Reports" Paragraph below for material test reports that are Contractor's responsibility.
 - E. Material Test Reports: For each borrow soil material proposed for fill and backfill as follows:
 - 1. Classification according to ASTM D-2487.
 - 2. Laboratory compaction curve according to ASTM D-1557.
 - F. Pre-excavation Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations. Submit before earth moving begins.

1.8 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: The Contractor will retain an accepted soil and compaction testing agency according to ASTM E-329 and ASTM D-3740 for testing indicated.
- B. If any conflicts arise between these specifications and the Geotechnical report, the Geotechnical report shall prevail.

1.9 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
 - 1. Do not close or obstruct streets, roads, walks, the campground, or other adjacent occupied or used facilities without permission from Kern County and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Kern County or authorities having jurisdiction.
 - 3. Maintain emergency vehicle access at all times. If the Work impacts the emergency vehicle access traffic way, coordinate with the local Fire Marshal.

- B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Kern County's property will be obtained by the Kern County before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by the Kern County Construction Manager.
- C. Utility Locator Service: Retain a professional utility locator service and have all existing underground utilities located and surface-identified before beginning earth-moving operations.
- D. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in section 3.2 in this section.
- E. Do not commence earth-moving operations until plant-protection measures are in place.
- F. The following practices are prohibited within tree and plant protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Erection of sheds or structures.
 - 4. Impoundment of water.
 - 5. Excavation or other digging unless otherwise indicated.
 - 6. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- G. Do not direct vehicle or equipment exhaust towards protection zones.
- H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.
- I. Existing Utilities: Do not interrupt utilities serving facilities occupied by Kern County or others unless permitted in writing by Kern County and then only after arranging to provide temporary utility services according to requirements indicated.
 - 1. Notify Kern County not less than three weeks in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Kern County's written permission.
- J. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

1.10 REQUIRED PERMITS

- A. Building permit:
 - 1. Building permits will be obtained from Kern County Department of Public Works by the Architect and provided to the Contractor.
- B. Stormwater Pollution Prevention Plan (SWPPP):

- 1. With a surface area disturbance of > 1.0 acre, a SWPPP will be required. Depending on the duration of construction, this project may be eligible for an Erosivity Waiver Exemption (EWE). The Contractor is responsible for obtaining an approved SWPPP or EWE from the Regional Water Quality Control Board and for contracting the services of a Qualified SWPPP Practitioner.
- C. Dust Control Plan (DCP):
 - 1. The Contractor is responsible for obtaining an approved DCP from or providing a 48hr notification to the San Joaquin Valley Air Pollution Control Board.

PART 2 - PRODUCTS

- 2.1 SOIL MATERIALS
 - A. General: See recommendations in the Geotech Investigation. Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
 - B. Satisfactory Soils: Onsite soils with classification Groups GW, GM, SW, and SC according to ASTM D-2487, free of rock larger than 3 inches in any dimension, debris, waste, vegetation, and other deleterious matter.
 - 1. Expansion Index: Less than 20 as measured by ASTM D-4829.
 - 2. Upper 18 inches of subgrade fill under landscaped areas: Soil containing not more than 10% stones or lumps larger than 1-1/2 inches.
 - C. Unsatisfactory Soils: Soil Classification Groups OL, CH, MH, OH, and PT according to ASTM D-2487; Soil Classification Groups GC, SC, CL and ML where those soils are classified as medium or highly expansive by ASTM D-4829.
 - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
 - D. Subbase Material: Aggregate subbase material conforming to Greenbook Section 200-2.6 or an aggregate subbase conforming to Section 25 of Caltrans Standard Specifications.
 - E. Imported Fill: Due to strict requirements on what type of soils can be imported to the site, imported soils must come from a Kern County-approved borrow site and cannot not be imported from any other construction site.
 - F. Trench Bedding:
 - 1. Bedding Course:
 - a. For gravity sewer and storm drain: 3/8" crushed rock in accordance with section 200-1.2 of the Greenbook.
 - b. For Force Sewer Main and Water: Sand or crushed aggregate with a sand equivalent of 30 or higher. 100% of the bedding shall pass the No. 4 sieve and shall have an expansion index when saturated with water of not more than 0.5%.
 - 2. Trench backfill:
 - a. Satisfactory Soil or native material generated from trench excavations. Trench backfill material shall be free from organic materials, trash, debris or rocks greater than 3" in diameter. Backfill material shall have a sand equivalent of 20 or higher.

2.2 EQUIPMENT, SERVICES AND MATERIALS BY CONTRACTOR

- A. Excavation, backfill and compaction;
- B. Water for moisture conditioning and dust control;
- C. Measures necessary to prevent erosion and ponding;
- D. All surveying associated with this work;

2.3 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
 - 1. Red: Electric.
 - 2. Yellow: Gas, oil, steam, and dangerous materials.
 - 3. Orange: Telephone and other communications.
 - 4. Blue: Water systems.
 - 5. Green: Sewer systems.
- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
 - 1. Red: Electric.
 - 2. Yellow: Gas, oil, steam, and dangerous materials.
 - 3. Orange: Telephone and other communications.
 - 4. Blue: Water systems.
 - 5. Green: Sewer systems.

PART 3 - EXECUTION

- 3.1 GENERAL
 - A. Review the Geotechnical Investigation for all earthwork and subgrade preparation requirements. Prepare all remedial grading and earthwork activities in accordance with this specification, and the projects geotechnical report.
- 3.2 EROSION AND SEDIMENTATION CONTROL
 - A. Refer to BMP layouts and references, see erosion control plans C-05, C-09, C-12, and C-18.

B. BMPs shall be installed in conformance with CASQA BMP installation details and guidance.

3.3 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Clear and grub the entire area to be rough graded in accordance with the Section 31 10 00 "Site Clearing."

3.4 BLASTING

A. Blasting: Blasting is not permitted.

3.5 EXCAVATION

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials, filter and screen the onsite soils to be in accordance with satisfactory soil materials specifications.
- B. Excavations for Foundations:
 - 1. All excavations shall be performed in a manner to assure drainage during the course of the work. Flooded excavations shall be dewatered and all muck removed before proceeding with the work.
 - 2. The soils at the site maybe sandy and will have a tendency to cave into excavations.
 - 3. Shoring or sloping back trench sidewalls may be required.
 - 4. Removals shall extend downward to earth materials determined in the field to be acceptable for their intended use. It is anticipated that removal bottoms will be founded in existing compacted fill or competent native terrace deposits. Removal depth is estimated to range from one to three feet below existing grade or proposed finish subgrade, whichever is deeper. Deeper removal may be necessary if unexpected conditions are exposed during site work, or if required by the project geotechnical engineer.
 - 5. The exposed excavation bottoms shall be observed and approved by geotechnical engineer and the county grading inspector prior to processing. Dependent on field observations, removals may be adjusted up or down.
- C. Excavations at Edges of Tree- and Plant-Protection Zones:
 - 1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.

3.6 PREPARATION OF SUBGRADE

- A. After excavation, scarify the entire area exposed to a 8-inch depth, moisture condition if necessary, and compact to a minimum 90% of maximum dry density at or above optimum moisture content as determined by ASTM D-1557.
- B. Geotechnical engineer shall inspect the bottom of excavation prior to placement of backfill. Final depth of excavation to be determined by engineer. Civil engineer shall inspect site at completion of all grading activities.
- C. Over-excavate existing soil in locations where unsuitable material exists as directed by the geotechnical engineer. Backfill with engineered fill compacted to a minimum 90% of maximum dry density at or above optimum moisture content as determined by ASTM D-1557.

3.7 SUBGRADE INSPECTION

- A. Notify Project Inspector when excavations have reached required subgrade. The Project Inspector will arrange for the geotechnical engineer to review the subgrade.
- B. If geotechnical engineer determines that unsatisfactory soil is present, continue excavation and replace with subbase material as directed.
- C. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - 1. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Testing Agency, and replace with compacted backfill or fill as directed.
- D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Testing Agency, without additional compensation.

3.8 COMPACTION

- A. The placement of material to be used as compacted backfill shall be free of objectional material such as tree, stumps, root, logs and otherwise deleterious material. The geotechnical engineer is responsible for the selection of the material which the contractor intended to use.
- B. Fill soils shall be placed in six to eight-inch loose lifts, moisture conditioned to 2% over optimum moisture content and compacted to a minimum of 90% relative compaction. This process shall be utilized to finish grade. Fill soils shall be observed and tested by geotechnical engineer to verify adequate compaction by the grading contractor.
- C. To minimize effects of expansive soils and to minimize moisture intrusion the slab shall be underlain by engineered fill compacted to a minimum of 90% relative compaction at 2% over optimum moisture content. Minimum fill thickness shall be one foot below pad subgrade elevation but could be deeper depending on conditions exposed in the field. See geotechnical report for requirements.

D. If the soils at grade become disturbed during construction, they should be brought to 3-4% over optimum moisture content and rolled to a firm, unyielding condition prior to placing concrete. Soils engineering, inc. Will need to verify adequate mitigation.

3.9 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
 - 3. All debris, vegetation, rock and lumps greater than 3 inches in its largest dimension and other objectionable material shall be collected, piled and disposed of by the contractor so as to leave the areas that have been cleared with a neat and finished appearance.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
 - 1. Landscaped Areas: Plus or minus 1-inch.
 - 2. Walks: Plus or minus 1-inch.
 - 3. Pavements: Plus or minus 1/2-inch.
- C. Finished Grading:
 - 1. Finish grade around the structure shall slope away from the foundation a minimum of 2% for a minimum distance of 10 feet. Impervious surfaces within 10 feet of the building foundation shall be sloped a minimum of 1 percent away from the building.
 - 2. Elevations presented on the drawings indicate final grade elevations. Final graded surface shall be sloped uniformly between such points and natural grade.
- D. Any grading anticipated during the rainy season (october 15 to april 15) will require the approval of a construction zone drainage and erosion control plan to prevent damage to adjacent property. Appropriateness of areas shall be be subject to county engineer approval, and may require a desilting basin.
- E. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2-inch when tested with a 10-foot straightedge.
- F. Borrow Pits: The site is limited on the type and quantity of fill that can be imported to the site. Borrow pits on site include the two basins at the southern portion of the site, and the 2-foot deep remedial grading of all pavement areas.
- G. Grading Inspection:
 - 1. Civil engineer shall inspect site at completion of all grading activities.
 - 2. Grading operations for which a permit is required shall be subject to inspection by the grading official.

3. Building pads shall have a drainage gradient of 2 percent toward approved drainage facilities, unless waived by the grading official.

3.10 COMPACTED FILLS, GENERAL

- A. Prior to placement of compacted fills, the exposed ground surface shall be scarified to approximately 8" depth, moisture conditioned and recompacted to the suggested rates below.
- B. In general, onsite soils shall be filtered and screened to the specifications of Satisfactory Soils. Compacted fill shall be placed in lifts of approximately 8 inches of loose thickness for material compacted by heavy compaction equipment and not more than 4 inches in loose thickness for material compacted by hand-operated tampers.
- C. Soil Moisture Control: Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.
 - 3. Following a delay in grading operations, the exposed surface of previously compacted fill shall be prepared to receive fill. If the previously compacted fill has excessively dried out, the fill may need to be scarified, moisture conditioned and recompacted.
- D. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D-1557:
 - 1. Under structures, and building slabs, compact to 90% of maximum dry density at optimum moisture content in accordance with ASTM D-1557. See sections A and C under "Earthwork Recommendations" in the geotechnical report.
 - 2. Under the pavements, compact to 90% of maximum dry density at optimum moisture content in accordance with ASTM D-1557. Extend compaction area to 2ft beyond pavement edges. See section "Pavement Areas" in "Proposed Exterior Concrete Flatwork Areas" in the geotechnical report.
 - 3. Under walkways, scarify and recompact to 90% of maximum dry density at optimum moisture content in accordance with ASTM D-1557. See "Proposed Exterior Concrete Flatwork Areas" in the geotechnical report.
 - 4. For utility trenches, compact to 90% of maximum dry density at optimum moisture content in accordance with ASTM D-1557. See Table A under "Utility Lines" in the geotechnical report.
- E. Fill slopes shall not be constructed on natural slopes steeper than 1 unit vertical in 2 units horizontal (50% slope).the ground surface shall be prepared to receive fill by removing vegetation, non-complying fill, topsoil and other unsuitable materials scarifying to provide a bond with the new fill and, where slopes are steeper than 1 unit vertical in 5 units horizontal (20% slope) and the height is greater than 5 feet, by benching into sound bedrock or other competent material as determined by the soils engineer. The bench under the toe of a fill on a slope steeper than 1 unit vertical in 5 units horizontal (20% slope) shall be at least 10 feet wide. The area beyond the toe of fill shall be sloped for sheet overflow or a paved drain shall be provided. When fill is to be placed over a cut, the bench under

the toe of fill shall be at least 10 feet wide but the cut shall be made before placing the fill and acceptance by the engineer or engineering geologist or both as a suitable foundation for fill.

3.11 IMPORTED SOIL

A. General: Due to strict regulations on the source and type of soils that can be imported to this site, all imported soil must be approved by the Port and the Geotechnical engineer in writing prior to hauling to the job site. See 2.1E for acceptable imported fill material.

3.12 EARTHWORK FOR STRUCTURES

- A. General: Structural building areas are defined as the areas underlying the buildings and ancillary structures, extending a horizontal distance of 5 feet beyond the footprint of the structures.
- B. Remedial Grading:
 - 1. Existing site soils within the structural building area should be over excavated to a depth of 2 feet below the bottom of the foundation system. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. The bottom of the excavation shall be scarified to a depth of 8 inches, moisture conditioned and recompacted to a relative compaction of 90 percent as evaluated by ASTM D-1557.
 - 2. For ancillary structures, excavate to a depth of 1 foot below the bottom of the proposed foundation within a tolerance of plus or minus 1 inch. The bottom of the exaction shall be scarified to a depth of 8 inches, moisture conditioned and recompacted to a relative compaction of 90 percent as evaluated by ASTM D-1557.
- C. Backfill Placement, Fill Placement and Compaction: After scarification and recompaction of the bottom of the over excavation the Contractor shall obtain acceptance by the Geotechnical engineer. Satisfactory soils shall be utilized to replace the over excavated soils. The satisfactory soils should be placed at or above the optimum moisture content and compacted in uniform horizontal lifts to achieve a relative compaction of 90 percent as evaluated by ASTM D-1557. The lift thickness should not exceed 8 inches in loose thickness. Successive lifts should be treated in a like manner until the finished grades are achieved. Ancillary structures do not need geogrid at the base of the foundation.

3.13 EARTHWORK FOR PARKING LOTS

- A. General: Parking lot area is defined as the areas underlying the vehicular pavement and extending a horizontal distance of 5 feet beyond the footprint of asphalt, concrete and DG vehicular pavements.
- B. Remedial Grading: Existing site soils within the parking lot area should be over excavated to a depth of 2 feet below the existing ground surface within a tolerance of plus or minus 1 inch. The bottom of the excavation shall be scarified to a depth of 8 inches, moisture conditioned and recompacted to a relative compaction of 90 percent as evaluated by ASTM D-1557. Place excavated soil throughout the remaining site in accordance with general compacted fills section.
- C. Backfill Placement, Fill Placement and Compaction: After scarification and compaction of the bottom of the over excavation and acceptance by the Port and Geotechnical engineer, Subbase Material shall be utilized to replace the over excavated soils. The Subbase material should be placed at or above the optimum moisture content and compacted in uniform horizontal lifts to achieve a relative compaction of 90 percent as evaluated by ASTM D-1557. The lift thickness should not exceed 8 inches in loose thickness.

Successive lifts should be treated in a like manner until the subgrades of the pavement section is achieved. The upper 12" of parking lot subgrade should be compacted to 95 percent as evaluated by ASTM D-1557.

D. Pavement Section: After compaction subgrade is achieved and accepted by the Geotechnical engineer, compact base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 90 percent of maximum dry unit weight according to ASTM D-1557. Place base course of a design thickness of 6 inches or less in a single compacted layer. Place base course that exceeds a design thickness 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.

3.14 EARTHWORK FOR WALKS

- A. General: Walkway areas are defined as the concrete pedestrian pavement and extending a horizontal distance of 2 feet beyond the footprint of all concrete pedestrian pavements.
- B. Remedial Grading: Excavate surfaces under walkway areas to the indicated lines, cross sections, elevations, and subgrades. The subgrade of the walkway areas shall be scarified to a minimum depth of 8 inches, moisture conditioned and recompacted to a relative compaction of 90 percent as evaluated by ASTM D-1557.
- C. Backfill Placement, Fill Placement and Compaction: After scarification and recompaction of the bottom of the over excavation and acceptance by the Geotechnical engineer, Satisfactory Soils shall be utilized to replace the over excavated soils. Satisfactory Soils material should be placed at or above the optimum moisture content and compacted in uniform horizontal lifts to achieve a relative compaction of 90 percent as evaluated by ASTM D-1557. The lift thickness should not exceed 8 inches in loose thickness. Successive lifts should be treated in a like manner until the finished grades are achieved.

3.15 UTILITY TRENCHES

- A. Excavation:
 - 1. Trench width shall include a minimum 12 inches of clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.
 - a. Clearance: 12 inches each side of pipe or conduit unless otherwise indicated.
 - 2. Trench Bottoms:
 - a. Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
 - b. Unless indicated otherwise, excavate trenches 4 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.
 - c. Unless indicated otherwise, excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
 - 3. Trenches in Tree and Plant Protection Zones:
 - a. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
 - b. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.

- B. Backfill:
 - 1. Pipe Zone: Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Place additional bedding material to a minimum of 12 inches above the top of pipe. Carefully compact under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
 - 2. Trench Zone: Place and compact final backfill of satisfactory soil to final subgrade elevation. Backfill voids with satisfactory soil while removing shoring and bracing. No trenches or excavations shall be left open overnight.
 - 3. Compaction Requirements: For utility trenches, compact to 90% of maximum dry density at optimum moisture content in accordance with ASTM D-1557. See Table A under "Utility Lines" in the geotechnical report. Compaction tests will be required on backfill of all trenches and excavations.
 - 4. Warning Tape: Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.
- C. Shallow Trenches under Roadways and Driveways: Unless otherwise indicated, provide 4-inch-thick, concrete-base slab support for piping or conduit less than 30 inches below finished surface of roadways or driveways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase course (or base course if no subbase course is indicted). Concrete to be minimum 2500 PSI. Coordinate backfilling with utilities testing.

3.16 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of trees or plant material to remain.
 - 2. Obtain Kern County's acceptance of stockpile locations prior to creation. If stockpile must be moved, obtain Kern County's acceptance.

3.17 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor shall engage a qualified independent geotechnical engineering testing agency to perform tests and inspections.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Project Inspector.

- D. Testing agency will test compaction of soils in place according to ASTM D-1556, ASTM D-2167, ASTM D-2937, and ASTM D-6938, as applicable. Tests will be performed at the following locations and frequencies:
 - 1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab but in no case fewer than three tests.
 - 2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet or less of wall length but no fewer than two tests.
 - 3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 100 feet or less of trench length but no fewer than two tests.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.18 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- C. Scarify or remove and replace soil material to depth as directed by Geotechnical engineer; reshape and recompact.
- D. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Kern County's property.

END OF SECTION 312000

SECTION 321000 BASES AND PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Preparing base for pavement
 - 2. Preparing asphaltic concrete pavement
- B. Geotechnical Report: Kern County commissioned a geotechnical report in accordance with the requirements of the CBC. This report is a part of the Contract Documents. The report is available for Contractor's examination.
 - 1. Geotechnical Report Publication Information:
 - a. Title: Geotechnical Investigation for the Buena Vista Aquatic Recreational Area
 - b. Date: August 16, 2023
 - c. Author: Soils Engineering, Inc.
 - d. Document / Project Number: 23-18994

1.3 SCOPE OF WORK

The work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of "bases and paving," complete as shown on the drawings and as specified herein.

- 1.4 RELATED SECTIONS
 - A. Section 321123 "Aggregate Base Course"
 - B. Section 321216 "Asphalt Paving"
- 1.5 DEFINITIONS
 - A. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase or base course if there is no subbase, drainage fill, drainage course, or topsoil materials.
 - B. Base Course: Aggregate layer placed between the subbase course, or the subgrade if there is no subbase course, and hot-mix asphalt paving or concrete paving.
 - C. Pavement: Paved surfacing on top of base course.

1.6 PRE-GRADING MEETINGS

- A. Pre-paving Conference: Conduct subgrade preparation, base construction and paving construction conferences at Project site.
 - 1. Review methods and procedures related to subgrade preparation, base preparation and paving construction, including:
 - a. Personnel and equipment needed to make progress and avoid delays.

- b. Coordination of Work with utility locator service.
- c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
- d. Field quality control.

1.7 ACTION SUBMITTALS

- A. Product Data: For each type of the following manufactured products required:
 - 1. Warning tapes.

1.8 INFORMATIONAL SUBMITTALS

- A. Coordinate "Qualification Data" Paragraph below with qualification requirements in "Quality Assurance" Article.
- B. Qualification Data: For qualified testing agency.
- C. Retain "Material Test Reports" Paragraph below for material test reports that are Contractor's responsibility.
- D. Material Test Reports: Compaction reports by geotechnical engineer
- E. Pre- and Post-subgrade preparation and base installation Photographs or Video: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations. Submit before paving begins.

1.9 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: The Contractor will retain an accepted soil and compaction testing agency according to ASTM E-329 and ASTM D-3740 for testing indicated.
- B. If any conflicts arise between these specifications and the Geotechnical report, the Geotechnical report shall prevail.

1.10 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
 - 1. Do not close or obstruct streets, roads, walks, the campground, or other adjacent occupied or used facilities without permission from Kern County and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Kern County or authorities having jurisdiction.
 - 3. Maintain emergency vehicle access at all times. If the Work impacts the emergency vehicle access traffic way, coordinate with the local Fire Marshal.
- B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Kern County's property will be obtained by the Kern County before award of Contract.

- 1. Do not proceed with work on adjoining property until directed by the Kern County Construction Manager.
- C. Utility Locator Service: Retain a professional utility locator service and have all existing underground utilities located and surface-identified before beginning earth-moving operations.
- D. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in 31 20 00 EARTH MOVING section 3.2.
- E. Do not commence earth-moving operations until plant-protection measures are in place.
- F. The following practices are prohibited within tree and plant protection zones:
 - 1. Revise subparagraphs below to suit Project.
 - 2. Storage of construction materials, debris, or excavated material.
 - 3. Parking vehicles or equipment.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- G. Do not direct vehicle or equipment exhaust towards protection zones.
- H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.
- I. Existing Utilities: Do not interrupt utilities serving facilities occupied by Kern County or others unless permitted in writing by Kern County and then only after arranging to provide temporary utility services according to requirements indicated.
 - 1. Notify Kern County not less than three weeks in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Kern County's written permission.
- J. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

1.11 REQUIRED PERMITS

- A. Building permit: Building permits will be obtained by the Architect and provided to the Contractor.
- B. Stormwater Pollution Prevention Plan (SWPPP): With a surface area disturbance of > 1.0 acre, a SWPPP will be required. Depending on the duration of construction, this project may be eligible for an Erosivity Waiver Exemption (EWE). The Contractor is responsible for obtaining an approved SWPPP or EWE from the Regional Water Quality Control Board and for contracting the services of a Qualified SWPPP Practitioner.

C. Dust Control Plan (DCP): The Contractor is responsible for obtaining an approved DCP from or providing a 48hr notification to the San Joaquin Valley Air Pollution Control Board.

PART 2 - PRODUCTS

2.1 BASE MATERIALS

- A. General: See recommendations in the Geotech Investigation. Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Base Material: Aggregate base material conforming to Greenbook Section 200-2.6 or an aggregate base conforming to Class 2 requirements in Section 26 of Caltrans Standard Specifications.
- C. Pavement shall be Hot Mix Asphalt (HMA) and shall meet the requirements of the 2010 or newer, State of California, Standard Specifications Manual (SSM), Section 39.
- D. These recommendations are valid only if the pavement is properly drained and shoulder areas are graded to prevent water ponding at pavement edges. All construction should be subject to adequate tests and observations to verify conformance with these recommendations.

2.2 EQUIPMENT, SERVICES AND MATERIALS BY CONTRACTOR

- A. Excavation, backfill and compaction;
- B. Water for moisture conditioning and dust control;
- C. Base course and Hot mix asphalt
- D. Measures necessary to prevent erosion and ponding;
- E. All surveying associated with this work;
- 2.3 ACCESSORIES
 - A. Signage by Contractor. See note on sht C-18.

PART 3 - EXECUTION

3.1 GENERAL

A. Review the Geotechnical Investigation for all earthwork and subgrade preparation requirements. Prepare all remedial grading and earthwork activities in accordance with this specification, and the projects geotechnical report.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Clear and grub the entire area to be rough graded in accordance with the Section 31 10 00 "Site Clearing."

3.3 BLASTING

A. Blasting: Blasting is not permitted.

3.4 EXCAVATION

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials, filter and screen the onsite soils to be in accordance with satisfactory soil materials specifications.
- B. Excavations for Foundations:
 - 1. All excavations shall be performed in a manner to assure drainage during the course of the work. Flooded excavations shall be dewatered and all muck removed before proceeding with the work.
 - 2. The soils at the site maybe sandy and will have a tendency to cave into excavations.
 - 3. Shoring or sloping back trench sidewalls may be required.
 - 4. Removals shall extend downward to earth materials determined in the field to be acceptable for their intended use. It is anticipated that removal bottoms will be founded in existing compacted fill or competent native terrace deposits. Removal depth is estimated to range from one to three feet below existing grade or proposed finish subgrade, whichever is deeper. Deeper removal may be necessary if unexpected conditions are exposed during site work, or if required by the project geotechnical engineer.
 - 5. The exposed excavation bottoms shall be observed and approved by geotechnical engineer and the county grading inspector prior to processing. Dependent on field observations, removals may be adjusted up or down.
- C. Excavations at Edges of Tree- and Plant-Protection Zones:
 - 1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.

3.5 PREPARATION OF SUBGRADE

- A. After excavation, scarify the entire area exposed to a 8-inch depth, moisture condition if necessary, and compact to a minimum 90% of maximum dry density at or above optimum moisture content as determined by ASTM D-1557.
- B. Geotechnical engineer shall inspect the bottom of excavation prior to placement of backfill. Final depth of excavation to be determined by engineer. Civil engineer shall inspect site at completion of all grading activities.
- C. Over-excavate existing soil in locations where unsuitable material exists as directed by the geotechnical engineer. Backfill with engineered fill compacted to a minimum 90% of

maximum dry density at or above optimum moisture content as determined by ASTM D-1557.

3.6 SUBGRADE INSPECTION

- A. Notify Project Inspector when excavations have reached required subgrade. The Project Inspector will arrange for the geotechnical engineer to review the subgrade.
- B. If geotechnical engineer determines that unsatisfactory soil is present, continue excavation and replace with subbase material as directed.
- C. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - 1. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Testing Agency, and replace with compacted backfill or fill as directed.
- D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Testing Agency, without additional compensation.

END OF SECTION 321000
SECTION 321123 AGGREGATE BASE COURSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Aggregate base course on a prepared subgrade.
- B. Geotechnical Report: Kern County commissioned a geotechnical report in accordance with the requirements of the CBC. This report is a part of the Contract Documents. The report is available for Contractor's examination.
 - 1. Geotechnical Report Publication Information:
 - a. Title: Geotechnical Investigation for the Buena Vista Aquatic Recreational Area
 - b. Date: August 16, 2023
 - c. Author: Soils Engineering, Inc.
 - d. Document / Project Number: 23-18994
- C. Reference Sections:

1.3 SCOPE OF WORK

The work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of "aggregate base course," complete as shown on the drawings and as specified herein.

- 1.4 RELATED SECTIONS
 - A. Section 312000 for "Earth Moving"
 - B. Section 033000 for "Cast-in-Place Concrete"
 - C. Section 321000 for "Bases and Paving"
 - D. Section 321216 for "Asphalt Paving"

1.5 REFERENCES

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. M147, Standard Specification for Materials for Aggregate and Soil- Aggregate Subbase, Base, and Surface Courses.
 - 2. T11, Standard Method of Test for Materials Finer Than 75 □m (No. 200) Sieve in Mineral Aggregates by Washing.
 - 3. Revised 08/2015
 - 4. T27, Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates.

- 5. T89, Standard Specification for Determining the Liquid Limit of Soils.
- 6. T90, Standard Specification for Determining the Plastic Limit and Plasticity Index of Soils.
- 7. T96, Standard Specification for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
- 8. T99, Standard Specification for the Moisture-Density Relations of Soils Using a 2.5 kg (5.5 pound) Rammer and a 305 mm (12 in) Drop.
- 9. T180, Standard Specification for Moisture-Density Relations of Soils Using a 4.54 kg (10-lb) Rammer and a 457 mm (18-in) Drop.
- 10. T190, Standard Specification for Resistance R-Value and Expansion Pressure of Compacted Soils.
- 11. T265, Standard Method of Test for Laboratory Determination of Moisture Content of Soils.
- 12. T310, Standard Specification for In-Place Density and Moisture Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
- B. ASTM International (ASTM):
 - 1. C88, Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.
 - 2. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600 kN-m/m3)).
 - 3. D1557, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3(2,700 kN-m/m3)).
 - 4. D1883, Test Method for CBR (California Bearing Ratio) of Laboratory Compacted Soils.
 - 5. D2419, Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
 - 6. D4791, Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

1.6 SUBMITTALS

- A. Section 01 33 00 Submittal Procedures: Requirements for submittals.
- B. Samples: Submit to testing laboratory 10-pound sample of each type of aggregate in airtight containers.
- C. Materials Source: Submit name of imported materials suppliers.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- 1.7 QUALITY ASSURANCE
 - A. Perform Work in accordance with Kern County Grading Ordinance.
 - B. Maintain one copy of documents on site.

- C. Furnish each aggregate material from single source throughout the Work.
- D. Use sources approved by Kern County Parks and Recreation District.
- E. Geotechnical Testing Agency Qualifications: The Contractor will retain an accepted compaction testing agency according to ASTM E-329 and ASTM D--3740 for testing indicated.
- F. If any conflicts arise between these specifications and the Geotechnical report, the Geotechnical report shall prevail.

PART 2 - PRODUCTS

- 2.1 MATERIALS
 - A. General: See recommendations in the Geotech Investigation. If any conflicts arise between these specifications and the Geotechnical report, the Geotechnical report shall prevail.
 - B. Aggregates: Aggregates for bases shall be crushed stone, crushed slag, crushed gravel or natural gravel that conforms to the quality requirements of AASHTO M147, except that the requirements for the ratio for the minus No. 200 sieve fraction to the minus No. 40 sieve fraction shall not apply. The requirements for the Los Angeles wear test shall not apply to Class 1, 2, and 3. Aggregates for bases shall meet the grading requirements as called out in the drawings.

	Percentage by Weight Passing Square-Mesh Sieves							
Standard US Sieve Size	LL < 35			LL < 30				
	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	
4 inches		100						
3 inches		95 - 100						
2½inches	100							
2 inches	95 - 100			100				
1½inches				90 - 100	100			
1 inch					95 - 100		100	
¾ inch				50 - 90		100		
No. 4	30 - 65			30 - 50	30 - 70	30 - 65		
No. 8						25 - 55	20 - 85	
No. 200	3 - 15	3 - 15	20 max.	3 - 12	3 - 15	3 - 12	5 - 15	

C. Gradations:

PART 3 - EXECUTION

3.1 GENERAL

- A. Equipment:
 - 1. Equipment shall be capable of performing the work as described in this specification. Equipment that is inadequate to obtain the results specified shall be replaced or supplemented as required to meet the requirements of this specification. Any equipment that is used in an improper manner may be cause for rejection of the work if in the opinion of engineer the work fails to meet the requirements of this specification.
 - 2. Equipment used for compaction shall be the rolling type, vibratory type, or combination of both types, and shall be of sufficient capacity to meet the compaction requirements herein.

3.2 PREPARATION

- A. General:
 - 1. The foundation shall be considered to be the finished earth subgrade, subbase course, or base course, as the case may be, upon which any subbase, base, or surface course is to be constructed.
 - 2. Preparation of foundation for construction of a subbase, base, or surface course shall consist of the work necessary to restore, correct, strengthen, or prepare the foundation to a condition suitable for applying and supporting the intended course.
 - 3. The foundation shall be prepared and constructed such that it will have a uniform density throughout. It shall be brought to the required alignment and cross section with equipment and methods adapted for the purpose. Upon completion of the shaping and compacting operations, the foundation shall be smooth, at the required density, and at the proper elevation and contour to receive the aggregate base course.
 - 4. Unless otherwise provided, all holes, ruts, and other depressions in the foundation shall be filled with materials similar to those existing in the foundation. High places shall be excavated and removed to the required lines, grade and section.
 - 5. Areas of yielding or unstable material shall be excavated and backfilled with stabilization rock as determined by engineer. Base course material shall not be placed on a foundation that is soft, spongy, or one that is covered by ice or snow. Base course shall not be placed on a dry or dusty foundation where the existing condition would cause rapid dissipation of moisture from the base course material and hinder or preclude its proper compaction. Dry foundations shall have water applied, reworked, and compacted as necessary.
 - 6. Engineer may direct contractor to make minor adjustments in the finish grade from that shown in the drawings as may be necessary or desirable to maintain the characteristics of a stabilized foundation by minimizing the amount of cutting into or filling.

- B. Roads and Parking Areas: For aggregate base course roads and parking areas, the top six (6) inches of topsoil shall be stripped within the area to be aggregate surfaced. Following stripping of the topsoil, the upper twelve (12) inches of the subgrade shall be scarified and compacted to a minimum of ninety percent (90%) of the Maximum Standard Proctor Density (ASTM D-698). Onsite material may be used as accepted by engineer, for compacted fill for the aggregate base course. Fill shall be placed within two percent (2%) of optimum moisture content and compacted to a minimum of ninety percent (90%) of the Maximum Standard Proctor Density (ASTM D-698).
- C. Pavements: Aggregate base course used as a foundation for pavements shall be placed on the subgrade within two percent (2%) of optimum moisture and compacted to a minimum of one hundred percent (100%) of the Maximum Modified Proctor Density (ASTM D-1557). The top six (6) inches of topsoil shall be stripped within the area to be aggregate surfaced. Following stripping of the topsoil, the upper twelve (12) inches of the subgrade shall be scarified and compacted to a minimum of ninety percent (90%) of the Maximum Standard Proctor Density (ASTM D-698). Onsite material may be used, as accepted by engineer, for compacted fill for the aggregate base course. Fill shall be placed within two percent (2%) of optimum moisture content and compacted to a minimum of ninety percent (90%) of the Maximum Standard Proctor Density (ASTM D-698). Deviations in aggregate base course under pavements of more than one-quarter (1/4) inch in ten (10) feet, measured with a ten-foot (10') straight edge, shall be corrected prior to pavement construction.
- D. Earth Subgrade: When the foundation is an earth subgrade it shall be prepared by removing all vegetation, excavating and removing materials, filling depressions, scarifying, shaping, smoothing and compacting to meet the required grade, section and density. Stones over six (6) inches in greatest dimension shall be removed.

3.3 AGGREGATE PLACEMENT

- A. The aggregate base course shall be constructed to the width and section shown in the drawings. If the required compacted depth of base course exceeds six (6) inches, the base shall be constructed in two (2) or more layers of approximate equal thickness. The maximum compacted thickness of any one (1) layer shall not exceed six (6) inches.
- B. Each layer shall be constructed as far in advance of the succeeding layer as engineer may direct. The work shall, in general, proceed from the point on the project nearest the point of supply of the aggregate in order that the hauling equipment may travel over the previously placed material, and the hauling equipment shall be routed as uniformly as possible over all portions of the previously constructed courses or layers of the base course.
- C. The material shall be deposited on the soil foundation, or previously placed layer, in a manner to minimize segregation and to facilitate spreading to a uniform layer of the required section. In the event that blending of materials is necessary to provide required gradation and properties of the material, and is done in the roadway, the same shall be accomplished by mixing the aggregate and blending material by means of blade graders, discs, harrows, or other equipment to effect a uniform distribution and gradation throughout the finished mixture. Excessive mixing and grading that will cause segregation between the coarse and fine materials is prohibited.

3.4 COMPACTION

A. After a layer or course has been placed and spread to the required thickness, width and contour, it shall be compacted. If the material is too dry to readily attain the required density,

it shall be uniformly moistened to the degree necessary during compaction operations for proper compaction.

- B. Compaction of each layer shall continue until the required density specified in Article Preparation of Foundation is reached. The surface of each layer shall be maintained during compaction operations in such a manner that a uniform texture is produced and aggregates firmly keyed.
- C. All areas where proper compaction is not obtainable due to segregation of materials, excess fines, or other deficiencies in the aggregate shall be reworked as necessary or the material removed and replaced with aggregates that will meet this specification.
- D. The surface of each layer shall be kept true and smooth at all times.

3.5 MIXING

- A. Unless otherwise specified, contractor shall mix the aggregate by any one of the three following methods:
 - 1. Stationary Plant Method: Aggregate base course and water shall be mixed in an approved mixer. After mixing, the aggregate shall be transported to the project site while it contains the proper moisture content and shall be placed on the roadbed by means of an approved spreader.
 - 2. Travel Plant Method: After the material for each layer has been placed through an aggregate spreader or windrow-sizing device, it shall be uniformly mixed by a traveling mixing plant.
 - 3. Road Mix Method: After material for each layer has been placed, the materials shall be mixed while at optimum moisture content by motor graders or other approved equipment until the mixture is uniform throughout.

3.6 SHOULDER CONSTRUCTION

- A. Shoulders shall be constructed with base course material to conform to the elevation and section shown in the drawings. No equipment shall be used which by its design or through its manner of operation will damage the pavement or curbs. Insofar as practicable, the base course material shall be placed directly on the shoulder area. Materials that are deposited outside the shoulder area, if not contaminated, shall be recovered and placed within the required limits. Contractor shall not be compensated for materials not recovered as determined by engineer.
- B. Materials shall not be deposited on the pavement or surfacing during placing unless specifically permitted by engineer.
- C. The base course material as placed shall be spread and compacted to the required density in layers not exceeding six (6) inches in compacted thickness. Any material inadvertently placed on the pavement shall be broomed from the pavement. The result shall not effect a change in the gradation of the shoulder material.

3.7 TOLERANCES

- A. Section 01 40 00 Quality Requirements: Tolerances.
- B. Maximum Variation from Thickness: 1/2 inch.
- C. Maximum Variation from Elevation: 1/2 inch.

3.8 FIELD QUALITY CONTROL

- A. Section 01 40 00 Quality Requirements: Independent laboratory, field inspecting, testing, adjusting, and balancing.
- B. Laboratory Material Tests: Conform to Modified Proctor ASTM D-1557 or AASHTO T180.
- C. In-place Compaction Tests: Conform to:
 - 1. Density Tests: ASTM D-1556, ASTM D-2167, or ASTM D-2922.
 - 2. Moisture Tests: ASTM D-3017.
- D. Compaction:
 - 1. 100 percent of maximum when measured in-place by standard methods.
 - 2. 98 percent of maximum when measured in-place by nuclear methods.
- E. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- F. Frequency of Compaction Tests: Two tests per layer for every 5,000 tons of aggregate base course.

END OF SECTION 321123

SECTION 321216 ASPHALT PAVING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Placing of base course.
 - 2. Placing of asphalt concrete.
 - 3. Sealant.
 - 4. Field quality control.
 - 5. Maintenance of pavement.
- B. Geotechnical Report: Kern County commissioned a geotechnical report in accordance with the requirements of the CBC. This report is a part of the Contract Documents. The report is available for Contractor's examination.
 - 1. Geotechnical Report Publication Information:
 - a. Title: Geotechnical Investigation for the Buena Vista Aquatic Recreational Area
 - b. Date: August 16, 2023
 - c. Author: Soils Engineering, Inc.
 - d. Document / Project Number: 23-18994

1.3 SCOPE OF WORK

The work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of "asphalt paving," complete as shown on the drawings and as specified herein.

1.4 RELATED SECTIONS

- 1. Section 312000 for "Earth Moving"
- 2. Section 321000 for "Bases and Paving"
- 3. Section 321123 for "Aggregate Base Course"

1.5 REFERENCES

- A. State of California, Department of Transportation (Caltrans), Standard Specifications, latest edition:
 - 1. Section 37 Bituminous Seals
 - 2. Section 39 Asphalt Concrete
 - 3. Section 92 Asphalt Binders
 - 4. Section 94 Asphaltic Emulsions
 - 5. Section 96 Geosynthetics
- B. State of California, Department of Transportation (Caltrans), Standard Test Methods:

- 1. Calif. Test 202 Method of Tests for Sieve Analysis of Fine and Coarse Aggregates
- 2. Calif. Test 375 Method of Determining the in Place Density and Relative Compaction of AC
- 3. Pavement
- 4. Calif. Test 379 Method of Determining Asphalt Content of Bituminous Mixtures by Use of the Troxler Nuclear Gauge (Model 3241)
- 5. Calif. Test 382 Method of Test for Determination of Asphalt and Moisture Contents of Bituminous
- 6. Mixtures by the Ignition Method

1.6 PRE-GRADING MEETINGS

- A. Pre-grading Conference: Conduct pre-excavation conference at Project site.
 - 1. Review methods and procedures related to earthmoving, including:
 - a. Personnel and equipment needed to make progress and avoid delays.
 - b. Coordination of Work with utility locator service.
 - c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
 - d. Field quality control.

1.7 INFORMATION SUBMITTALS

- A. General: Refer to Section 01 33 00, Submittal Procedures, for submittal requirements and procedures.
- B. Mix Design: Submit proposed mix design for each asphaltic concrete mixture and seal coat to be used in the work, covering the specific materials to be used in the mixes. Include test data in support of each proposed mix design.
- C. Test Reports: Submit test results of sampling and testing, and inspection records within 24 hours of asphaltic concrete placement.

1.8 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: The Contractor will retain an accepted soil an compaction testing agency according to ASTM E-329 and ASTM D-3740 for testing indicated.
- B. If any conflicts arise between these specifications and the Geotechnical report, the Geotechnical report shall prevail.

1.9 FIELD CONDITIONS

A. Protect concrete pavements and walks, curbs and bases, and other improvements adjacent to the operations with suitable materials. The Contractor shall be responsible for any damage caused by the Contractor's employees or equipment and shall make necessary repairs. Buildings and other surfaces shall be covered with paper or other protection, where required. All damage caused by the Contractor's operations shall be repaired or replaced as required.

1.10 REQUIRED PERMITS

- A. Building permit:
 - 1. Building permits will be obtained by the Architect and provided to the Contractor
- B. Stormwater Pollution Prevention Plan (SWPPP):
 - With a surface area disturbance of > 1.0 acre, a SWPPP will be required. Depending on the duration of construction, this project may be eligible for an Erosivity Waiver Exemption (EWE). The Contractor is responsible for obtaining an approved SWPPP or EWE from the Regional Water Quality Control Board and for contracting the services of a Qualified SWPPP Practitioner.
- C. Dust Control Plan (DCP):
 - 1. The Contractor is responsible for obtaining an approved DCP from or providing a 48hr notification to the San Joaquin Valley Air Pollution Control Board.

PART 2 – PRODUCTS

2.1 BASE COURSE MATERIAL

A. Class 2 Aggregate Base mineral aggregate as specified in Section 32 11 23, Aggregate Base Courses, of these Specifications.

2.2 TACK COAT

- A. Tack Coat: Diluted SS-1 or SS-1h emulsion in conformance with Section 94 of the Caltrans Standard Specifications.
- 2.3 ASPHALT PAVING MATERIALS
 - A. General: See recommendations in the Geotech Investigation.
 - B. Hot Mix Asphalt: Type A, with the gradation of the combined aggregate conforming to onehalf inch maximum size, or three-fourth inch maximum size, as indicated, and as specified in Section 39 of the Caltrans Standard Specifications. Unless shown otherwise, top twoinch lift shall be one-half inch maximum size.
 - C. Asphalt Binder: Performance Grade asphalt binder, in accordance with Section 92 of the Caltrans Standard Specifications.
 - D. Mixing Facilities: Asphalt concrete surfacing material shall be furnished from an approved commercial asphalt central mixing plant.

2.4 BITUMINOUS SEAL

A. Bituminous seal, as indicated, in conformance with Section 37 of the Caltrans Standard Specifications.

2.5 MIX DESIGN

A. Design of asphaltic concrete mixes shall be provided by the Contractor and shall be obtained from a qualified independent testing laboratory or agency, properly equipped to design asphaltic concrete mixes. Costs of obtaining mix designs shall be at the Contractor's expense.

B. Design of asphaltic concrete mixes, including aggregate quality and gradation, shall conform with the quality requirements of Section 39 of the Caltrans Standard Specifications.

2.6 SOURCE QUALITY CONTROL

- A. The Contractor shall perform sampling and tests of materials in accordance with the following requirements:
 - 1. Aggregate Grading: The combined aggregate, prior to addition of asphalt binder (paving asphalt), shall conform with the "Operating Range" requirements specified in Section 39 of the Caltrans Standard Specifications for the type of aggregate specified herein. Conformance with grading requirements shall be determined by California Test 202.
 - 2. Frequency of Tests: Minimum testing frequency shall be one test for every 500 tons, or fraction thereof, for each graded aggregate placed each day.
 - 3. Asphalt Content: Asphalt content shall be within plus or minus 0.50 percent of the mix design content. Conformance with asphalt content requirements shall be determined by California Test 382 or 379 from samples taken from the mat behind the paving machine. Minimum testing frequency shall be one test for every 500 tons, or fraction thereof, for each asphaltic paving mix placed each day.

PART 3 - EXECUTION

- 3.1 PLACING OF BASE COURSE
 - A. The Contractor shall call for an inspection by the engineer and obtain written approval of the sub grade before proceeding with the base course.
 - B. Base course shall be minimum uniform thickness after compaction of dimensions indicated. Where not indicated, compacted thickness shall be six inches for parking stalls and eight inches for roads, driveways, and aisles of parking areas.
 - C. Base course shall be placed over finished sub grade and compacted in accordance with Section 32 11 23, Aggregate Base Courses.
 - D. After base course has been completed, the Contractor shall call for an inspection by the engineer and obtain written approval before proceeding with application of the asphaltwearing surface.

3.2 PLACING ASPHALT CONCRETE

- A. Areas to be paved shall be covered with a layer of hot asphalt concrete surfacing not less than the thickness indicated after compaction. Where not indicated, compacted thickness shall be three inches for parking stalls and four inches for roads, driveways, and aisles of parking areas.
- B. Paving asphaltic concrete shall be delivered, laid, rolled, and finished in accordance with Section 39 of the Caltrans Standard Specifications.
- C. Before placing asphalt concrete on untreated base, a liquid asphalt prime coat shall be applied to the base course in the areas to be surfaced in accordance with Section 39-4 of the Caltrans Standard Specifications. Prime coat shall be applied at the rate of 0.25 gallons per square yard.

- D. Pavement reinforcing fabric shall be embedded in the liquid prime coat in accordance with Section 39 of the Caltrans Standard Specifications.
- E. Before placing asphalt concrete, a tack coat (paint binder) shall be applied to all vertical surfaces against which asphalt concrete surfacing will be placed. Tack coat (paint binder) shall be applied in accordance with Section 39-4 of the Caltrans Standard Specifications at the rate of from 0.02 to 0.10 gallons per square yard.
- F. Finish surface of the wearing course shall be thoroughly compacted, smooth, and free from ruts, humps, depressions, cold joints, or other irregularities.
- G. Finish paving shall conform to slopes, lines, and finish grades indicated, and shall drain properly. Where adjacent surfaces are intended to be flush (as at concrete gutters, walks, and paving), they shall conform smoothly at all joints.
- H. Ridges, indentations, and other objectionable marks left in the surface of the asphalt concrete by paving or rolling equipment shall be eliminated by rolling. The use of equipment that leaves ridges, indentations, or other objectionable marks in the asphalt concrete shall be discontinued, and other acceptable equipment shall be employed.
- I. Where cold joints are indicated or necessary, cut back the placed and compacted cold asphalt a minimum of three inches with a concrete or masonry power saw, so that a vertical face of compacted full thickness material is exposed. Treat this surface with a tack coat before proceeding with the placement of new asphaltic concrete surfacing.
- J. Finish paving shall conform to finish elevations within plus or minus 0.01 of a foot and shall be level to within plus or minus one-fourth inch in 10 feet when measured with a 10-foot straightedge in any direction.

3.3 BITUMINOUS SEAL

A. Apply bituminous seal over finished paving surface in conformance with Section 37 of the Caltrans Standard Specifications.

3.4 FIELD QUALITY CONTROL

- A. The Contractor shall control the quality of the Work and shall provide adequate testing to assure compliance with these Specifications.
- B. After completion of paving work, all paving shall be flooded with water, and any resulting "ponds" shall be ringed with chalk. Such hollows shall be corrected with addition of asphalt paving materials and re-rolling until all paving is completely level and free from hollows and high spots.
- C. The Contractor shall perform in-place density and compaction tests of the completed pavement in accordance with California Test Method No. 375 to determine compliance with specified requirements. Relative compaction shall be 96 percent.

3.5 MAINTENANCE OF PAVEMENT

- A. Upon completion of final rolling, traffic shall not be permitted on the finished pavement for at least six hours, and until the asphalt concrete has cooled sufficiently to withstand traffic without being deformed.
- **B.** Finished pavement shall be maintained in finished clean conditions until the Work is accepted by the engineer. **END OF SECTION 321216**

SECTION 321313 CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 - 1. Concrete paving for roads, driveways, walkways, and other surfaces.
 - 2. Joint sealants and related accessories.

1.3 SCOPE OF WORK

The work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of "concrete paving," complete as shown on the drawings and as specified herein.

1.4 RELATED SECTIONS

- A. Section 033000 for "Cast-in-Place Concrete"
- B. Section 321314 for "Special Concrete Finishes"
- C. Section 321723 for "Pavement Markings"

1.5 REFERENCES

- A. American Concrete Institute (ACI) Standards.
- B. American Society for Testing and Materials (ASTM) Standards.
- 1.6 SUBMITTALS
 - A. Product Data: Submit manufacturer's technical data sheets for concrete mix, joint sealants, and accessories.
 - B. Mix Design: Provide concrete mix design, including proportions of all materials and evidence of compliance with specified requirements.
 - C. Shop Drawings: Submit shop drawings for paving layout, including joint patterns and dimensions.
 - D. Samples: Provide samples of joint sealants and finishing materials for approval.
 - E. Test Reports: Submit test reports for concrete materials and mix design.

1.7 PROJECT CONDITIONS

- A. Do not place concrete when ambient temperature is below 40°F (4°C) or above 90°F (32°C) without special provisions.
- B. Protect freshly placed concrete from freezing, rapid drying, and hot temperatures.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. Portland Cement: ASTM C150, Type I or II.
- B. Aggregates: ASTM C33, clean, hard, durable, and well-graded.
- C. Water: Potable and free of deleterious substances.
- D. Admixtures: ASTM C494, as approved.
- E. Joint Sealants: ASTM D3405, hot-poured elastic type, or ASTM C920, polyurethane type.

2.2 CONCRETE MIX

- A. Compressive Strength: Minimum 4,000 psi (27.6 MPa) at 28 days.
- B. Slump: 4 inches (100 mm) \pm 1 inch (25 mm) for slip-form paving, 3 inches (75 mm) \pm 1 inch (25 mm) for other methods.
- C. Air Content: $6\% \pm 1.5\%$.

PART 3 - EXECUTION

- 3.1 PREPARATION
 - A. Subgrade Preparation: Ensure subgrade is properly prepared, compacted, and free of debris and standing water.
 - B. Formwork: Install formwork to the dimensions, lines, and grades indicated on the drawings. Secure and brace formwork to prevent movement during concrete placement.

3.2 PLACEMENT

- A. Concrete Paving: Place concrete evenly and continuously. Use appropriate equipment to place and consolidate concrete.
- B. Finishing: Strike off concrete to required grade and finish with a broom or float to provide a non-slip surface.
- C. Curing: Cure concrete using approved methods to prevent premature drying. Maintain moisture for a minimum of 7 days.
- 3.3 JOINTS
 - A. Construction Joints: Place construction joints at the end of each day's work and where indicated on the drawings.
 - B. Control Joints: Cut control joints using saws or inserts at intervals not exceeding 10 feet (3 meters). Depth of joints to be 25% of pavement thickness.
 - C. Expansion Joints: Install expansion joints where indicated, filled with approved joint filler.

3.4 PROTECTION AND CLEANING

- A. Protect freshly placed concrete from traffic, weather, and other potential damage.
- B. Clean up and remove debris and materials from the site.

END OF SECTION 321313

SECTION 321314 SPECIAL CONCRETE FINISHES

PART 1 - GENERAL

1.1 GENERAL CONDITIONS

A. The General Conditions and Special Conditions are a part of this section and the contract for this work and apply to this work and apply to this section as fully as if repeated herein.

1.2 SUMMARY

A. The work includes the furnishing and installing of all special concrete finishes as shown and noted on the drawings.

1.3 REFERENCES

Except as modified by the requirements specified herein or as indicated, work shall conform to the applicable provisions of the following codes and standards:

- 1. California Building Code, Chapter 19, Concrete.
- 2. American Concrete Institute: ACI 301-81 Structural Concrete for Buildings. ACI 318-77 Building Code Requirements for Reinforced Concrete.
- 3. American Society for Testing and Materials (ASTM): Specifications and standards referred to herein.

1.4 RELATED SECTIONS

- A. Section 312000 for "Earth Moving"
- B. Section 321313 for "Concrete Paving"
- C. Section 131102 for "Spray Ground Concrete"

1.5 SUBMITTALS

- A. Provide for approval mockup sample panels on the project site of the following finishes for each of the finishes indicated on the drawings (including alternative options for review as indicated):
 - 1. Integral Color Concrete
 - 2. Broom Finish
 - i. Provide one (1) mockup for standard gray concrete with Medium Broom Finish. Minimum panel sizes shall be 4ft x 4ft and include all joints to be proposed on the plans. Owner's Representative shall review mockup sample panels for approval.

- 3. Surface Retarded Finish
 - i. Provide four (4) mockup sample panels. Two (2) alternative mockups for each type of concrete associated with Spray Ground surfacing, as noted on the plans. Minimum panel sizes shall be 4ft x 4ft and include all joints to be proposed on the plans. Owner's Representative, Spray Ground Designer (ADG), and Health Department shall review mockup sample panels for selection to ensure slip resistance is equivalent to that of a medium broom finish.
- B. Approved mockup sample panels, may be left in place as part of the completed construction.
- C. Photo documentation, true to color and with sufficient detail and quality shall be made and provided to the Architect for approval prior to owner review and acceptance. Photos shall be taken on a clear day with sufficient natural sunlight and include close up and images of the overall installation. Additional photos shall be provided at the request of the Architect.

1.5 QUALITY ASSURANCE

A. Approved sample panels, may be left in place as part of the completed construction.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Furnish materials conforming to Section 321313 as applicable and following requirements.
- B. Use same brand of cement from single source throughout entire project.
 - 1. Color Admix for use in Integral colored concrete w/ releasing agent: Color shall be as specified on plan. Approved products or equal
 - 2. Surface Retarder: Top-Cast surface retarder as manufactured by Dayton Superior.
 - 3. 3/8" & 1/2" fiber Exp. Joint w / Sealant Color

2.2 COLORING AGENTS

- A. Only commercially pure mineral pigments shall be used to produce the desired color and in no case shall they exceed 10% of the cement content by weight. Color shall be as specified on drawings. Coloring agent shall be used in strict conformity with manufacturer's specification.
 - 1. Integral color admixtures for color-conditioned concrete: Davis Colors, Chromix by Scofield, Bomanite Integral Color, QC Integral Color, or equal.

2.3 EXPANSION JOINT MATERIALS

- A. Pre-molded expansion joint filler shall conform to ASTM D1751-6B size per Drawings. "Ethafoam Polyfelt" by White Cap, Inc., "Denver" foam backer rod by DFC, "Sonofoam" backer rod by Sonneborn, or approved equivalent.
- B. Joint sealant compound shall be a moisture cured, one component, polyurethane non-sag sealant as identified on the Drawings and as manufactured by Sikaflex or approved equivalent. Color shall be per Drawings, or as approved by Owner's Representative.

PART 3 - EXECUTION

3.1 INITIAL FINISH

- A. Place, consolidate, screed and trowel concrete as specified in Section 321313.
 - 1. Do <u>NOT</u> tamp concrete to receive exposed aggregate finish.

3.2 INTEGRAL COLOR CONCRETE

- A. Mix coloring material into the concrete specified under section 03300, in strict accordance with the manufacturer's instructions to achieve color selected.
- B. Upon completion of placing colored concrete slabs and not more than 24 hours after placing, apply curing compound and sealers as recommended by the color admix manufacturer.

3.3 MEDIUM BROOM FINISH

- A. After surface water disappears and floated surface is sufficiently hardened, steel trowel and re-trowel to smooth surface. When ready, apply approved coarse texture finish by sliding a wire or stiff bristle broom in one direction along a straightedge guide set at right angles to the direction of traffic. On walkways, smooth finish 2" wide at edges, expansion joints, and score joints.
- 3.4 SURFACE RETARDED FINISH:
 - A. Install per Manufacturer's Recommendations.
 - B. Mixing: Mix Top-Cast thoroughly prior to each use. After mixing, it is recommended to pour through a paint strainer or fine sieve when filling sprayers.
 - C. Placement: Refer to the online Top-Cast User Guide for helpful hints on concrete finishing techniques. Apply Top-Cast uniformly to the wet c oncrete after the evaporation of the initial bleed water. Spray with a low-pressure sprayer (plastic preferred) until the surface has a complete hiding coat. Do not apply too sparingly. Use water for clean up. Once dry (1-2 hours after application depending on ambient temperature and humidity), Top-Cast provides good protection against intermittent rain and does not require additional cover.
 - D. Sealing: Multiple options are available for sealing exposed aggregate concrete. Top-Cast PR 300 can be used any time after wash-o0ff for penetrating protection, making the exposed aggregate concrete more water, stain and abrasion resistant for easier maintenance and longer life. Exposed aggregate treated with Top-Cast PR 300 will not accept future applications of Top-Cast CS 400 or Top-Cast HG 500.
 - E. Removal: Actual removal time for the desired appearance varies based upon concrete mix design, finishing technique, weather conditions, and grade of Top-Cast used. The retarded cement matrix can be removed as early as 4 hours and up to 16 hours depending on conditions. The Top-Cast EX 200 can be used to extend wash off times when applied per the technical data sheet. The use of a garden hose with a stiff broom can be used when removing Top-Cast sooner or using high pressure water or a combination of water and scrubbing if left on longer. With faster setting concrete mix designs or application in hot weather, it may be necessary to remove the retarded matrix the same day for best results,

particularly when using the lightest etches. Do not wait too long to remove Top-Cast. Top-Cast will slow the set of the concrete surface but will not stop it, if the concrete cures to hard, the Top-Cast will be harder to remove.

- F. Cleanup: Clean tools and equipment with clean water after use.
- G. Control joints shall be scored straight even lines.

EDGE AND JOINT FINISH:

- A. Score joints shall be formed in the fresh concrete using a jointer to cut the groove so that a smooth uniform impression is obtained. All joints shall be struck before and after brooming.
- B. Expansion joints and Edging: Expansion joints shall be formed provided at the location and intervals as shown on the Drawings and at all locations where concrete paving abuts buildings or other permanent vertical structures. Approved joint material shall be placed with top edge 1/4 in. below the paved surface, and shall be formed in the fresh concrete using an edging tool to provide a smooth uniform impression. All edges shall be struck before and after brooming. After the curing period, expansion joints shall be carefully cleaned and filled with approved backer rod and joint compound flush with the paved surface in such a manner as to avoid spilling on paved surfaces or overflow from joint.
- C. Tooled Joints: Tool all joints as shown on Drawings.
- 3.10 CLEAN-UP:
 - A. During the progress of the work and at the completion of the work, remove all trash, debris, from the project site and leave the site clean and in orderly condition.
- 3.11 PROTECTION:
 - A. Special finishes of concrete surfaces shall be protected until final acceptance of the project.

END OF SECTION

SECTION 321413.19 PERMEABLE INTERLOCKING UNIT PAVERS

PART 1 - GENERAL

- 1.1 SUMMARY
 - A. The work of this section consists of furnishing and installing a Permeable Interlocking Concrete Pavement (PICP) System in accordance with these specifications and in general conformance with the lines, grades, design, and dimensions shown on the plans.
 - 1. Concrete pavers.
 - 2. Subbase Course.
 - 3. Base Course.
 - 4. Bedding Course.
 - 5. Permeable joint materials.
 - 6. Geotextiles and/or geomembrane liner (where required)
 - 7. Horizontal drainage piping (where required),

1.2 RELATED SECTIONS

- A. Section 312000 for "Earth Moving"
- B. Section 321000 for "Bases and Paving"

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM)
 - 1. C33, Concrete Aggregates
 - 2. C 67, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
 - 3. C 131, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - 4. C 136, Method for Sieve Analysis for Fine and Coarse Aggregate.
 - 5. C 140, Test Methods for Sampling and Testing Brick and Structural Clay Tile, Section 8 – Freezing and Thawing.
 - 6. D 448, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
 - 7. C 936, Standard Specification for Solid Interlocking Concrete Pavers.
 - 8. C 979, Specification for Pigments for Integrally Colored Concrete.
 - 9. D 698, Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 5.5-lb (2.49 kg) Rammer and 12 in. (305 mm) drop.
 - 10. D 1557, Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 10-lb (4.54 kg) Rammer and 18 in. (457 mm) drop.
 - 11. D 1883, Test Method for California Bearing Ratio of Laboratory-Compacted Soils.
 - 12. D 4254, Standard Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.
- B. Interlocking Concrete Pavement Institute (ICPI)
 - 1. Permeable Interlocking Concrete Pavement manual (latest edition)
 - 2. Permeable Design Pro software for hydrologic and structural design
 - 3. Tech Specs and Technical Bulletins

1.4 DEFINITIONS

- A. Base Course within the context of this specification, a dense graded free draining aggregate material of a designed thickness that provides structural support over the subgrade.
- B. Bedding Course within the context of this specification, a layer of course for bedding of the Concrete Pavers.
- C. Concrete Pavers individual paving units manufacturing from concrete. Concrete Pavers are shipped in clusters called bundles or cubes, which consist of several layers of pavers strapped or wrapped together.
- D. Geotextile Woven or non-woven fabrics made from plastic fibers used primarily for separation between pavement layers.
- E. Interlocking Concrete Pavement System a system of paving consisting of Concrete Pavers placed in an interlocking pattern, compacted into the Bedding Course, the joints filled with Joint Filling Sand, and compacted again to initiate interlock. The Concrete Pavers and Bedding Course are placed over the Base Course, and are confined on the edges by Edge Restraints.
- F. Laying Face the working edge of the pavement where the laying of pavers is occurring.
- G. Mechanical Installation The use of specialized machines to lift whole layers of pavers from the bundles and place them on the prepared bedding course. These specialized machines are designed specifically for this application.
- H. Subgrade the soil upon which the pavement structure and shoulders are constructed.
- 1.5 SUBMITTALS
 - A. Contractor shall submit to the owner for approval, and retain for the balance of the project, a minimum of four full size samples of each Concrete Paver type/size/thickness/color/finish specified; the samples shall represent the range of shape, texture and color permitted for the respective type. Color(s) will be selected by Architect.
 - B. Minimum 3 lb samples of subbase, base and bedding aggregate materials.
 - C. Sieve analysis of aggregates for subbase, base and bedding materials per ASTM C 136, aggregates must all be angular crushed chip with no round pieces including No8.
 - D. Geotextiles
 - One 18-inch x 18-inch panel of each Geotextile or geomembrane liner material for inspection and testing. The sample panels shall be uniformly rolled and shall be wrapped in plastic to protect the material from moisture and damage during shipment. Samples shall be externally tagged for easy identification. External identification shall include: name of manufacturer; product type; product grade; lot number; and physical dimensions.
 - 2. Material Safety Data Sheets.
 - E. Paver Installation ICPI certified Subcontractor:

- 1. A copy of Subcontractor's current certificate from the Interlocking Concrete Pavement Institute Concrete Permeable Paver Installer Certification program.
- 2. Job references from projects of a similar size and complexity.
- 3. Written Method Statement and Quality Control Plan that describes material staging and flow, paving direction and installation procedures, including representative.
- 4. Reporting forms that ensure conformance to the project specifications.
- 5. Subcontractor must supply ICPI permeable certificate at time of bidding and must have completed at least two permeable paver projects of similar magnitude in past three years.

1.6 QUALITY ASSURANCE

- A. Paver Installation Subcontractor Qualifications: Installer must have performed at least two paver installations before of similar magnitude.
 - 1. Installer must submit a list of completed self-performed paver projects.
 - 2. Utilize only an installer holding a current certificate from the Interlocking Concrete Pavement Institute Concrete Permeable Paver Installer Certification program.
- B. Contractor shall conform to all local, state/provincial licensing and bonding requirements.
- C. Contractor will hold a mandatory pre-construction meeting with Design Engineer, Owner, and affected sub-trades accessing the paver work area to review method statement and quality control plan and communicate to all parties a work flow that is most desirable to meet the construction schedule as set forth by the General Contractor.

1.7 MOCKUPS

- A. Install a 4' x 4' mock up paver area.
- B. Use this area to determine surcharge of the bedding layer, joint sizes, lines, laying pattern(s), color(s) and texture of the job.
- C. This area will be used as the standard by which the work will be judged.
- D. Subject to acceptance by owner, mock-up may be retained as part of finished work.
- E. If mock-up is not retained, remove and properly dispose of mock-up.
- F. Photo documentation, true to color and with sufficient detail and quality shall be made and provided to the Architect for approval prior to owner review and acceptance. Photos shall be taken on a clear day with sufficient natural sunlight and include close up and images of the overall installation. Additional photos shall be provided at the request of the Architect.

1.8 DELIVERY, STORAGE, AND HANDELING

- A. Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged container packaging with identification tags intact on each paver bundle.
 - 1. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.

- 2. Deliver concrete pavers to the site in steel banded, plastic banded, or plastic wrapped cubes capable of transfer by forklift or clamp lift.
- 3. Unload pavers at job site in such a manner that no damage occurs to the product existing construction
- C. Storage and Protection: Store materials in protected area such that they are kept free from mud, dirt, and other foreign materials.

1.9 ENVIRONMENTAL REQUIREMENTS

- A. Do not install in rain or snow.
- B. Do not install frozen bedding materials.
- C. Do not install on frozen soil subgrade.

1.10 MAINTENANCE

- A. Extra materials: Provide additional material for use by owner for maintenance and repair.
- B. Pavers shall be from the same production run as installed materials.
- C. Store paver materials in Owner designated location.

PART 2 - MATERIALS

2.1 CONCRETE PAVER UNITS

- A. Install pavers as specified and in locations as noted in the drawings.
 - 1. Air Vol Block, Inc. TJP -Thin Joint Permeable Paver
 - a. Shapes and Styles
 - a) Classic Bevel II: 5-7/16" x 5-7/16" x 3-19/128" (80mm)
 - b) Classic Bevel Rectangle: 5-7/16" x 10-13/16" x 3-19/128" (80mm)
 - c) Classic Bevel Quad: 5-7/16" x 5-7/16" x 3-19/128" (80mm)
 - b. Color: Sandstone Blend
 - c. Pattern: Pismo Pattern: Contractor shall provide orientation as a part of mock up for approval. Orientation shall be consistent throughout all paver areas.
 - 1) Classic Bevel II: 7% of pattern
 - 2) Classic Bevel Rectangle: 40% of pattern
 - 3) Classic Bevel Quad: 53% of pattern
 - d. Spacers: A part of overall paver construction, protruding 0.29" (7.5mm)
 - e. Joint Width: 3/16" (4.5mm)
 - 2. Or Approved Equal

2.2 AGGREGATE MATERIALS

- A. General Requirements:
 - 1. Clean, non-plastic sand, free from deleterious or foreign matter, natural or manufactured from crushed rock.
 - 2. Do not use limestone screenings or stone dust.

- 3. When concrete pavers are subject to vehicular traffic:
 - a. Micro Deval Degradation shall be less than 8% as per ASTM D-7428.
 - b. Percent combined of sub-angular and sub-rounded shall be greater than 60% as per ASTM D-2488.
 - c. LA Abrasion <40 as per ASTM C-131
 - d. Minimum CBR of 80% as per ASTM D-1883.
- 4. All aggregates shall be washed and have less than 2% passing the No. 200 (0.075 mm) sieve.
- 5. All aggregate material gradations shall be tested in accordance with ASTM C136.
- B. Bedding Course/ Joint Fill Material- open-graded aggregate conforming to the following gradation:

Note: No. 9 stone may be used as joint fill material if "Granite Ice" or equivalent gradation stone material is not available locally, No. 89 can be used as a bedding course if choke criteria is met with underlying base aggregate

"Granite Ice" Aggregate – Crye Navajo Pit Sand Contact: Air Vol Block,Inc. Nick Thompson, 805-869-1327

Or approved equal

Sieve Size	Percent Passing	
3/8 in.(9.5 mm)	100	
No. 4 (4.75 mm)	93	
No. 8 (2.36 mm)	40	
No. 16 (1.18 mm)	12	
No. 30 (0.595 mm)	4	
No. 50 (0.297 mm)	2	
No. 100 (0.015)	1	
No. 200 (0.075 mm)	0.2	

Permeable #9 Cemex 1/4" X 1/8" Gravel (Birds Eye)- 1365372, Rockfield Quarry Contact: Air Vol Block, Inc. Nick Thompson, 805-869-1327

Or approved equal

Sieve Size	Percent Passing	
3/8 in.(9.5 mm)	100	
No. 4 (4.75 mm)	86	
No. 8 (2.36 mm)	31	
No. 16 (1.18 mm)	14	
No. 30 (0.595 mm)	6	
No. 50 (0.297 mm)	2	
No. 100 (0.015)	1	
No. 200 (0.075 mm)	0.5	

ASTM C33 size No. 8

Sieve Size	Percent Passing	
1/2 in. (12.5mm)	100	
3/8 in.(9.5 mm)	85 to100	
No. 4 (4.75 mm)	10 to 30	
No. 8 (2.36 mm)	0 to 10	
No. 16 (1.18 mm)	0 to 5	
No. 200 (0.075 mm)	0 to 2	

C. Base course material- open graded aggregate conforming to the following gradation:

ASTM C33 size No. 57

Sieve Size	Percent Passing	
1-½ in. (37.5 mm)	100	
1 in. (25 mm)	95 to 100	
1/2 in. (12.5 mm)	25 to 60	
3/8 in. (9.5 mm)	0 to 10	
No. 4 (4.75 mm)	0 to 5	
No. 200 (0.075 mm)	0 - 2	

D. Subbase course Material - open graded aggregate conforming to the following gradation:

ASTM No. 3 or No. 4 may be used as subbase material if No. 2 stone in unavailable locally.

ASTM C33 Size No. 2

Sieve Size	Percent Passing	
3 in. (75 mm)	100	
2- ½ in. (63 mm)	90 to 100	
2 in. (50 mm)	35 to 70	
1-½ in. (37.5 mm)	0 to 15	
¾ in. (19 mm)	0 to 5	
No. 200 (0.075 mm)	0-2	

PART 3 - EXECUTION

- 3.1 PRE-CONSTRUCTION INSPECTION
 - A. Prior to commencement of any work, the Contractor shall conduct a pre-construction meeting with the Owner, Design Engineer and affected sub-trades. The pre-construction meeting should, at a minimum, verify:
 - 1. The location of the Mock Up, and whether it will be part of the final construction or need to be removed.
 - 2. The site layout conforms to the Site Plan.
 - 3. The excavation work conforms to the specified lines, elevations and compaction densities of the subgrade soils. Subgrade shall be trimmed to within 0 and ½ in of the specified grades. The surface of the prepared Subgrade shall not deviate by more than 3/8 in from the bottom edge of a 10 foot straight edge laid in any direction.

- 4. Locations of curbs, grade beams, utility structures, light standards, tree wells or any other protrusions as applicable to the project, and that project formed details are available for each.
- B. Although the Owner may provide soil testing and quality assurance inspection during earthwork and Subgrade preparation, the Owner's quality assurance program does not relieve the Contractor of responsibility for quality control and system performance. Contractor shall obtain any quality control testing or inspection not provided by the Owner that is necessary to satisfy the Contractor with the condition of the Subgrade prior to commencement of the work. This may include:
 - 1. Proof rolling of the subgrade to determine presence of soft spots or localized pockets of objectionable materials.
 - 2. Compaction testing.

3.2 INSTALLATION SUBBASE AND BASE COURSE

- A. Install geotextiles as required in accordance with the specifications and drawings. The geotextile is applied to the bottom and sides of the excavation with overlapping joints a minimum of 12 inches. Overlaps to be constructed to "shingle" moisture from upstream panel to downstream panel. Allow for enough geotextile to exceed the final elevation of the surface. After completion of the surface, the excess geotextile should be cut flush with the finished grade.
- B. Install the Base Course at the thickness, compaction, surface tolerances, and elevations outlined in the specifications.
 - 1. Place and spread the first layer of subbase without displacing or damaging the geosynthetics (if used). To prevent damage, tracked vehicles shall not be allowed directly on the geotextiles or geomembranes during the initial spreading process of the subbase layer.
 - 2. The aggregate should be spread and compacted in uniform layers not exceeding 6-inch loose thickness. Compaction is performed using either a 10 T (10 ton) vibratory roller or a minimum 13,500 lb-f centrifugal force reversible vibratory plate compactor. For each lift, make at least two passes in the vibratory mode and at least two passes in the static mode and continue compaction until there is no visible movement in the materials.
 - 3. At the specified elevation(s), install the pipe underdrains in accordance with the manufacturer's recommendations. Ensure the pipes are sloped to provide proper drainage to the outlets. Pipes shall be surrounded by a minimum of 4 inches of base course material to prevent damage during compaction. Care must be taken not to damage pipe underdrains during subsequent aggregate installation.
 - 4. Final subbase surface tolerance shall be plus or minus 0.1 ft over a 10-foot straight edge laid in any direction.
 - 5. Final base surface tolerance shall be plus or minus 3/4 inch over a 10-foot straight edge laid in any direction.
 - 6. Provide proper compaction near curbs, grade beams, concrete collars around utility structures, lights standards, tree wells, building edges and other protrusions as applicable to the project. The aggregate should be spread and compacted in uniform layers not exceeding 6-inch loose thickness.
- C. Before commencing the placing of the Bedding Course, the base shall be inspected by the Owner or the Architect.

3.3 INSTALLATION BEDDING COURSE, CONCRETE PAVERS AND JOINT MATERIALS

- A. Spread the bedding course evenly over the base course and screed to a nominal 2 in. thickness utilizing an approved mechanical spreader or by screed rails and boards. Do not use the bedding material to fill depressions in the base course surface. Surface tolerances shall be +/- 3/8 inch over a 10-foot straight edge.
- B. Ensure that concrete pavers are free of foreign material before installation. Concrete pavers shall be inspected for color distribution and all chipped, damaged, or discolored concrete pavers shall be replaced. Initiation of concrete paver placement shall be deemed to represent acceptance of the pavers.
- C. Lay the concrete pavers in the pattern(s) shown on the drawings. Maintain straight pattern lines. For mechanical installations, follow the stitching details as submitted and verified during the mock-up.
- D. Paving units shall be installed simultaneously from a minimum of 3 bundles for hand installations, and 6 bundles for mechanical installations to provide proper color blending.
- E. Joints between the individual concrete pavers shall be uniformly maintained and installed in accordance with the in-place dimensions
- F. Fill gaps at the edges of the paved area with cut pavers or edge units. Do not install cut pavers smaller than one-third of a whole paver along edges subject to vehicular traffic trim two pavers to fit.
- G. Cut pavers using a masonry saw or splitting device. Upon completion of cutting, the area must be swept clean of all debris.
- H. Using a low amplitude plate compactor capable of at least 5,000 lbs. (22 kN) compaction at a frequency of 75 Hz –100 Hz, compact and seat the concrete pavers into the bedding course.
- I. The pavers shall be compacted to achieve consolidation of the bedding course and brought to level and profile by not less than three passes. Initial compaction should proceed as closely as possible following the installation of the paving units and prior to the acceptance of any traffic.
- J. Any units that are structurally damaged during compaction shall be immediately removed and replaced.
- K. Apply the joint material to the surface and sweep into the joints and voids. Filljoints and voids then sweep off excess material before vibrating the material down into the joints using a plate compactor. This will typically require two to three passes with the plate compactor.
- L. Do not compact within 6 feet of unrestrained edges of the paving units.
- M. All work to within 6 feet (1 m) of the laying face must be left fully compacted at the end of each day.
- N. Sweep off excess aggregate when the job is complete.

3.4 QUALITY ASSURANCE/QUALITY CONTROL

- A. Quality Assurance The Owner may engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction. This does not relieve the Contractor from securing the necessary construction quality control testing.
- B. Quality assurance should include as a minimum verification with the Design Engineer that the Contractor's quality control plan and testing are adequate. Quality assurance shall also include observation of construction for general compliance with design drawings and project specifications.
- C. Quality Control The Contractor shall engage inspection and testing services to perform the minimum quality control testing described in the design plans and specifications. Only qualified and experienced technicians and engineers shall perform testing and inspection services.
- D. Quality control testing shall include backfill testing to verify soil types and compaction, and verification that the system is being constructed in accordance with the design plans and project specifications.

3.5 AS-BUILT CONSTRUCTION TOLERANCES

- A. Final inspection shall be conducted to verify conformance to the drawings after removal of excess joint sand. All pavements shall be finished to lines and levels to ensure positive drainage at all drainage outlets and channels.
- B. The final surface elevations shall not deviate more than +/- 3/8 inch under a 10 ft long straight edge.
- C. Lippage shall be no greater than 1/8-inch difference in height between adjacent pavers.
- D. Surface elevation of pavers shall be 1/8-inch to 1/4-inch above adjacent rigid surfaces, including drainage inlets, concrete collars or gutters, sidewalks, etc.
- E. Bond lines for the pavers shall be +/- 1/2-inch over a 50-foot string line.
- F. Verify the in-situ surface infiltration rate of the permeable pavement is a minimum of 100 in/hour using ASTM C1781.

3.6 MAINTENANCE AND PROTECTION

- A. At the completion of the work, the Contractor shall provide the Owner with the manufacturer's PICP System Operation and Maintenance Guidelines.
- B. Once the work is complete, the Owner shall be responsible for protecting the work from sediment deposition and damage due to subsequent construction activity on the site.

END OF SECTION

SECTION 321723 PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes:
 - 1. Pavement markings for roadways, parking areas, and pedestrian crossings.
 - 2. Materials for markings, including paint and thermoplastic materials.
 - 3. Application of pavement markings and related accessories.
- B. Reference sections:

1.3 SCOPE OF WORK

The work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of "pavement markings," complete as shown on the drawings and as specified herein.

1.4 RELATED SECTIONS

- A. Section 321216 for "Asphalt Paving"
- B. Section 321313 for "Concrete Paving"
- C. Section 320117 for "Pavement Repair"

1.5 REFERENCES

- A. American Society for Testing and Materials (ASTM).
- B. Manual on Uniform Traffic Control Devices (MUTCD).
- C. Drawing number C-04.

1.6 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data sheets for pavement marking materials, including paint and thermoplastic materials.
- B. Samples: Provide samples of pavement marking materials and colors for approval.
- C. Application Method: Submit a description of the proposed application methods and equipment.
- D. Schedule: Provide a schedule for pavement marking application, including dates and times.
- 1.7 PROJECT CONDITIONS
 - A. Do not apply pavement markings when the ambient temperature or pavement surface temperature is below the manufacturer's recommended minimum.

B. Ensure pavement surfaces are clean, dry, and free from debris before application.

PART 2 - PRODUCTS

- 2.1 MATERIALS
 - A. Traffic Line Paint: Water-based or solvent-based paint conforming to applicable environmental regulations for VOC content.
 - B. Thermoplastic Material: Preformed thermoplastic pavement marking material meeting ASTM D 5950.
 - C. Glass Beads: For improved visibility, meeting AASHTO M 247.
 - D. Primer: As recommended by the pavement marking material manufacturer for use on asphalt and concrete surfaces.

PART 3 - EXECUTION

- 3.1 PREPARATION
 - A. Surface Preparation: Clean pavement surfaces of loose dirt, dust, oil, grease, and other contaminants.
 - B. Layout: Mark the layout of pavement markings using chalk or temporary paint before applying permanent markings.
 - 1. Apply no paint or thermoplastic material until pavement has cured for at least 3 days or for the number of days as recommended by the manufacturer, whichever is longer. Ensure that pavement has cured sufficiently to carry application equipment without damage.
 - 2. Application equipment and procedures shall conform to the applicable requirements of the Caltrans Standard Specifications. Keep paint thoroughly mixed throughout application.

3.2 APPLICATION

- A. Traffic Line Paint:
 - 1. Apply paint using spray equipment or other approved methods.
 - 2. Apply paint in two coats, allowing sufficient drying time between coats.
 - 3. Ensure paint is applied in straight, continuous lines, and to the specified width and thickness.
- B. Thermoplastic Material:
 - 1. Heat thermoplastic material to the manufacturer's recommended temperature.
 - 2. Apply thermoplastic material using appropriate equipment to achieve specified line width and thickness.
 - 3. Embed glass beads into the thermoplastic material for improved night visibility.

- C. Glass Beads:
 - 1. Evenly distribute glass beads on the surface of the paint or thermoplastic material immediately after application.

3.3 PROTECTION

- A. Protect newly applied pavement markings from traffic and environmental damage until fully cured.
- B. Remove any temporary layout markings after the pavement markings have been applied and cured.

3.4 CLEANING

- A. Remove all debris, waste materials, and equipment from the site upon completion of pavement marking operations.
- B. Restore any damaged areas to their original condition.

END OF SECTION 322317

SECTION 32 80 00 LANDSCAPE IRRIGATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 GENERAL CONDITIONS

The General Conditions and Special Conditions are a part of this section and the contract for this work and apply to this section as fully as if repeated herein.

1.3 SCOPE OF WORK

- A. The scope of work includes the construction of an irrigation system for landscape planting areas. The extent of the irrigation system is shown on the drawings. The work includes all services, labor, materials, transportation and equipment necessary to perform the work as shown and/or noted on the drawings and/or as specified. Irrigation system shall be fully functional with all capabilities met.
- B. Contractor is responsible for close coordination with other contractors involved with grading, drainage and construction of site elements. For the project to be successful, it is the responsibility of Contractor to coordinate his work with other trades, as well as with the Landscape Architect or Owner's Representative prior to, and throughout the construction period to avoid conflicts which may interrupt another's work progress.

1.4 QUALIFICATIONS AND REQUIREMENTS

- A. Project Experience. Have a minimum of five (5) years' experience installing three (3) different projects of this size including systems of similar scope. Provide project references.
- B. Project Completion. Successful completion of a minimum of three (3) commercial irrigation projects of this size, from beginning to end (not including projects that may not have been originally bid upon from the project beginning). Must have good reputation for quality of work and the ability to stay on schedule.
- C. Company Specialization. Professional contractor must have at a minimum, a C-27 license, is a Certified Irrigation Contractor (by the Irrigation Association) or equivalent certified Contractor with CLCA (California Landscape Contractors Association), specializing in commercial irrigation system installation and maintenance. A review of a current copy of each bidder's license is required.
- D. Credit Rating. Business has a good credit standing with irrigation distributors, manufacturers, and other creditors that the business relies upon to perform.
- E. Contractor shall be able to secure bonding.
- F. Contractor shall be able to obtain and carry appropriate insurance policies.

- G. Installation Expertise. It is required for the Contractor's performance that installers are experts in the operations they are engaged to perform.
- H. Contractors shall provide evidence of valid training, certifications, safety training, and continuing education of employees by industry leading trade groups such as the IA and CLCA.
- I. Company crew size and equipment shall be sufficient to accomplish the installation on schedule and maintain the landscape according to maintenance specifications. The contractor shall own or have access to all of the equipment necessary to properly install the irrigation system.
- J. Designation of site project leader or foreman shall not change for the duration of the installation.
- K. Site project leader or foreman must be able to fluently speak English and understand English.
- L. Mandatory Pre-Bid Conference. All contractors are required to participate in a Pre-Bid Meeting with the Landscape Architect and Owner's Representative to discuss project scope, expectations, and timetables.
- M. Bid Submittal. Must examine the bid to ensure it fully complies with all requirements of the construction documents. Bids not following the construction documents may be subject to rejection.
- N. Water Management. The contractor must be sensitive to the realities of limited water supplies in this region, and that it may be in an Emergency Drought Response stage. Contractor shall note that the State's and County's landscape ordinance is in effect and will be adhered to at all times by his employees during installation and maintenance. Contractor and his employees shall know how to properly manage water that will provide the landscape with the health and appearance desired by the County while conserving water.

1.5 RELATED DOCUMENTS

- A. Section 033000 for "Cast in Place Concrete"
- B. Section 312000 for "Earth Moving"
- C. Section 321300 for "Rigid Paving"
- D. Section 329000 for "Landscape Planting"

1.6 REFERENCES

The latest editions of standards and specifications published by the following organizations, and referenced herein, apply to the work only to the extent specified by the reference.

- A. American National Standards Institute (ANSI)
- B. American Society for Testing and Materials (ASTM)
- C. United States General Services Administration (Federal Specification)
- D. Local Jurisdiction/s, Water Agency, State Agency, Local Health Department Regulations
- E. Kern County Development Standards and Standards for Construction

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1.7 SUBMITTALS

- A. Submit a list of all irrigation equipment to be used and to be handed over to the Owner, manufacturer's brochures, maintenance manuals, warrantees, and operating instructions, within ten (10) calendar days of notice to proceed. Provide an index sheet clearly identifying the product name, manufacturer/model number, any options, and the sheet number where the product cut sheet is located in the submittal package.
 - 1. If substitution of irrigation equipment from that which is specified on plans is proposed, Contractor shall provide in writing to the Landscape Architect or Owner's Representative the proposed substitution for approval prior to any installation. Substitution shall be equal or better. Approval by Owner and/or Landscape Architect of any items, alternate or substitute indicates only that the product or products apparently meet the requirements of the Drawings and Specifications on the basis of the information or samples submitted.
- B. Provide a copy of project as-builts and controller charts. Refer also to following section on details of submittal.
- C. Provide a copy of major equipment maintenance and operation manuals.
- D. Refer to extra irrigation equipment list indicated for irrigation materials to be provided to Owner prior to project turnover.

1.8 GUARANTEE

Furnish a guarantee in accordance with the General Provisions and Special Conditions for a period of one (1) year from the date of final acceptance, at the conclusion of the maintenance period by the Contractor. The entire system shall be guaranteed against defective equipment, materials and workmanship. Repairs shall be made by the Contractor in a timely fashion at no expense to Owner. The guarantee shall include provisions for non-settling of the backfill in trenches and excavations which, if occur, shall be corrected, including repairs and/or replacement of any material damaged thereby or there from, to the complete satisfaction of, and at no cost to the Owner.

1.9 SITE OBSERVATION VISITS BY THE LANDSCAPE ARCHITECT

- A. In all cases where site observation visits of the irrigation system work are required and/or where portions of the work are specified to be performed under the direction and/or site observation of the Landscape Architect or Owner's Representative, the Contractor shall notify the Landscape Architect or Owner's Representative at least three (3) working days in advance of the time such site observations and/or directions are required (unless otherwise indicated).
 - Site observation will be required for the following parts of the work at the sole option of the Landscape Architect or Owner's Representative. The Contractor shall request the presence of the Landscape Architect to observe the installation at the following stages of progress:
 - a. Owner's Representative shall be notified for review of installation and testing of main lines and lateral lines; when pipes are laid and are to be submitted to pressure tests. Do not cover any lines until they have been checked and approved.
 - b. Substantial completion walkthrough prior to the start of maintenance shall review the following:

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- 1. Review and testing of service and control systems, including any valves, quick couplers, automatic controller(s), rain sensor(s), flow meter(s), and control valves and wires.
- 2. The Contractor in the presence of the Landscape Architect or Owner's Representative, shall perform a coverage test to determine if the coverage of water afforded the planting areas is complete and adequate. The Contractor shall prepare all systems including making any adjustments prior to any coverage test and shall promptly furnish all materials and perform all work required to correct any inadequacies, without extra cost to the Owner. Operation of any disturbed irrigation systems shall also be included in operational review, with any corrections complete and systems adjusted and with full function.
- c. A final site observation visit by the Landscape Architect and Owner's Representative as required, two weeks before the end of maintenance period, and performance tests shall occur at the same time as the final site observation of the landscape maintenance period work.

1.10 TESTING

- A. All P.V.C. mains shall be subjected to a pressure test of existing line pressure for a period of four (4) hours and shall be watertight. All shut-off valves to isolate the section of mainline to be tested shall be fully closed prior to testing. All testing shall be in the presence of the Landscape Architect or Owner's Representative unless otherwise authorized. Testing will be done in sections as required. Liquid filled test gauges rated to a minimum 200 psi with maximum 5 psi increments shall be used for testing purposes.
- B. Test water mains as follows: (1) add water slowly to pipe to avoid water hammer damage, (2) bleed system at pressure gauge location to ensure all air is out of pipes, (3) pressurize system to line pressure for duration specified. Visually inspect for leaks while system is under constant pressure.
- C. All lateral lines shall be visually observed for leaks under line pressure, prior to burial of lines. All piping sections in excess of 20 ft length occurring under pavement shall be reviewed for leaks prior to making connections to each end.
- D. All installed irrigation control wiring, conduit and master valve/flow meter wire shall be visually observed by the Landscape Architect or Owner's Representative. Contractor shall be solely responsible for providing and passing a wire conductivity test for all remote control wiring, as well as a communication test on flow meter conductors where not performed by a manufacturer's field technician. Testing shall be repeated as required until facilities tested pass inspection and exhibit correct operation.
- E. Authorization to proceed with installation shall be received prior to backfilling any trench. Do not cover any lines, sleeves, conduits, conductors, or fittings until they have been reviewed, and authorization to proceed is given by the Landscape Architect or Owner's Representative.

1.11 RECORD DRAWINGS

A. Following construction, prior to the start of maintenance period, and prior to final acceptance of work, the Contractor shall provide a record set of drawings showing the irrigation system work. Utilize one complete set of irrigation drawing prints used for installing system, for indicating installed equipment. Make daily annotations thereon as project progresses, prior to burial of irrigation facilities. Lettering shall be 1/4" height minimum. Final submitted information shall be on a clean, full-size set of bond copy prints for reproduction purposes. All items changed/relocated from original drawings shall be so indicated with the same symbol in the new location, the original symbol erased. All notes/callouts pertaining to the item shall be directed to new location. All work shall be neat, in red ink and subject to the satisfaction of the Landscape Architect and/or Owner's Representative. Once approved by the Landscape Architect and/or Owner's Representative, obtain one (1) reduced print copy of record drawings (11" X 17" format), laminate in plastic, and submit to Landscape Architect and/or Owner's Representative.

- B. Immediately upon the installation of any pipe or equipment, the Contractor shall indicate on the drawings the locations of said pipe or equipment. All locations of mainline, and all conduits and sleeves shall be noted on plans with number, size and depth of cover at each location. Any detours around obstacles shall be noted with description of the obstacle and how the installation detoured, (for example, "shallow bury- 12" cover, or otherwise described for the occurrence).
- C. Any changes in type/manufacturer/model number/size of equipment or installations from that shown on Drawings shall be so indicated on the Record Drawings. This includes irrigation legends, irrigation notes, irrigation details and any other information included in the construction of project.
- D. All remote control valves shall be numbered by station and corresponding numbers shall be shown on the record drawings.
- E. All routing of electrical wire shall be noted starting from the controller to each valve/valve manifold. Note any spare wires on wire runs.
- F. All sensors, meters, water mains, control wiring, stub-outs, points of connection to water mains, controllers, pull boxes, wire splice boxes, sleeves, flow meter cable conduits with routing, control wire conduit with routing, remote control valves, master valve/flow meter, remote control valves, shut-off valves and quick coupling valves shall be located by measured dimensions, to the nearest one-half foot. Mainlines and lateral lines shall be dimensioned along all runs at a minimum every 20 feet apart, and as required. Dimensions from two (2) different reference points minimum shall be given from permanent objects such as face of curbs, drain inlets, sidewalks, walls, structures, and driveways. Use the nearest, best points of reference for documenting the dimensions for each item. Indicate lateral line routing to system where valve location and/or lateral line different than plans.
- G. For the inside surface of the cover of each Automatic Controller, prepare and mount a color-coded chart showing the valves, mainline, and systems serviced by that particular Controller. All valves shall be numbered to match the operation schedule and the drawings. Only those areas controlled by that Controller shall be shown. This chart shall be the as-built plan, entire or partial, showing building, walks, roads, and walls. A photostatic print of this plan, reduced as necessary and legible in all details, shall be made to a size (11" X 17" size) that will fit into the Controller enclosure. This print shall be approved by the Landscape Architect and/or Owner's Representative and shall be hermetically laminated by plastic. This shall then be placed inside the enclosure door, or in an agreed-to location given by the Owner.
- H. Record drawings shall be signed and dated in black ink by the Contractor attesting to and certifying the accuracy of the record drawings. Contractor shall indicate company name, address and phone number on record drawings.

1.12 OPERATION AND MAINTENANCE MANUALS

- A. Prepare and deliver to the Landscape Architect of Record within ten (10) calendar days prior to completion of construction, a digital pdf format document containing the following information:
 - 1. Index sheet stating Contractor's address and telephone number, list of equipment with name and addresses of local manufacturers' representatives.
 - 2. Catalog and parts sheets on all material and equipment.
 - 3. Equipment warranties and certificates.
 - 4. Guarantee statement.
 - 5. Complete operating and maintenance instruction for all major equipment.
- B. In addition to the above-mentioned maintenance manuals, provide the Owner's maintenance personnel with instructions for maintaining major equipment and show evidence in writing to the Landscape Architect and/or Owner's Representative at the conclusion of the project that this has been rendered.

1.13 GENERAL REQUIREMENTS

- A. Code requirements shall be those of State and Municipal Codes and Regulations locally governing this work, providing that any requirements of the Drawings and Specifications, not conflicting therewith, but exceeding the Code Requirements, shall govern unless written permission to the contrary is granted by the Landscape Architect and/or Owner's Representative.
- B. The Contractor is responsible for understanding the correct installation and operation of all equipment. If installation or operation is in doubt, contact manufacturer's representative for instruction.
- C. Extreme care shall be exercised at all times by the Contractor in excavating and working in the project area due to existing utilities. Contractor shall be fully responsible for expenses incurred in the repair of damages caused by his operation.
- D. Care shall be used to avoid severing roots of existing trees. All trenching within 20' of trunk of existing trees to remain shall be done by hand methods, carefully tunneling under roots 2" and larger, and routing pipe to avoid disturbing roots.
- E. Care shall be used to avoid disturbing existing pavement. All trenching adjacent to existing pavement shall be done by hand methods. All boring shall be done carefully when tunneling under existing pavement, and routing of sleeves and pipe to avoid disturbing pavement. Use open utility trenches and share routing under existing pavement where allowed by Owner and where possible where boring is not feasible.
- F. If discrepancies are encountered between the plans and actual site conditions, or within the plans themselves, the Contractor shall promptly contact the Landscape Architect for direction.
- G. For the purpose of clarity, plan locations of sprinkler heads, valves, in-line check valves, sensors, meters, splice boxes, existing facilities, backflow preventers, controller(s), sesnors, pipe lines, sleeves and conduits, etc. are diagrammatic and indicate the spacing and relative
locations of all installations. Final locations of installations shall be determined by final site conditions and plantings prior to their installation with the Landscape Architect and/or Owner's Representative present.

- H. All lines shall have a minimum horizontal and vertical clearance of 6" from each other and 6" from lines of other trades. Parallel lines shall not be installed directly over one another. Install system so that repairs can be made without disturbing rest of system.
- I. Prior to starting any work, Contractor shall obtain a reading of existing available water pressure (no flow condition) at designated point of connection and promptly submit written verification of pressure with date and time of recording to the Landscape Architect and/or Owner's Representative. Any differences to stated pressure on plans and readings may cause changes directed by the Landscape Architect and/or Owner's Representative. Failure of Contractor to provide stated information as noted above will cause the Contractor to bear full responsibility in cost, installation and equipment changes or additions for any changes necessary for a fully functional irrigation system with acceptable pressure for all site irrigation.
- J. Point of connection shall be approximately as shown on drawings. Connect new underground piping and valves and provide all flanges, adapters or other necessary fittings for connection.
- K. Permission to shut off any existing in-use water line must be obtained 48 hours in advance, in writing from the Landscape Architect or Owner's Representative. The Contractor shall receive instructions from the Landscape Architect or Owner's Representative as to the exact length of time of each shut-off.
- L. New work will tie into existing facilities. Prior to starting any work, coordinate with the Landscape Architect or Owner's Representative the exact tie-in locations and timing. Verify their exact locations and suitability for this new work. Promptly report to the Landscape Architect or Owner's Representative any obstacles to work.
- M. Installation during the construction period may occur in stages depending on the site and concurrent construction activity. It is of utmost importance, and Contractor's responsibility to preserve any water supply line's service, and to keep interruption to the irrigation water supply to installed landscaped areas to a minimum. Contractor shall be responsible for providing continued watering of the site's landscape during the entire construction period. Contractor shall, with the Landscape Architect or Owner's Representative's prior written approval, utilize hose watering off building wall hydrants, highlining mainline, or whatever is deemed necessary to ensure watering is uninterrupted and plantings are maintained in a sustainable condition. Any cause for Contractor not preparing for and not employing a watering program which results in plant decline or demise shall cause the Landscape Architect or Owner's Representative shall cause the Landscape Architect and/or Owner's Representative shall cause Contractor at Contractor to replace plants during the construction period, along with a plant replacement guarantee.
- N. Contractor shall acquaint himself with all site conditions and proposed site conditions as indicated on the plans and specifications, prior to any installation. Measure site planter areas and dimensions and compare them to drawing area dimensions. Do not proceed with installation in any area until conflicts between these measurements have been brought to the immediate attention of Landscape Architect and/or Owner's Representative and resolved by and with the Landscape Architect and/or Owner's Representative. Do not willfully install the irrigation system as shown on the drawings when it is obvious in the field that unknown obstructions, grade differences or grade discrepancies in area dimensions exist that might not have been considered in engineering. Such differences shall be brought to the immediate

Landscape Irrigation 328000 - 7 attention of the Landscape Architect and/or Owner's Representative. In the event this notification is not performed, the Contractor shall assume full responsibility and costs involved for any revisions necessary.

O. Where occurs, the Owner's Representative is to coordinate with their landscape maintenance staff to help ensure that the landscape areas where water to existing areas will be disrupted is well watered in the days preceding the start of demolition and construction to provide plants with a bank of moisture.

1.14 QUALITY ASSURANCE

- A. Refer to Site Observation Visits Section for irrigation installation milestones and quality control measures.
- B. Refer to Testing Section for testing and review of installed equipment.

PART 2 - PRODUCTS

2.1 STANDARD PRODUCTS

Materials furnished under this specification shall be new and of standard products of manufacturers regularly engaged in the production of such materials and shall be the manufacturers' latest standard design that complies with the specification requirements.

2.2 POLYVINYL CHLORIDE PIPE

- A. All plastic piping and sleeves shall be integral white color, Type 1, Grade 1 (impact modified) designated as Polyvinyl Chloride (PVC), conforming to ASTM D1785, for potable water use.
- B. PVC Plastic Pressure Lines: For piping upstream of remote-control valves, shut-off valves and quick coupling valves. All piping 2" to 3" shall be Class 315 PVC 1120 (SDR 13.5). All piping 1-1/2" and smaller shall be Schedule 40 PVC.
- C. Plastic Non-Pressure Lines: For piping downstream of remote-control valves. All pipes shall be PVC SCH 40.
- D. Plastic Sleeves: Where required, sleeves for underground installation shall be PVC SCH 40, sized at a minimum twice the diameter of pipe to be sleeved, with a 2" minimum size. Each pipe shall have its own sleeve.
- E. Identification: Furnish plastic pipe continuously and permanently marked with following information: Manufacturer's name or trademark, size, schedule or class and type of pipe, working pressure rating at 73.4 degrees F., and National Sanitation Foundation (NSF) rating, and date of extrusion.
- F. All plastic pipes shall conform to ASTM D2441.

2.3 BRASS PIPE

A. Brass pipe shall be IPS Standard weight 125 pounds, 85% red brass.

2.4 FITTINGS AND CONNECTIONS

- A. Polyvinyl Chloride Pipe Fittings and Connections: Type I, Cell C1. 12454-B, Schedule 40, high impact molded fittings, manufactured from virgin compounds as specified for piping tapered socket or molded thread type, suitable for either solvent weld or screwed connections. Machine threaded fittings and plastic saddle and flange fittings are not acceptable. Furnish fittings permanently marked with following information: Nominal pipe size, type and schedule of material, and National Sanitation Foundation (NSF) seal of approval. PVC fitting shall conform to ASTM D2464 and D2466.
- B. Ultraviolet Resistant Polyvinyl Chloride Pipe Fittings and Connections: Type 1, Grade 1 Schedule 40, high impact molded fittings, manufactured in accordance with ASTM Designation D-2246 by the Brownline Pipe Company, or approved equal.
- C. Copper pipe fittings and connections: Type K hard copper.
- D. Brass Pipe Fittings and Connections: Standard 125-pound class 85% red brass fittings and connections, IPS threaded.
- E. Flexible risers shall be of line size IPS, PVC plastic threaded adaptors securely held to approximately 4.6" long synthetic rubber or flex-vinyl hose shanks, 85 pound minimum. King Bros., Excalibre or approved equal.
- F. Polyvinyl Chloride Schedule 80 Risers and Nipples: Type 1, Grade 1, Schedule 80, high impact molded, manufactured from virgin compounds as specified for piping and conforming to ASTM D-2464. Threaded ends shall be molded threads only. Machined threads are not acceptable.
- G. Swing joint assemblies for sprinkler heads shall be as indicated on the details or approved equal.
- H. PVC unions at valve assemblies shall be PVC SCH 80, molded and threaded inlet, and outlet.
- I. Pipe fittings at pipe connections to existing pipe shall be compatible with the type of material of existing pipe is being connected to. Provide companion fittings, reducing fittings and jointing materials that are approved by Owner's Representative.
- J. Dielectric bushings shall be used in any connections with piping of dissimilar metal materials.

2.5 SOLVENT CEMENTS, PRIMER, AND THREAD LUBRICANT

- A. Solvent cements shall comply with ASTM D2564. Socket joints shall be made per recommended procedures for joining PVC plastic pipe and fittings with PVC solvent cement by the pipe and fitting manufacturer and procedures outlined in the Appendix of ASTM D2564.
- B. Primer shall be recommended by pipe manufacturer of pipe used.
- C. Thread lubricant shall be Teflon ribbon-type, or approved equal, suitable for threaded installations as per manufacturer's recommendations.

2.6 AUTOMATIC CONTROL WIRE AND WIRE SPLICE CONNECTORS

- A. Electric control wiring runs to the automatic control valves shall be single, solid 14 AWG copper wire in a polyethylene jacket, Style DB (Direct Burial) or equal. Common wire shall be white, control wires of different color than white.
- B. Wire Splice Connectors for flow sensor conductors shall be as indicated on the drawings, and as recommended by the controller manufacturer.
- C. Wire Splice Connectors for control wires shall be as indicated on the drawings, and as recommended by the controller manufacturer.

2.7 AUTOMATIC CONTROLLER AND CONTROL SYSTEM

- A. Control systems shall be conventional wired systems. Refer to plans and legend for the types of assemblies.
- B. Controller shall be furnished and installed complete with all electrical connections, ready for operation.
- C. Electrical power line shall be dedicated 20A/110VAC circuit, placed in rigid conduit and pull boxes.
- D. Controller shall be the latest model of the particular manufacturer as specified in the irrigation legend.
- E. Unit shall have an input of 110/120 volt, 60 cycle, be completely automatic and shall function optionally with or without the clock. Unit shall have a secondary output of 24/28 volt, 60 cycle.
- F. Rain sensor enclosure assembly shall be the latest model of the particular manufacturer as specified in the irrigation legend.

2.8 GROUNDING

A. Grounding requirements for irrigation controllers shall be as recommended by control system manufacturer.

2.9 WIRE CONDUIT

- A. Wire conduit and fittings for below grade installation shall be electrical designation, gray, PVC SCH 40, with sweeps as required. Conduit shall be solvent welded at each connection with fittings.
- B. Wire conduit, clamps, fittings and boxes for above grade installation shall be electrical designation, SCH 40, galvanized steel, with sweeps as required. Conduit shall be connected with Teflon thread sealant at each connection with fittings.
- C. Master valve/flow meter wire shall be fully enclosed in its own electrical conduit/sweeps except at terminal connection points.
- D. Control wire shall be installed in conduit where passing under hardscape and through walls, sized twice the diameter of wire bundle, with a minimum 2" size.

2.10 CONTROL VALVES

- A. Remote control valves shall be Rain Bird model numbers as specified in the irrigation legend or approved equal.
- B. Master control valve shall be Rain Bird brass valve as specified in the irrigation legend or approved equal.

2.11 VALVE BOXES

- A. All valve boxes shall be commercial grade, professional irrigation type, integral green colored, with locking bolt-down green lids, by Carson-Brooks, Ametek, or approved equal. Include stainless steel bolt and stainless-steel washer or spring for each valve box lid.
- B. For flow sensor: 10" x 19" nom. plastic valve box.
- C. For master valve: 10" x 19" nom. plastic valve box.
- D. For remote control valve: 10" x 19" nom. plastic valve box.
- E. For gate valve: 10" x 19" nom. plastic valve box.
- F. For quick coupling valve box: 10" diameter round plastic box.
- G. For wire splice box, pull box and spare wire box: 10" diameter round plastic box.
- H. Valve box extensions shall be of the same manufacturer, size and color as existing valve box to be adjusted to finish grade, unless when fully buried below finish grade.

2.12 SPRINKLER HEADS

- A. Sprinkler heads shall be of the types and sizes with diameter (or radius) of throw, pressure, nozzle discharge and/or other designations indicated on the drawings. Sprinkler head shall be of make and model specified in the irrigation legend or approved equal.
- B. Pop-up sprinkler heads shall be as specified in the irrigation legend or approved equal. The sprinkler shall have a built-in check valve. No side inlet option shall be used.
- C. Sprinkler heads shall be available in both full circle and part circle arc configurations, and where specified and/or required, variable arc configurations. Adjustments shall be possible before and after installation as well as during operation.

2.13 QUICK COUPLING VALVES

A. Shall be 1" size brass, as indicated in the irrigation legend, or approved equal.

2.14 GATE VALVES

- A. Gate valves for mainline isolation shall be as specified in the irrigation legend or approved equal.
- B. Gate valves for valve manifolds shall be as specified in the irrigation legend or approved equal.

2.15 SPRING CHECK VALVES

A. Spring check valves for sprinkler head assemblies shall be maintenance free and constructed of heavy-duty Type 1 PVC with stainless steel and neoprene internal parts. Valves shall be adjustable from 5 to 40 feet of head and shall prevent low head drainage quickly and positively after RCV shut-off. Valves shall have a female IPS threaded inlet and outlet. Valcon ADV, Hunter Ind. HCV, King Bros. KC, or approved equal.

2.16 TRENCH MARKER TAPE

- A. Water warning marker tape for pressure irrigation lines shall be 3" wide, detectable type, blue text with "Caution Irrigation Line Buried Below" (TA-DT-3B-I), manufactured by T. Christy Enterprises, Inc., Paul Potter Warning Tape Inc., or approved equal.
- B. Warning marker tape for control wire and control system conduits shall be 3" wide, detectable type, red text with "Caution Electric Line Buried Below" (TA-DT-3R-E), manufactured by T. Christy Enterprises, Inc., Paul Potter Warning Tape Inc., or approved equal.

2.17 FILTER FABRIC

A. Filter fabric for all valve boxes shall be non-woven type, fully stabilized UV-resistant and shall prevent soil particles from clogging and entering valve box pits. Mirafi 140N or approved equivalent.

2.18 GRAVEL

A. Clean rock gravel free from organic material, clay or loam; ½ inch to ¾ inch in size.

2.19 CONCRETE FOOTINGS AND THRUST BLOCKS

A. Concrete footings and thrust blocks shall be 2,000 P.S.I. concrete at 28 days, 5 sack minimum mix, natural color.

2.20 EXTRA EQUIPMENT

- A. Contractor shall provide to Owner:
 - 1. One (1) tool for adjusting operation of each type of sprinkler head and each type of nozzle with screen.
 - 2. Extra sprinkler heads, nozzles, and screens in amounts equal to five (5) of each type used on the project.
 - 3. One (1) quick coupler key with swivel hose ell to match, of the type installed.
 - 4. One (1) valve box and matching lid, each with locking bolt of each type installed on this project.
 - 5. One (1) hand ratchet wrench with sockets to match size of locking bolts installed on valve boxes (two different sizes typical).

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

- A. Locations on drawings are diagrammatic and approximate only and shall be changed and adjusted as necessary and as directed to meet existing conditions and obtain complete water coverage. Locate and stake all work and obtain approval of the Landscape Architect or Owner's Representative prior to any installations. This includes, but is not limited to valve locations, mainline locations, sleeve locations and sprinkler head locations. Tree placement takes precedence over location of irrigation system equipment and lines (to be installed before pipeline or other irrigation system components installed).
- B. Install and extend system indicated on the drawings, and as necessary to carry out the intent of the Drawings and Specifications. The Contractor shall not willfully install any equipment as shown on plans when it is obvious in the field that conditions exist that were not evident at the time these plans were prepared. Any such conditions shall be brought to the prompt attention of the Landscape Architect and/or Owner prior to any work, or the Contractor shall assume all responsibility for any field changes deemed necessary by the Owner.
- C. The Contractor shall obtain permits and call for inspections as required by local codes and regulations.
- D. The system is designed for the minimum operating pressure and peak demand as shown at each point of connection, and for operation pressure as noted for equipment in the irrigation legend. The Contractor shall verify the available water pressure at the site prior to the start of installation and provide written documentation to the Landscape Architect of the recorded pressure.
- E. 120-volt electrical power source is understood to be existing and Contractor shall field verify that all required controller hookups are existing and usable. As required, all electrical connections to electrical source for the controller shall be provided by the Electrical Contractor. Contractor shall be responsible for final connection to control equipment with field wires and sensor wires from the landscape to the irrigation controller.
- F. Rain sensor electrical conduits on or in structures and poles shall be installed by Electrical Contractor in locations and as directed by Owner's Representative.
- G. Locate existing potable irrigation water lines and equipment, and control wires for connection thereto, controller/s, valves, and other underground utilities prior to digging trenches.
- H. Paving, curb, drainage system, and tree and/or specimen plantings shall be installed or indicated prior to installation of irrigation system mains, laterals, sprinkler heads, and valve or pull boxes.
- All sprinkler heads shall be installed, adjusted, and maintained to keep all water and spray off wood structures, walls, arbors, utilities, walks, paving and surfaces, other structures and unintended areas at all times. This includes, but is not limited to, adjustment of radius, arc and angle of sprinkler heads and the equipment attached thereto. Do not allow ponding and runoff.
- J. All piping, whether existing installation or new, shall be kept free from contaminants that may potentially enter piping during construction and following construction. Should Contractor's work cause contamination in the irrigation water and it exhibit itself during construction and/or the maintenance period, Contractor shall be responsible to decontaminate the entire irrigation

system's components affected by contamination by flushing the debris out until water appears clear at the satisfaction of the Landscape Architect or Owner's Representative, at Contractor's expense. Components include, but are not limited to the following: mainlines, valves, sprinkler swing joints, sprinkler heads and nozzles. Contractor shall replace components where attempts at cleaning them prove unsuccessful. All work to decontaminate system and put it back into satisfactory working order shall be completed within 48 hours of the time condition is found and/or at the time of notification by the Landscape Architect or Owner's Representative. Work shall be done to the complete satisfaction of the Landscape Architect or Owner's Representative.

- K. All existing wires and cables/conduits and mainline shall be reconnected together where damaged/disrupted by construction in order to have a fully functioning irrigation system, with all system capabilities met.
- L. All existing irrigation system heads and equipment disturbed shall be replaced in kind with matching materials. All systems shall be restored to full function and reviewed by Owner's Representative.
- M. Contractor shall employ whatever means necessary to protect valves, conduits, lateral lines and mainlines installed, especially when working with other trades. Stake out facilities; use flat, sturdy material to cover shallow buried piping as required throughout the construction period to minimize damage to the installation and to help deter bodily injury. Employ removable barriers as required to keep activity outside of construction areas.
- N. Ponding/runoff from irrigation system shall be kept to a minimum wherever possible.
- O. No low head drainage shall be allowed. Install check valves as required.

3.2 INSTALLATION OF IRRIGATION SYSTEM

Excavation and backfilling of Trenches

- A. Excavate trenches, prepare subgrade, and backfill to line and grade with sufficient room for pipe fittings, testing and inspecting operations. Do not backfill until the pipe system has been subjected to a hydrostatic test as specified. Do not cover any installed control wiring until it has been visually observed by the Landscape Architect or Owner's Representative. Control wire shall be installed along with Pressure Line. Where not installed with Pressure Line (home run to controller, for example), install at same depth specified for Pressure Line.
- B. Depth of Cover

	In Landscape: (from Soil Finish Grade to Top of Pipe, Conduit or Tubing)	
	PVC Pressure Line (2-1/2" & smaller)	See detail
	PVC Pressure Line (3" & larger)	See detail
	PVC Non-Pressure Line with 4" to 6" Pop-Ups or Bubblers	See detail
	PVC Non-Pressure Line with 12" Pop-Ups	See detail
	Conduit	See detail
C.	Depth of Cover	
	Under Pavement: (from Base Material to Top of Pipe or Conduit)	
	PVC Pressure Line (2-1/2" & smaller)	See detail
	PVC Pressure Line (3" & larger)	See detail
	PVC Non-Pressure Line	See detail
	Conduit	See detail

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- D. Soil backfill within 3" of piping shall be free of all rocks over 1/2" diameter, debris, and litter prior to use as backfill. The remaining soil backfill shall be free of 1" and larger rock, debris and litter prior to using as backfill.
- E. Deposit topsoil on one side of trench and subsoil on the opposite side, then install irrigation lines and test each section.
- F. Repair any leaks and replace all defective pipe or fittings until lines meet test requirements. Do not cover any lines until they have been checked and approved for tightness, quality of workmanship and materials.
- G. Backfill trenches, after approval of piping, with suitable and approved material, tamping soil around pipe and thoroughly compact all trench fills until 90% relative compaction has been achieved.
- H. Backfill material shall be an approved soil, or sand where specified, free from rocks and clods, litter and other debris.

3.3 INSTALLATION OF POLYVINYL CHLORIDE PIPE

- A. Because of the nature of plastic pipe and fittings, exercise caution in handling, loading, and storing, to avoid damage.
- B. The pipe and fittings shall be stored under cover until using and shall be transported in a vehicle with a bed long enough to allow the length of pipe to lay flat so as not to be subjected to undue bending or concentrated external load at any point.
- C. All pipe that has been dented or damaged shall be discarded unless such dent or damaged section is cut out and pipe rejoined with a coupling.
- D. Trench depth shall be as specified above from the finish grade to the top of the pipe. The bottom of the trench shall be free of rocks, clods, and other sharp-edged objects.
- E. Pipe ends and fittings shall be wiped with "MEK" primer, or approved equal, prior to applying welding solvent. Welded joints shall be given a minimum of 15 minutes to set prior to moving or handling. All field cuts shall be beveled to remove burrs and excess material prior to fitting and gluing together.
- F. Pipe shall be snaked from side-to-side of trench bottom to allow for expansion and contraction.
- G. Center load pipe at 10' intervals with small amount of backfill to prevent arching and slipping under pressure. Leave joints exposed for site observation during testing.
- H. No water shall be permitted in the pipe until a period of at least 24 hours has elapsed for solvent weld setting and curing.
- I. Plastic to metal joints shall be made with metal threaded couplings with PVC SCH 80 male adapters hand tightened, plus one turn with a strap wrench.
- J. Plastic to plastic joints shall be solvent weld, assembled per pipe manufacturer's specifications and using solvent recommended by pipe manufacturer only.

K. All pressure pipe shall have a continuous blue colored metallic three (3) inch wide marker tape placed nine (9) inches below finished grade directly above the buried pipe, or as detailed on the drawings.

3.4 INSTALLATION OF BRASS PIPE

- A. Cut brass piping by power hacksaw, circular cutting machine using an abrasive wheel, or hand hacksaw. No piping shall be cut with metallic wheel cutter of any description. Ream and remove rough edges of burrs so smooth and unobstructed flow is obtained.
- B. Carefully and smoothly place thread lubricant on male thread only. Tighten screwed joints with tongs or wrenches. Caulking is not permitted.

3.5 INSTALLATION OF SLEEVES AND CONDUIT

- A. Control system wiring passing under proposed paving, walls or structures shall pass through SCH 40 PVC conduit-size as required (minimum of twice the diameter of wire/bundle).
- B. Sleeves shall be installed with utilities traversing underneath disrupted pavement where new utilities are proposed to occur. Sleeves and conduits shall extend twelve inches (12") beyond farthest edge of pavement, wall or structure on each end of sleeve. A 10 diameter round valve box shall be located at each end of sleeve, a maximum of two feet from edge of paving to note where sleeve occurs.
- C. Provide removable plug at ends of conduits and sleeves to prevent debris entry prior to use. No cloth or cloth Duct tape shall be used. Dry-fitted PVC cap recommended.
- D. Refer to specific plan notes and details for installation. Exercise extreme caution when working near drainage system lines, structures, existing pavement and walls. Ensure these facilities have been staked out prior to any installation.
- E. Master valve/flow sensor wire conduit and sweeps shall be size noted on the plans, with pull boxes set at maximum 250 feet apart for the route between controller and master valve/flow sensor.

3.6 REMOTE CONTROL WIRING INSTALLATION

- A. Direct burial control wire sizes shall be as shown and as specified hereinbefore.
- B. All remote-control valve wire shall be run up and looped with two feet of wire into each valve manifold along the mainline run.
- C. Provide one control wire and one common ground wire to service each valve in system. Provide 4' minimum expansion loop at each valve to permit removal and maintenance of valves. Provide 2' minimum expansion loops at least every 100' of wire length on wire runs greater than 100'. Form expansion loops by wrapping multiple turns of wire around a 1-inch diameter PVC pipe then withdrawing the pipe.
- D. Install control wires at least below finish grade and minimum of distance from any pipe or fittings except at terminal points, per the details.
- E. Install control wires and irrigation pressure piping in common trenches wherever possible. If not possible with pressure piping, then install with lateral lines. If in either case, enclose wire in conduit.

- F. As a part of the work to allow for possible damage to any conventional wired system common or control wire, the Contractor shall run an extra common (white color jacket) and control wire (red color jacket) on each leg of mainline from the controller to the furthest remote-control valve on a mainline run. Where indicated on plans provide any additional number of spare wires indicated. Provide and install waterproof wire splice connectors and/or apply waterproof epoxy to the bare wire ends of spare wires.
- G. Install Trench Marker tape on all installed wire.
- H. Wire splices shall be made with waterproof connectors as specified.
- I. Wire splices shall be allowed only on runs of more than 500-feet.
- J. Wire splices shall be done according to manufacturer's instructions and placed in a valve box as specified in previous section.
- K. Control wire system numbering and tagging: Identify direct burial control wires at each automatic valve and at the terminal strips of the controller with corresponding valve station numbers shown on the drawings. Tag wires at the terminal strips with 3M Scotchcode SER Wire Markers or approved equal.
- L. All valves, including master valves, shall have wires identified by controller and station designation inside each valve box with Christy Enterprises Standard Yellow I.D. Tags or approved equal. Identify spare wires by capping ends with waterproof connectors as specified above and tagging with an I.D. tag marked "SP".

3.7 FLOW SENSOR AND FLOW SENSOR CONDUCTOR INSTALLATION

- A. Install flow sensor and conductors per controller manufacturer's instructions, as directed on plans, specifications and as shown on the detail drawings.
- B. Flow sensor wires shall be a continuous run between end connections of control system and sensor, fully enclosed in PVC SCH 40 electrical conduit. Runs with over 250 ft distance shall be broken up by the use of PVC SCH 40 sweep ells and 10" diameter valve boxes.

3.8 AUTOMATIC CONTROLLER AND CONTROL SYSTEM INSTALLATION

- A. Automatic controller shall be located and installed as shown in detailed drawings and as directed by Owner's Representative prior to installation. Controller shall be tested with complete electrical power connections. Contractor shall be responsible for temporary and permanent power to the controller for operation and testing purposes. Controller shall be fully operable prior to planting operations.
- B. All connections to control wiring shall be made within the pedestal of the controller or in junction boxes.
- C. Electrical supply wiring exists on site and understood to be operational. Contractor shall field verify the existing conditions. Should the Contractor determine any adjustments to the electrical supply wiring is required, Electrical Contractor shall install electrical service in a rigid metal conduit from controller to electrical source or power pedestal. The electrical supply shall be hard-wired without the use of pigtails or any other type of extension cord. The Electrical Contractor shall be responsible for installing all wiring to the sub-panels, clocks, or

elsewhere as required, in order to complete this installation. A disconnect switch shall be included as a part of this work.

- D. Contractor shall set the controller parameters for watering and flow sensing for each irrigation system controlled by each controller. Contractor to meet with and provide operation instructions to the Owner's Representative for the control system prior to the start of maintenance. Contractor to coordinate with the Owner's Representative during maintenance period any recommended adjustments to the control system. Provide a copy of the watering schedule at the time of turnover.
- E. Where required, provide simultaneous watering of multiple valves per watering program as required for site watering requirements on allowable water days. Refer to and follow the local water agency's restrictions and/or Owner's restrictions.
- F. Rain sensors shall be installed in an open area where unobstructed rainfall would occur, in exact location coordinated with Owner's Representative. Rain sensor electrical conduits on or in structures and poles shall be installed by Electrical Contractor in locations and as directed by Owner's Representative. Contractor to install rain sensor wire between sensor and controller and activate sensing.

3.9 REMOTE CONTROL VALVE AND MASTER CONTROL VALVE INSTALLATION

- A. Install remote control valves and master control valves in locations approximately as shown on the drawings, with sufficient distance from top of flow control stem to valve box lid. Install a union type connection. Affix valve ID tag to valve with nylon zip strap. Fit with plastic valve box and cover as shown in the detail drawings. Install one valve per box. Do not locate in paving or adjacent to where susceptible to vehicular damage. See also valve box installation.
- B. Provide specified waterproof connections at all below grade wire splices and at every spare wire end.

3.10 VALVE BOX INSTALLATION

- A. Install valve boxes as shown in the detail drawings. Install no more than one valve per box. Set valve boxes perpendicular and plumb to adjacent hardscape and to each other. Set boxes 12" apart, and 12" from adjacent hardscape areas. Heat brand valve number and controller letter on outside top of valve box lid to maximum 1/8" depth with 1-1/2" minimum to 2" maximum height text, readable from side valve would be accessed. Size shall be consistent throughout the project.
- B. Heat brand outside top of valve box with branding of the identification of contents inside valve box. Brand lids using the following:
 - 1. Master control valve: MV-A (shown with controller letter)
 - 2. Flow sensor: FS-A (shown with controller letter)
 - 3. Pull box: PB
 - 4. Wire splice box: WS
 - 5. Spare wire: SW
 - 6. Sleeve: SL
 - 7. Gate valve: GV
 - 8. Pipe stub-out: STB
- C. Valve boxes shall not be modified in any way by cutting away portions of them, to ensure structural integrity. Any removal of valve box material will be subject to rejection and

BVARA RPP Project No. 1650.7087-23 Landscape Irrigation 328000 - 18 replacement, unless such removal is granted by the Landscape Architect and/or Owner's Representative, but only under consideration prior to valve box installation. If cannot use manufacturer's holes, run piping and wire underneath box with a minimum 1" box clearance.

3.11 SPRINKLER HEAD INSTALLATION

- A. Install all sprinkler heads as shown in detail drawings.
- B. Nozzle size of all heads shall be adjusted to suit any particular conditions of the area. This shall be done after the system has been thoroughly tested, immediately after written notification by the Landscape Architect or Owner's Representative to do so.
- C. If it is determined that adjustments in the irrigation equipment will provide proper, more adequate coverage, make such adjustments prior to planting. Relocate and install additional sprinkler heads as required. Adjustments may also include changes in nozzles and degrees of arc as required.

3.12 TREE IRRIGATION INSTALLATION

- A. Coordinate Tree irrigation installation timing with California Conservation Corps (CCC). Refer to the planting specifications for tree planting procedures to be carried out by the CCC.
- 3.13 QUICK COUPLING VALVE INSTALLATION
 - B. Install all quick coupling valves approximately where shown on drawings and as shown on the detail drawings. Do not locate in paving.
 - C. Prior to ordering parts and installing assemblies, coordinate location of, and construction of assemblies with the Landscape Architect or Owner's Representative.
- 3.14 GATE VALVE INSTALLATION
 - A. Install all gate valves approximately where shown on drawings and as shown on the detail drawings. Install one valve per box. Do not locate in paving.

3.15 CHECK VALVE INSTALLATION

- A. Install check valves as indicated on the plans and in the detail drawings. Contractor shall be responsible for installation of check valves as required to prevent low head drainage, at no additional cost to the Owner.
- B. Adjust spring check valves as required for optimal sprinkler head operation, and to prevent low head drainage.

3.16 CONCRETE FOOTING INSTALLATION

- A. Footings shall be placed on 90% minimum compacted or undisturbed subgrade. Construct to shapes specified and parallel to walkways. Tool finish exposed surface.
- B. Thrust blocks should be constructed to industry standard shapes. They should be so shaped that they allow access to all fittings or joints or valves for inspection or repair. This includes the use of form lumber or equally effective form material, which shall be removed upon setting and curing.

- C. Thrust blocks shall be completely separated from all other trench materials placed in trench (such as, but not limited to wires, cables, conduits) and shall not be shaped so that access to inspection or other repairs cannot be made.
- D. To be effective, a thrust block must: a) be placed against undisturbed (freshly excavated) trench wall or fully compacted earth; b) contact the fitting over a sufficiently large area so as not to create point stresses on the fitting; and c) have sufficient area on the soil side to restrain the thrust block without exceeding the bearing strength of the soil. Over-excavation and under-excavation of thrust block support area shall be avoided at all times.

3.17 FLUSHING OF IRRIGATION SYSTEMS

A. After piping and risers are in place, prior to sprinkler installation, a full head of water shall be used to flush out the system. After system is thoroughly flushed, cap all risers.

3.18 CLEAN-UP

A. As project progresses, Contractor shall daily maintain all areas in a neat manner and remove unsightly debris as necessary. After completion of project, Contractor shall remove all debris and containers used in accomplishing work. Contractor shall sweep and clean all sidewalks, asphalt, and concrete areas, and clean all vertical surfaces affected by Contractor's work, to the satisfaction of the Owner's Representative.

3.19 WATERING GUIDELINES

- A. The Contractor shall monitor the planting areas and new plants closely and frequently during the maintenance period for adequate levels of soil moisture; so that over- and under-watering situations can be corrected.
- B. Watering shall occur according to site conditions, local conditions and water restrictions to keep the plants sustained and healthy. Adjustments to watering intervals and durations shall be as required with weather changes and establishment of the plants.
- C. Do not depend solely on the automatic irrigation system. Utilize hose watering for the trees through the plant establishment period. Utilize hose watering for other plantings as required.
- D. Care shall be taken that the rate of application of water does not cause ponding or runoff onto non-pervious surfaces.
- E. All depressions, voids and settled trenches generated by watering shall be filled with amended topsoil and brought up to finish grade. Restore planting as required to match adjacent areas.

END OF SECTION

SECTION 32 90 00 LANDSCAPE PLANTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes (not all inclusive)
 - 1. Plants.
 - 2. Planting soils, soil amendments, and fertilizers
 - 3. Tree stabilization.
 - 4. Bark mulch.
 - 5. Root barriers.
 - 6. Filter fabric.
 - 7. Sod.
 - 8. Tree standpipe components
 - 9. Concrete Mow Curb
 - 10. Gopher Wire Mesh Tree Protection

1.3 SCOPE OF WORK

- A. The work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of "landscaping," complete as shown on the drawings and as specified herein.
- 1.4 RELATED SECTIONS
 - A. Section 312000 for "Earth Moving"
 - B. Section 328000 for "Landscape Irrigation"

1.5 DEFINITIONS:

- A. Architect: The Landscape Architect or the Owner's authorized representative.
- B. Backfill: The earth used to replace or the act of replacing earth in an excavation.
- C. Bonded Fiber Matrix: A continuous layer of elongated fiber strands held together by a water-resistant bonding agent.
- D. Caliper: Diameter of a trunk measured by a diameter tape at a height of 12 inches (300 mm) above the ground.
- E. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.

- F. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.
- G. Final Acceptance: Observation review by Architect at end of the specified Maintenance Period to verify completion and acceptance of the Work.
- H. Finish Grade: Elevation of finished surface of planting soil.
- I. Imported Soil: Soil that is transported to Project site for use.
- J. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."
- K. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.
- L. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- M. Planting Area: Areas to be planted.
- N. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- O. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.
- P. Pre-maintenance review: Observation by Architect to verify substantial completion of the Work. The Architect will generate a Punch List during this review. Maintenance Period will commence when Contractor has completed items on this Punch List and Architect has verified that the Punch List is complete.
- Q. Punch List: List of work within the Contract, generated by Architect that needs to be completed, repaired, replaced, or rectified by Contractor.
- R. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
- S. Soil Test: Required testing performed by Contractor after site is rough graded. A current soil report is also required for import soil prior to transport to the site.

- T. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.
- U. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- 1.6 QUALITY ASSURANCE
 - A. Standards:
 - 1. Provide plants and planting materials that meet or exceed specifications of Federal, State, and County laws requiring inspection for plant disease or insect control.
 - 2. Provide quality and size conforming to current edition of "Horticultural Standards" for number one nursery stock as adopted by the American Association of Nurserymen.
 - 3. Provide plants that are true to name. Tag one of each bundle or lot with the name and size of plants in accordance with the standards of practice of the American Association of Nurserymen.
 - 4. Botanical names shall take precedence over common names.
 - B. Workmanship: Perform work in accordance with the best standards of practice for landscape work and under the continual supervision of a competent foreman capable of interpreting the Drawings and Specifications.
 - C. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of exterior plants.
 - D. Installer's Field Supervision: Require Installer to maintain an experienced and qualified full-time supervisor on project site when landscaping is in progress.
 - E. Quantities and Types: Plant materials shall be furnished in the quantities and/or spacings as shown or noted for each location, and shall be of the species, kinds, sizes, etc., as symbolized and/or described in the Plant List, and as indicated on the Drawings.
 - F. Verification of dimensions, quantities, and existing conditions
 - Scaled dimensions are approximate. Before proceeding with work, carefully check and verify dimensions and quantities and immediately inform the Architect of discrepancies between the Drawings and/or specifications and actual conditions. Do not start work in areas where there are discrepancies until approval for same has been given by the Architect.
 - 2. Prior to the excavation for planting or placing of plant materials, the Contractor shall verify the location of all underground utility lines and other improvements and take proper precautions to avoid damage to such improvements. In the event of conflict between such improvements and plant locations, the Contractor shall notify the Architect and arrangements will be made for relocation as necessary. Failure to follow the procedure places upon the Contractor the responsibility for making any and all repairs for damage resulting from work as herein specifies at his own expense.

1.7 VERIFICATION AND PROTECTION OF EXISTING CONDITIONS

A. All scaled dimensions on the drawings are approximate. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions, quantities, and grade elevations, and shall immediately inform the Owner of any discrepancies. Submit with

the bid the proposed source of import soil (if utilized) and a recent test evaluation on the soil.

- B. Prior to the excavation for planting or placing of plant materials, the Contractor shall verify the location of all underground utility lines and other improvements, and take proper precautions to avoid damage to such improvements. In the event of conflict between such improvements and plant locations, the Contractor shall notify the Owner, and arrangements will be made for relocation as necessary. Failure to follow this procedure places upon the Contractor the responsibility for making any and all repairs for damage resulting from work as herein specified at his own expense.
- C. The specified soil amendments and their rates of application are for bidding purpose only. The Contractor shall verify the soil conditions through soil testing. See Part 3 for execution of soil amendments.
- D. During the construction and maintenance period, the Contractor shall take every precaution to protect and avoid damage to sprinkler heads, irrigation lines, drainage lines, existing underground facilities, paving, structures, fixtures, and existing plantings. The Contractor shall be held responsible for any and all damage to such improvements and shall completely repair or replace the same at no cost to the Owner.

1.8 SUBMITTALS AND SUBSTITUTIONS

- A. Upon 15 days after the Contractor has received the Owner's notice to proceed, the Contractor shall submit to the Landscape Architect three (3) typewritten lists of all materials proposed with quantities, size, quality, and source.
- B. Prior to installation of any landscape elements, the Contractor shall submit for approval by the Landscape Architect, a list of all materials and equipment proposed for use. Submit product data for each type indicated for approval, such as (not all inclusive):
 - 1. Electronic photos in JPEG format of each size and species of specimen tree, fifteen (15) gallon size, 24-inch box size, and larger. Photos shall be an accurate representation of the actual tree specimens to be utilized on the project. Photos shall be transmitted to the Landscape Architect via e-mail and/or other electronic media. Identify each photograph with the full scientific name of the plant (genus, species, variety, cultivar, etc), plant size, and name of the growing nursery (under separate text if needed). Include a scale rod or other measuring device in each photograph. For species where more than 10 plants are required, include a minimum of three photographs of that species showing the average plant, the best quality plant, and the worst quality plant to be furnished.
 - 2. Tree standpipe components, including PVC drainpipe, filter fabric, and drain grates.
 - 3. Staking and tying materials.
 - 4. All soil conditioners, soil amendments, fertilizers, and other chemicals.
 - 5. Mycorrhizal fungi
 - 6. Imported soil.
 - 7. Root barrier.
 - 8. Filter fabric.
 - 9. Bark mulch.
 - 10. Pesticides: Also, include copies of sample label and Material Safety Data Sheet (MSDS).

- C. Soil Test: Contractor shall have import soil and the soil of the site tested for fertility, agricultural suitability, and appraisal by Soil and Plant Laboratory Inc. (714) 282-8777, or Wallace Labs (310) 615-0116.
 - 1. Submit a copy of the Planting Plan and Plant Legend to the laboratory with the samples.
 - 2. Soil shall be tested from a minimum of five (5) locations. This shall include two (2) locations at the dog park, and three (3) locations at the picnic area. Representative samples shall be taken from locations shown on the plans. Samples should represent major conditions of exposed cut soils, fill soils, and native undisturbed soil. Sample from the top foot for ground cover and shrubs. Sample from the expected depth for planting proposed in the area identified. Label each sample for location/origin, type of soil condition visibly observed, and sampling depth. Laboratory report shall identify each sample with same information. All samples taken shall be split into two samples, one half will go to a qualified laboratory by the Contractor (at his or her expense) and the other half will be retained by the Owner. All samples shall be at least one pint in volume. All samples shall go to an approved soil-testing laboratory.
 - 3. A copy of the soil test results shall be submitted to the Owner and Architect before work begins.
 - 4. Testing methods should comply with the United States Department of Agriculture Handbook Publication No. 60, Methods of Soil Analysis published by the Soil Science Society of America and peer-viewed methods published in scientific journals. Evaluations and recommendations should be based on University of California publication's and peer-viewed articles published in) scientific journals.
 - 5. The Owner shall appoint a representative to oversee soil sampling that may be required. The time, depth, location, and number of samples to be taken as per instructions from the Owner.
 - 6. Soil report shall include:
 - a. pH measurement.
 - b. Determination whether limestone is present or not.
 - c. Percent water in saturation extract.
 - d. Electrical conductivity of the saturated extract (salinity ECe) / soluble salts.
 - e. Measurement of sodicity (Sodium Adsorption Ratio).
 - f. Concentration of boron in saturation extract.
 - g. Nutrients and elements:
 - 1) Measurement (low, medium, high) of: Boron, calcium, copper, iron, magnesium, manganese, molybdenum, phosphorus, potassium, sodium, sulfur, and zinc.
 - 2) Analyze saturation extract for: calcium, magnesium, sodium, boron, chloride, phosphorus, nitrate and sulfate.
 - 3) Trace metals: Aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, nickel, selenium, silver, strontium, tin and vanadium.
 - 4) The presence of calcium carbonate and/or magnesium carbonate.
 - h. Soil Texture (gravel, sand, silt and clay). Determine organic matter content by the measurement of organic carbon. The quality of the organic matter shall be determined by measuring organic carbon and total nitrogen.
 - Methods of Soil Analysis, Part 1, Physical and Mineralogical Methods, Soil Science Society of America, Inc., 1986, chapter 36, pgs 901-926 and Methods of Soil Analysis, Part 3 Chemical Methods, Soil Science Society of America, Inc, 1996, chapter 34, pgs 965-977 & pgs 1001-2 and chapter 37, pg 1088
 - i. Interpretation and recommendations for correction of nutritional deficiencies/ excesses and potential toxicities. These recommendations shall include:

- 1) Volume of soil amendment per 1,000 sq.ft. and cu.yd. of backfill mix.
- 2) Pounds of gypsum per 1,000 sq.ft. and cu.yd. of backfill mix.
- 3) Pounds of soil sulfur per 1,000 sq .ft. and cu.yd. of backfill mix.
- 4) Pounds of iron sulfate per 1,000 sq.ft. and cu.yd. of backfill mix.
- 5) Pounds of pre-plant fertilizer per 1,000 sq.ft. and cu.yd. of backfill mix.
- 6) Pounds of soil polymers per 1,000 sq.ft.
- 7) Recommendation for soil leaching.
- 8) Recommendation for tree drain installation.
- 9) Pounds of maintenance fertilizer per 1,000 sq. Ft. and analysis.
- 10) Recommendation for soil wetting agent and application rate.
- 11) Percent of site soil-to-soil amendment in backfill mix.
- 12) Whether or not soil polymers need to be added to soil.

If any of the above listed items are not recommended, the recommendation shall call for zero volume or zero poundage per 1,000 square feet. All soil test costs will be the responsibility of the Contractor.

- D. Legible copies of delivery slips for soil amendments, plant materials, rock products, and bark mulch specifying the quantities that were delivered. The contractor shall provide certificates, trip slips, and invoices to the Owner prior to final acceptance of the work.
- E. Samples for verification for each of the following:
 - 1. Bark Mulch- 1 quart volume of each organic mulch required; in sealed plastic bags labeled with composition of materials by percentage of with and source of mulch. Each sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.
 - 2. Top Soil- 1 quart volume of each organic mulch required; in sealed plastic bags labeled with composition of materials (if required by soil test recommendations).
 - 3. Actual samples of the soil amendments shall be submitted to the Landscape Architect only if requested by the Landscape Architect after approval of the soils test.
- F. Qualification Data: For landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.
- G. Substitutions for the indicated materials will only be permitted provided the substitute materials are approved in writing, in advance, by the Landscape Architect and the Owner. All substitute materials shall conform to the requirements of these specifications. If accepted substitute materials are of less value than those indicated or specified, the contract price will be adjusted in accordance with the provisions of the contract.

1.9 OBSERVATION SCHEDULE

A. Site observations herein specified shall be made by the Landscape Architect during regular business hours. The Contractor or his authorized representative shall be on the site at the time of each observation. The Contractor will not be permitted to initiate the succeeding step of work until he has received approval to proceed by the Landscape Architect.

- B. All changes and deviations to the plans and specifications shall be communicated to the Construction Manager and shall be confirmed in writing.
- C. The Contractor shall have sufficient work personnel available during normal working hours to correct deficiencies immediately upon request of the Landscape Architect. Such repair or re-work services are to be performed without interference of regular project schedule.
- D. Contractor shall be responsible for notifying the Architect, in advance, for the following observations, according to the time indicated:
 - 1. Layout of Tree Materials, Plant materials handover to CCC 72 hours,
 - a. When trees are spotted in place for planting
 - b. When Contractor has prepared all materials to hand over tree planting operations to the CCC. Trees will be observed for health to be consistent with the condition accepted upon delivery.
 - c. Refer to Irrigation specs, Irrigation Progress Review at combined observation to review overall layout of mainline, valves, lateral line, etc.
 - d. Combine observation timing with review of completed hardscape and installation of site furnishings, refer to specifications including permeable pavers, special concrete finishes, and site furnishings.
 - 2. Completed planting (Pre-maintenance) walk through seven (7) days, when planting and all specified work has been installed and completed, the Landscape Architect will prepare a written "punch list" indicating all items to be corrected. These items must be completed prior to initiating the beginning date of the maintenance period. The Landscape Architect will inform the Owner and Contractor of the actual date of the start of the maintenance period in writing. This observation is not the final acceptance of the project, and does not relieve the Contractor from any of the responsibilities in the contract documents.
 - 3. Final Site Observation and Acceptance of the Project seven (7) days, At the conclusion of the maintenance period a final site observation will be made. The Contractor shall show all corrections made from the punch list." Any items deemed not acceptable shall be reworked and the maintenance period will be extended. The Contractor will be notified in writing that the contract work and maintenance period has been accepted or that the maintenance period has been extended to correct any deficiencies remaining. Final acceptance of the project shall establish the beginning date for the guarantee period.
- E. Contractor shall be responsible for scheduling site Observation visits with Architect as work progresses. Failure to schedule required Observations shall not relieve Contractor of responsibility for obtaining approvals. Contractor shall redo, at no cost to the Owner, work that does not satisfy the Owner.
- F. Observations may be waived or combined at the discretion of the Architect.
- G. When someone other than the Architect conducts observations, the Contractor shall show evidence in writing of when and by whom these observations were made.
- H. No site visits shall commence without adequate preparation or items noted in previous Observation Reports, either completed or remedied, unless the Owner has waived such compliance. Failure to adequately prepare or accomplish previous punch list items shall make the Contractor responsible for reimbursing the Architect for the site visit at his current billing rates per hour plus transportation costs. No further inspections will be scheduled until this charge has been paid and received.

I. Site observations of the work shall not relieve the Contractor of the obligation to fulfill all conditions of the contract.

1.10 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall notify the Landscape Architect in advance when material is scheduled for each delivery, in order to ensure satisfactory coordination of delivery and to expedite the required inspection at the point of delivery. The delivery of the material shall include invoices certifying that subject material has been inspected as required by the State Agricultural Code prior to acceptance or installation. Particular care, using approved equipment, shall be exercised to ensure safe loading, unloading, shipping and handling for all material from source to in place locations indicated on the drawings.
- B. The Contractor shall furnish the Landscape Architect with three (3) copies of signed, legible certificates and/or invoices stating the quality and quantity of all items herein specified at time of delivery. Recommendation shall be made by the Landscape Architect or the Owner to stop work progress until certificates are received and reviewed by the Landscape Architect.
- C. Upon delivery of materials and/or completion of all soil amending and with the heretofore specified signed copies of required certificates, trip slips and invoices for soil preparation materials the Landscape Architect shall invoice such material, comparing the total quantities of each material furnished against the total area of each operation. If the minimum rates of application have not been met, the Landscape Architect will require the distribution of additional quantities of these materials to fulfill the minimum application requirements specified.
- D. After installation of plant materials, but prior to the pre-maintenance site observation, the Landscape Architect, with the heretofore specified signed copies of the required certificates and related items, shall invoice such material, comparing the total area and/or the amounts specified. If the minimum amounts have not been furnished, the Landscape Architect will require the installation of additional materials to fulfill the minimum requirements specified.
- E. Deliver fertilizer or soil amendments to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trademark, and conformance to state law. Protect material from damage or breakage. Immediately remove empty containers from site. The contractor shall furnish the Architect with a copy of signed, legible certificates or invoices stating the quality and quantity of all items herein specified at the time of delivery.
- F. Deliver plants with legible identification labels. Store plant material in shade and protect from weather or injury. Maintain in a healthy, vigorous condition. Architect may at time reject plant material not maintained in this condition.
- G. Handling: Do not drop plants or pick up container plants by their stems or trunks.

1.11 SAMPLES AND TESTS:

- A. Contractor shall submit soil samples for testing, per this Specification.
- B. Architect reserves the right to take and analyze samples of materials for conformity to specifications at any time. Contractor shall furnish samples upon request by Architect.

- C. Rejected materials shall be immediately removed from the site at the Contractor's expense.
- D. Contractor shall pay cost of all testing or replacement of materials not meeting specifications.

1.12 WARRANTY AND REPLACEMENT

- A. Special warranty: All trees shall be guaranteed to live and grow in a healthy condition during the Contract Period until the timing of the handover to California Conservation Corp (CCC) for installation scope as required in the grant. Trees shall be observed and documented at this handover to confirm they have been maintained in a healthy condition. Contractor shall notify Owner and Architect of timing and thoroughly document the trees with a minimum of three (3) photos of each tree including one (1) close view of the foliage to confirm health conditions, one (1) close up photo showing the rooting conditions, and one (1) photo with the entire tree in frame. Owner shall guarantee 15-gallon trees for the remainder of the Contract period, Maintenance Period, and for a one (1) year period from the date of final acceptance. The Contractor shall not be held responsible for failure due to neglect by the Owner, vandalism, etc. during the guarantee period. Report such conditions to the Owner immediately in writing.
- B. Special warranty: All turf shall be guaranteed to live and grow in vigorous, healthy, and upright condition for a minimum of ninety (90) days after final acceptance of work (excluding seasonal color).
- C. Replacement: All plants not healthy and in a vigorous growing condition as determined by the Owner shall be replaced immediately. Plants used for replacement shall be the same kind and size as specified in the plant legend as shown on the drawings. They shall be furnished, planted, and fertilized as originally specified at no cost to the Owner, except as noted in 1.12A for tree plantings following the handover from the contractor to the CCC, in which the owner is responsible for replacement of trees.

1.13 SUSPENSION OF WORK

- A. The Landscape Architect shall recommend to the Owner any necessity to suspend the work wholly, or in part, for such period or periods as he/she may deem necessary due to unsuitable weather, or such other conditions as are considered unfavorable for the reasonable performance of the work, or for such time as is necessary due to the failure on the part of the Contractor to carry out orders given or to perform any or all provisions of the contract.
- B. If it should become necessary to stop work for an indefinite period, the Contractor shall store all materials in such a manner that they will not become an obstruction nor become damaged in any way, and he shall take every precaution to prevent damage or deterioration of the work performed. The Contractor shall cover all open excavations and shall provide suitable drainage by opening ditches, planting pits, etc., and erect temporary structures where necessary.
- C. Grading, soil preparation, and planting work shall be performed only during periods when beneficial and optimum results may be obtained. Excessive soil moisture that would destroy the soil structure, soil spreading, grading, and/or tilling operations shall be suspended until the moisture content reaches acceptable levels and the desired results

are attainable. Moisten excessively dry soil that is not workable and which is too dusty before working the soil.

PART 2 - PRODUCTS

- 2.1 QUALITY
 - A. All materials shall be of standard, approved, and first grade quality and shall be in prime condition when installed and accepted. All commercially processed and/or packaged materials shall be delivered to the site in the original unopened containers bearing the manufacturer's guaranteed analysis.
- 2.2 SITE SOIL
 - A. Site soil used to form landscape planting areas or backfill planters shall be clean, fertile, loamy soil, free of stones, sticks, stumps, or other deleterious matter one inch in diameter or larger. It shall also be free from wire, plaster, construction debris, or similar objects that would be a hindrance to planting or maintenance.
 - B. The Architect shall approve suitability of soil of the site after reviewing results of the soil test.

2.3 IMPORTED TOP SOIL

- A. Definition
 - General Imported soil shall be from a source outside the limits of the project 1. selected by the Contractor and in compliance with the requirements specified herein. Imported soil shall be screened, fertile, friable soil from well-drained aerated land, and shall be free of roots, clods, heavy clay, pockets of coarse sand, stones larger than 1-inch in the greatest dimension, paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid or the like, obnoxious or invasive weeds (such as, but not all inclusive: Quackgrass, Johnsongrass, Poison Ivy, Nutsedge, Nimblewill, Canada Thistle, Bindweed, Bentgrass, Wild Garlic, Ground Ivy, Perennial Sorrel and/or Bromegrass), sticks, lumber, brush, other litter and/or refuse, or any material that might be deleterious to healthy plant growth. Imported soil shall not be infested with nematodes or other undesirable organisms, such as insects and disease causing plant pathogens. Imported soil shall be friable and have sufficient structure in order to give good tilth and aeration to the soil. Continuous, air-filled pore space content on a volume/volume basis shall be at least 15 percent (15%) when moisture is present at field capacity. Soil shall have a field capacity of at least 15 percent (15%) on a dry weight basis.
 - 2. At least 15 days before scheduled use, the proposed source of imported soil must be submitted to the Landscape Architect for approval. The Contractor shall submit a written request for approval, which shall be accompanied by a written report from an approved soil-testing laboratory registered by the State of California for agricultural soil evaluation, which states that the proposed source complies with these specifications. The imported soil shall meet the following requirements:
- B. Gradation limits Sand, 50-80 percent, clay 20 percent maximum, and silt, 30 percent maximum. Recommendations of sandy loam or loam per USDA definitions. The sand, clay and silt gradation limits shall be as defined by the USDA classification scheme. Gravel over one-quarter-inch (1/4") in diameter shall be less than ten-percent (10%) by weight.

- C. Permeability rate Hydraulic conductivity rate shall be not less than 1-inch per hour nor more than 20-inches per hour when tested in accordance with the USDA Handbook Number 60, method 34b or other approved methods. Successful soil can have a permeability rate of 5 to 10-inches per hour.
- D. Agricultural suitability The soil shall be suitable to sustain the growth of the plants specified as per USDA specs.
- E. Fertility The range of the essential elemental concentration in soil shall be as follows:

Ammonium Bicarbonate/DTPA Extraction parts per million (mg/kilogram) dryweight basis

2 - 40
40 - 200
2 - 35
0.3 - 6
0.6 - 8
0.1 - 5
0.2 - 1
50 - 150
0 - 100
25 - 500
0.1 – 30

- F. Acidity The soil pH range measured in the saturation extract (Method 21a, USDA Handbook Number 60) shall be 6.0 7.5.
- G. Salinity The salinity range measured in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 0.5 2.0 dStm. If calcium and if sulfate ions both exceed 20 milliequivalents per liter in the saturation extract, the maximum salinity shall be 4.0 dS/mH.
- H. Chloride The maximum concentration of soluble chloride in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 150 mgtl (parts per million).
- I. Boron The maximum concentration of soluble boron in the saturation extract (Method 3a, USDA Handbook Number 60) shall be 1 mgtl (parts per million).
- J. Sodium Absorption Ratio (SAR) The maximum SAR shall be 3 measured per Method 20b, USDA Handbook Number 60.
- K. Aluminum Available aluminum measured with the Ammonium Bicarbonate/DTPA Extraction shall be less than 5 parts per million.
- L. Soil Organic Matter Content Sufficient soil organic matter shall be present to impart good physical soil properties but not be excessive to cause toxicity or cause excessive reduction in the volume of soil due to decomposition of organic matter.
- M. Calcium Carbonate Content Free calcium carbonate (limestone) shall not be present.
- N. Heavy Metals The maximum permissible elemental concentration in the soil shall not exceed the following:

Ammonium Bicarbonate/DTPA Extraction parts per million (mg/kilogram) dry weight basis:

arsenic	2
cadmium	2
chromium	10
cobalt	2
lead	30
mercury	1
nickel	5
selenium	3
silver	0.5
vanadium	3

If the soil pH is between 6 and 7, the maximum permissible elemental concentration shall be reduced 50%. If the soil pH is less than 6.0, the maximum permissible elemental concentration shall be reduced 75%. No more than three metals shall be present at 50% or more of the above values.

- O. Phytotoxic Constituent, Herbicides, Hydrocarbons, etc. Germination and growth of monocots and dicots shall not be restricted more than 10%. Total petroleum hydrocarbons shall not exceed 100 mg/kg dry soil measured per the modified EPA Method No. 8015. Total aromatic volatile organic hydrocarbons (benzene, toluene, xylene and ethylbenzene) shall not exceed 2 mg/kg dry soil measured per EPA Methods No. 8020.
- P. Soil Texture/Organic Matter Provide information on the soil texture and soil organic matter.

2.3 SOIL AMENDMENTS AND FERTILIZER

- A. Soil Conditioner shall be a product that aids the structure of the soil consisting of rapidly decaying, slowly decaying and non-decaying material. The rate of decomposition of this amendment is very important.
 - 1. The humus material shall have an ash content of no less than 8% and no more than 50%.
 - 2. The pH of the material shall be between 6 and 7.5.
 - 3. The salt content shall be less than 10 millimho/cm @ 25° C. (ECe less than 10) on a saturated paste extract.
 - 4. Boron content of the saturated extract shall be less than 1.0 parts per million.
 - 5. Silicon content (acid-insoluble ash) shall be less than 30%.
 - 6. Calcium carbonate shall not be present if to be applied on alkaline soils.
 - 7. Types of acceptable products are composts, manures, mushroom composts, straw, alfalfa, sludges, peat mosses etc. low in salts, low in heavy metals, free from weed seeds, free of pathogens and other deleterious materials.
 - 8. Composted wood products are conditionally acceptable (stable humus must be present). Wood based products are not acceptable which are based on redwood or cedar.
 - 9. Sludge-based materials are not acceptable if the soil already has a high level (toxic level) of zinc, copper or other heavy metals based on soil analysis.
 - 10. Carbon:nitrogen ratio is less than 25: 1.
 - 11. The compost shall be aerobic without malodorous presence of decomposition products.

12. The maximum particle size shall be 0.5 inch, 80% or more shall pass a NO. 4 screen.

Maximum total permissible pollutant concentrations in amendment in parts per million on a dry weight basis: arsenic: 20, cadmium: 15, chromium: 300, cobalt: 50, nickel: 100, copper: 150, lead: 200, mercury: 10, molybdenum: 60, selenium: 50, silver: 10, vanadium: 50, zinc: 300

The commercial grade product used shall be Loamex, or approved equal.

- B. Mycorrhizal fungi shall be added in all planting areas, regardless of Soils Report. Mycorrhizal inoculum consists of a combination of:
 - Innoculum shall contain a blend of eight top types of Endospores: Glomus aggregatum, G. clarum, G. deserticola, G. intraradices, G. monosporus, G. mosseae, Gigaspora margarita, and Paraglomus brasilianum, and seven top types of Ecto fungi spores:Lacarria laccata, Pisolithus tinctorius, Rhizopogon amylpogon, R. fulvigleba, R. rubescens, R. villosuli, and Scleroderma spp. The guaranteed Endo spore count shall be a minimum 50 spores/cc, and the Ecto spore count shall be a minimum 50,000 spores/cc
 - 2. Manufacturers:
 - a. BioOrganics Mycorrhizae Inoculants, (888) 332-7676
 - b. Mycorrhizal Applications, Inc, (866) 476-7800
 - c. Tri-C Enterprises, LLC, (800) 927-3311
 - d. Or equal.
- C. Agricultural grade gypsum shall be a (CaS04 2H20) calcium sulfate product minimum 92% grade. Ninety-percent (90%) shall pass a 50-mesh screen. Control of dust during application is mandatory. The commercial grade product used shall be U.S. Gypsum, Sof'n'Soil, Dolmar, or approved equal.
- D. Sulfur (soil sulfur) shall be elemental sulfur (99.5%) commercially manufactured so that a pure sulfur product is used. Sulfur is a constituent of three amino acids (cystine, methionne and cysteine) and is essential for protein synthesis. Sulfur is also supplied by gypsum. Sulfur is not effective until it is oxidizes. The bacteria are specific for this and are not common in alkaline soils. The oxidization may require months or years. Gypsum is rapid in its actions. The sulfur used shall be 99.5% elemental. Sizing on stacked screen shall be approximately: 8-mesh 4.3%; 20-mesh 7.8 %; 50-mesh 46.9 %; 100-mesh 39.3 %; 200-mesh 1.7%. The commercial grade product used shall be Wil-Gro; Union Chemicals, Baker Industries, or approved equal.
- E. Iron sulfate derived from sulfate-deep green (FeS04, 7H20), a minimum analysis of iron shall be expressed as metallic is 20.0%. The commercial grade product used shall be Wil-Gro, Bandini, Wilson & Geo. Meyer, or approved equal.
- F. Chelated iron shall be Becker Underwood Sprint 138 Fe or other approved equal commercial FeEDDHA for dicots and woody plants, and Becker Underwood Sprint 330 Fe or other commercial FeDTPA for grasses and monocots, or approved equal.
- G. Pre-plant starter fertilizer (1-10-10) analysis shall be a commercial grade flowable fertilizer with a 1 % nitrogen analysis; 10% phosphorous pentoxide and 10% potassium oxide. No potassium chloride is to be used. Organic nitrogen shall be from cottonseed meal and urea. Phosphorous. from superphosphate and cottonseed meal. Potassium (potash) from sulfate of potash and cottonseed meal. Screen analysis 74% to be retained

on a 20-mesh screen. 0% to pass a 4-mesh screen, and 2 % to pass a 48-mesh screen. The commercial grade product used shall be Wil-Gro, Gro-Power, Bandini, Kellogg, or approved equal.

- Η. Prilled post-plant fertilizer (14-7-3) for maintenance - all areas. A maintenance fertilizer shall be used that is granular and homogeneous. Iron and zinc shall be in chelated form and sizing of granules during manufacture is very important. A regular maintenance program using this product for at least the first year is recommended. The homogeneous fertilizer granules used shall contain a fertilizer analysis of 14% nitrogen of which 4% is ammoniac sulfate. Remainder of nitrogen shall be 8.75% water soluble and 1.25% water insoluble. Available phosphorous pentoxide shall be 7%. Potassium oxide shall be 3%. Minor elements shall be chelated 25% by volume consisting of iron 2.0%; zinc 0.15% and manganese 0.15%. By-product calcium shall be 2.0%. Organic nitrogen is derived from urea and cottonseed meal. Phosphate from superphosphate and cottonseed meal. Potash from sulfate of potash and cottonseed meal. No potassium chloride is 'to be used. Sulfur from sulfate of ammonia. Calcium from superphosphate, iron \ from ferrous sulfate and mixed sulfides. Zinc and manganese are expressed as metallic and in their elemental form. Screen Analysis (% retained) approximately: 4-mesh 1.3%; 8 mesh = 24.2%; 20-mesh = 74.0%; and 48-mesh = 0.05%. The commercial grade product used shall be Wil-Gro Fairway, Gro-Power, Bandini, Kellogg, or approved equal.
- I. Planting tablets shall be tightly compressed chip type commercial grade planting tablets, of varying sizes with the following available percentages by weight of plant food:

Nitrogen	20.0 % min.
Phosphoric acid	10.0% min.
Potash	5.0 % min.

The commercial grade product used shall be Agriform, Gro-power, or approved equal.

2.4 WETTING AGENT

- A. An adjuvant (helping agent) is needed to make water penetrate difficult to wet soils. Also, organic soil amendments are more receptive to increased water holding capacity.
- B. Soil water repellence resulting from compaction will be overcome with multiple applications of a soil penetrant in the irrigation water.
- C. Product used shall have the following functioning agents: 2- hydroxyethyl ammoniumalkyl benzene sulfonate = 8.77%; alkyl phenoxy poly (ethylene oxy) ethanol= 4.49%; di (2 hydroxy ethyl)- ammonium cis-9 otadecenoate-octyl alkyldiamide = 2.50 %; dimethyl silicone = 1.00%; carrier= 83.24%. Adjuvant used shall be a commercial grade product and manufactured by Naiad/Wil-Gro, Dow, Dupont, or approved equal.

2.5 PLANTING BACKFILL FOR TREES AND SHRUBS

A. (For Bidding purposes only. Application rates shall be per soil analysis recommendation) Planting backfill shall be a thoroughly blended mixture of site soil and soil amendments at the following mixtures:

soil conditioner	30%
site soil from excavated planting pit	70%
gypsum	10 lbs. per cu. yd. of mix

iron sulfate pre-plant (1-10-10) 5 lbs. per cu. yd. of mix 5 lbs. per cu. yd. of mix

2.6 PLANT TABLETS

A. 7 gram planting tablet designed for 12 month slow release. 12-8-8 NPK, 20% humus, 4% humic acids, 3.5% sulfur, 2% iron, micronutrients.

2.7 PLANT MATERIAL

- A. Nomenclature: Scientific and common names of plants herein specified shall conform with the approved names given in "Checklist Of Woody Ornamental Plants of California", published by the University of California, College of Agriculture, Manual 32 (1963).
- B. Labeling: Each group of plant materials delivered on site shall be clearly labeled as to species and variety. However, final determination of plant species and variety will be made by the Landscape Architect and whose decision will be final. All patented plants (cultivars) required by the plant list shall be delivered with a proper plant patent label attached.
- C. Quality: Quality of all plants shall conform to the American Nursery & Landscape Association (AN LA) American Standard For Nursery Stock ANSI Z-60. 1-2004 (Approved May 12, 2004). Plants shall be vigorous or normal growth, free from disease, insects, insect eggs, insect larvae, and other pests. Plant materials shall not contain any deleterious, obnoxious, or invasive weeds such as (not all inclusive): Quackgrass, Johnsongrass, Poison Ivy, Nutsedge, Nimblewill, Canada Thistle, Bindweed, Bentgrass, Wild Garlic, Ground Ivy, Perennial Sorrel and/or Bromegrass. All plants shall equal or exceed any measurements specified and shall be supplied from the source indicated when a source is specified.
- D. Container stock: Shall have grown in containers for at least six (6) months and through one (1) full growing season, but not over two (2) years. Samples shall be shown to prove that no girdled roots, circled roots, and/or root-bound conditions are present. Any such trees or shrubs shall be deemed as not acceptable. All container plants or trees that have a cracked or broken rootball when taken from the container shall not be planted except on special approval from the Owner or the Landscape Architect.
- E. Pruning: At no time shall the plant materials be pruned, trimmed, or topped prior to delivery, and any alteration on the site of their shape shall be conducted only with the approval and in the presence of the Landscape Architect.
- F. Inspection of plant materials required by city, county, state, and/or federal authorities, and/or other regulatory agencies, shall be the responsibility of the Contractor. When necessary, the Contractor shall have secured permits or certificates prior to delivery of plants at site.
- G. Inspection of plant materials: Plants shall be subject to inspection and approval or rejection at the project site at any time before or during progress of work for size, variety, condition, latent defects and injuries. Rejected plants shall be removed from the project site immediately.
- H. Rejection and substitution: All plants not conforming to the requirements herein specified and/or as indicated on the drawings shall be considered defective, and such plants, whether in place or not, shall be marked as rejected and be immediately removed from the site of the work and replaced with acceptable plant materials. Under no condition will there be any substitution of plant species, variety, or reduced size for those listed on the accompanying drawings, except with the express written consent of the Landscape Architect.

- I. Right to changes: The Landscape Architect reserves the right to change the plant species, plant variety, and/or sizes of plant material to be furnished, provided that the cost of such plant changes does not exceed the cost of plants in the original bid. The Contractor shall be notified in writing sixty (60) days before the planting operation has commenced. Field changes to the plant species, plant variety, and/or sizes of plant material might be required due to current availability, and shall be coordinated with the Landscape Architect and Owner. Changes in the size and/or variety of any plant to be furnished which involves a reduction or addition in cost shall be adjusted in the contract cost.
- J. Root condition: The Landscape Architect reserves the right to inspect root condition of any species, particularly those grown from seed, and if found defective, to reject the plants represented by the defective sample.
- K. Protection: All plants at all times shall be handled and stored so that they are adequately protected from drying out, from wind burn, and from all other injury. All plants determined by the Landscape Architect or Owner to be wilted, burned, or dried out, may be rejected at any time, whether in the ground or not. All plants shall be handled solely by their containers and all plants that have been handled by the stem or trunk shall be rejected, and removed from the site immediately. The Contractor's on-site plant storage area shall be approved by the General Contractor prior to the delivery of any plant materials.
- L. Specimen tree selection:
 - Electronic photos of each tree variety and size, as called out on the drawings, fifteen (15) gallon size and larger shall be submitted to the Landscape Architect for approval prior to delivery to the project site and prior to installation.
 - 2. After delivery to the project site, the Contractor shall immediately remove any trees not approved.
 - 3. The Owner at his or her option and at his or her own expense, can retain the services of the Landscape Architect to review trees fifteen (15) gallon or larger tagged at the nursery and/or at its place of growth.
- 2.8 SOD
 - A. Sod shall be of the type on the drawings.
 - B. Sod shall have a permeable and well-drained base.
 - C. Sod shall be vigorous or normal growth, free from disease, insects, insect eggs, insect larvae, and other pests.
 - D. Sod shall not contain any deleterious, obnoxious, or invasive weeds such as (not all inclusive): Quackgrass, Johnsongrass, Poison Ivy, Nutsedge, Nimblewill, Canada Thistle, Bindweed, Bentgrass, Wild Garlic, Ground Ivy, Perennial Sorrel and/or Bromegrass.

2.9 PESTICIDES

A. General: Pesticide registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

- B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.10 STAKING MATERIALS:

- A. Tree stakes shall be of. non-pressure-treated Lodgepole Pine. Stakes shall have straight shafts, shaved and cut clean, and bare of branches and stubs. Stakes shall be of uniform thickness throughout length, with a minimum diameter of 2- inches, free of loose knots, splits, or bends. One end tip shall be tapered to allow ease of installation.
- B. Tree ties shall be manufactured of virgin, flexible vinyl meeting ASTM-D-412 standards for tensile and elongation strength. Material shall be black for ultraviolet resistance. Tree ties shall be manufactured with a double-back locking configuration. Tree ties shall be of sizes required to adequately support tree and shall elongate with the tree growth, thus preventing damage to the tree. Tree ties shall be "Cinch Tie," or approved equal.

2.11 WATER:

- A. Furnished by Owner.
- B. Transport by Contractor as required.

2.12 MULCH:

- A. Decorative Bark:
 - 1. Walk-On-Bark as supplied by Sequoia Forest Products, telephone: (559) 591-1177 or approved equal.
 - 2. No shredded lumber products, animal waste, or C&D wood by-products will be accepted.
 - 3. Shall be derived from bark or pine, white fir and/or red fir.

2.13 FILTER FABRIC

- A. Spun-bonded polypropylene with UV inhibitors, non-degrading geotextile fabric that blocks 95% of weed growth and is permeable to air, water, gasses and fertilizer. Typar 3301 or equal.
- B. Properties:
 - 1. Unit Weight: 3.0 oz/yds²
 - 2. Tensile Strength: 135 pounds
 - 3. Puncture Strength: 35 pounds
 - 4. Air Opening Size: 60/70 equivalent sieve
 - 5. Elongation at Break: <70%
 - 6. Trap Tear: 50 pounds
 - 7. Flux: 70 gal/ft²/min
 - 8. Permitivity: 1.2 sec⁻²
 - 9. Color: Black

2.14 DRAIN PIPE:

- A. Contractor shall install a minimum of two (2) tree drain standpipes for 24" box trees or larger. Trees less than 24" box will have a minimum of one tree drain standpipe installed.
- B. Contractor to refer to construction detail for tree planting, and for actual quantity.
- C. Tree drain standpipes shall be 4-inch rigid, perforated PVC pipe wrapped with filter fabric, tied with wire, and topped with a drain grate.
- D. Pipe shall be Hancor Dual Wall perforated pipe, or approved equal.
- E. Filter fabric at tree drain standpipes shall be non-woven polypropelene with a weight of 4.5 ounces per square yard, grab strength of 120 pounds, tensile elongation of 55%, burst strength of 210 psi, tear strength of 50 pounds, and puncture strength of 70 pounds.
- F. Caps for tree standpipes shall be plastic drain grates, black in color, and 4-inch in size. Provide flat-type drain grates. Drain grates shall be manufactured by National Diversified Sales (NDS), or approved equal.
- G. Gravel for tree drain standpipes shall be clean, thoroughly washed, crushed rock or gravel, three-quarter-inch (3/4") in size, and free from sticks, debris, or other deleterious materials.
- H. Tree drain standpipe components are to be listed as part of the product submittal and must be approved prior to installation.

2.15 CONCRETE MOW CURB

A. Concrete mow curbs shall be composed of poured-in-place concrete with an ultimate compression strength of 2,500 psi at twenty-eight (28) days.

2.16 GOPHER WIRE MESH TREE PROTECTION

- A. Manufacturer: Gopher Block Phone: (800) 604-5537
 - 1. Wire Mesh: 20 Gauge Steel, 3/4" Hexagonal Opening, Woven
 - 2. Finish: Double Hot-Dipped Electroplated Galvanized
 - 3. Size: As required
- B. Or approved Equal

PART 3 - EXECUTION

- 3.1 INSPECTION AND PREPARATION:
 - A. Site acceptance:
 - 1. The Contractor shall be responsible for coordinating his work with the General Contractor and other Sub-Contractors so no damage occurs to plantings after installation.
 - 2. The Contractor shall be responsible for verifying grades and site conditions before beginning work. No change in Contract price will be owed for actual or claimed

discrepancy between existing grade and those shown on the plan after Contractor has accepted existing grades and moved on the site.

- B. General: The areas to receive trees, shrubs, ground covers, seed planting, and other vegetation and their respective requirements for imported soil, fertilizer applications, soil amendments, and other treatments shall be as defined on the drawings. Equipment necessary for preparation of the ground surface and for handling and placing all required material shall be readily available and in proper working condition.
- C. Scheduling: Perform planting only when weather and soil conditions are suitable, as approved by Architect.
- D. Utilities: Prior to excavation for planting or installation of stakes or guys, Contractor shall locate utility lines and cables, so that proper precautions will be taken not to damage them. In the event of a conflict between utility lines and plant locations, promptly notify the Architect, who shall arrange for the relocation of one or the other. Failure to follow this procedure shall make the Contractor responsible for repairing damages at his own expense.
- E. Clearing and Grubbing: Prior to ripping and tillage operations, all existing vegetation in the area to be planted shall be grubbed, raked, and cleared from the site. The subsoil and ground surface shall be cleared of all material which has accumulated during construction activities, and all material which might hinder proper grading, tillage, planting, future plant health, and subsequent maintenance operations. The Contractor shall lawfully dispose of all grubbed materials and debris off the site at his or her expense. The Contractor shall completely remove any masonry, asphaltic concrete, and concrete from planting areas if present, and lawfully dispose of off site at his expense. Do not bury any grubbed materials, debris, masonry, asphaltic concrete, paints, chemicals, or other deleterious substances within any planting area on the project. Completely remove any concrete and plaster slurry / washout from planting areas if present, and remove the soil a minimum depth of 2-inches below a slurry / washout location.
- F. The irrigation system shall be operational and approved prior to planting.
- G. Underground Obstructions: All subsurface rocks over 2-inches in diameter and other underground obstructions shall be removed to the depth necessary to permit proper fine grading, tilling, or planting according to plans and specifications, a minimum depth of 6inches. All abandoned utility lines uncovered or severed shall be cut below grade and capped or plugged with concrete. Explosives, shall not be used for removal. When the location of utility lines is shown on the plans or has been made known to the Contractor, all damage to these lines shall be repaired by the Contractor in a manner approved by the Owner and affected utility purveyor.
- H. Deep Ripping: All areas to receive turf shall be deep-ripped and loosened to a depth of 12-inches in all directions. Access roads used during construction activities within planting areas shall be deep-ripped and loosened to a depth of 3 feet in all directions.
- I. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.
- J. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 SOIL AMENDMENTS, FERTILIZING AND ROTOTILLING:

- A. The following specified soil amendments and fertilizers are guidelines for bidding purposes only. At the time of rough grade, the Contractor shall meet with the Owner to determine quantity and locations of soil samples to be taken. The soil tests/analysis are the responsibility of the Contractor. The Contractor shall submit soil samples from the site to an approved soil-testing laboratory for agricultural suitability analysis. The Contractor shall submit the results of the soil tests/analysis to the Landscape Architect for interpretation and recommendations. If the test results reduce or increase the quantities specified, then the Owner shall be notified. The contract prices shall be adjusted to reflect any differences between the amendments as specified below and the recommendations of the soil-testing laboratory.
- B. After the areas have been deep ripped, the following rates of soil amendment materials shall be evenly spread over all planting areas and shall be thoroughly scarified to an average depth of 8-inches by rototilling a minimum of 2 alternating passes. Amendments must be intimately blended with soil.

Soil Conditioner:	4 cu.yd. per 1,000 sq. ft.
Gypsum:	100 lbs. per 1,000 sq. ft.
Soil Sulfur:	20 pounds per 1,000 sq. ft.
Iron Sulfate:	20 pounds per 1,000 sq. ft.
Triple superphosphate (0-45-0)	4 pounds per 1,000 sq. ft.
Potassium sulfate (0-0-50)	8 pounds per 1,000 sq. ft.

- 1. Leaching shall be done prior to the application of soil conditioner, gypsum, soil sulfur, iron sulfate, and pre-plant fertilizer.
- 2. The thoroughness and completeness of the rototilling and incorporation of the soil amendments shall be acceptable to the Owner. Adjust soil amendments and fertilizers on all slopes with gradients of 2: 1 and steeper, or as indicated on the drawings.
- 3. Deep Water Leaching And Follow-Up Soil Testing:
 - a. After rototilling in soil amendments, the area shall be deep water leached a minimum of three (3) times. Apply water slowly and avoid runoff. Allow the soil to drain thoroughly and partially dry out between applications. The total amount of water applied may be between 3 to 12-inches depending on the depth and degree of improvement. The soil type (sand, silt, or clay) will determine the amount of time required for the soil to dry out between leaching processes. Do not apply more water if the soil saturation exceeds 50% between applications. Treat and/or remove weeds that germinate.
 - b. One day after final application of water, the soil shall be tested for content of soluble salts (electrical conductivity or E.C.). The Owner and the Contractor shall take several soil samples from the top 6-inches of sailor the depth of planting for that particular area, and deliver the samples to an approved laboratory for testing of soluble salts. Reference Section 02900, for a listing of approved soil testing laboratories. The E.C. test reading shall not be above 3.0 millimho/cm. 3.
 - c. If soil test reading for E.C. for a particular area tested is above 3.0 millimho/cm, the soil amending, tilling and deep watering procedure shall be repeated until test readings are not above 3.0 millimho/cm.

- d. Care shall be taken that the rate of application of water does not cause erosion, sloughing of soils, damage to paving, damage to hardscape elements, or damage to structures. Contractor assumes all responsibility for monitoring of all areas during leaching period.
- e. All depressions, voids, erosion scars and settled trenches generated by the deep watering shall be filled with amended soil and brought to finish grade.
- f. Uniformly spread amendments and thoroughly cultivate by means of mechanical tiller per Soils Report.

3.3 IMPORTED SOIL

- A. Subgrades of all planting areas (as noted on the plans to receive imported soil), shall be established at below finish grade in order to accommodate imported soil.
- B. The subgrade shall be scarified a minimum depth of 2-inches before placement of the imported soil. Compacted subgrade needs to be ripped. Place 2-inches of import soil and till to 4-inches depth, to form a fifty-fifty (50/50) blend 4-inches in depth in order to avoid a sharp interface of soil types.
- C. Placement: of the imported soil shall be smooth and even in all planting areas. Finish grades in lawn areas shall be 1-inch below adjacent finished paving surfaces and 2-inches in shrub areas without abrupt changes in gradient, not only in the surface of the soil but also where soil meets walks, curbs, pavement or other features, unless otherwise indicated on the drawings.

3.4 CONCRETE MOW CURB

- A. Concrete mow curbs shall be installed per plan and detail.
- B. Smooth trowel finish.
- C. Install expansion joints at fifteen-feet (15') on-center.
- D. Install a 2" wide x 1" deep drainage

3.SOIL PREPARATION AND FINISH GRADING

- A. Rough Grade: Site to be received by Landscape Installer to within one-tenth-of-a-foot (0.1'), plus or minus, by others based on Civil Engineer's drawings.
- B. Finish Grade: Finish grading to consist of grading, raking, watering in, mechanically compacting and settling to achieve desired contour and flow line patterns resulting in evenly finished surface.
- C. All undulations and irregularities in the planting surfaces resulting from tillage, rototilling and all other operations shall be leveled and floated out before planting operations are initiated.
- D. Finish grades shall insure positive drainage of the site with all surface drainage away from buildings, walls, over mow curbs, and toward roadways, drains and catch basins. Planting surfaces shall be graded with no less than two-percent (2%) surface slope for positive drainage.

- E. The Contractor shall take every precaution to protect and avoid damage to existing sprinkler heads, irrigation lines, and other underground utilities during soil amending and fertilizing operations.
- F. All rocks, debris, and other deleterious materials shall be removed from planting areas, and then from the site. Rocks in accordance with the following criteria: one-half-inch (1/2") diameter in hydroseed areas; 1-inch diameter in turf areas and groundcover areas; 2-inches diameter in shrub areas a minimum depth of 6- inches, and three-eighths-inch (3/8") from the top 2-inches in turf areas.
- G. Final finish grade shall be one-inch below finish paving surface in adjacent lawn areas and 2-inches in shrub areas, and decomposed granite areas. Final grades shall be acceptable to the Owner before planting operations will be allowed to begin.
- H. Ease top and toe of all existing and new slopes.
- I. Finish Grades: Fine grade prepared planting areas to lines and grades shown on Drawings and as specified within this Section. Finish grade 1/2-inch lower than adjacent sidewalks, unless otherwise noted. Intent is to minimize tripping hazards from grade changes after minor settlement of soils. Elevations and landform configuration is critical to project design intent. Allow for soil depths shown on drawings and minor settlement. Supply additional specified soil as needed to give the specified depths after settlement.
- J. Compacted Soil / Percolation Testing:
 - 1. Bio-Retention Areas
 - a. Percolation tests shall be performed in each bio-retention basin to ensure an infiltration rate of at least 5 inches per hour minimum.
 - 2. Planter areas: Soil may be heavily compacted which can hinder root development, drainage and aeration.
 - a. Severely compacted areas shall be ripped or tilled to a depth of at least 9" prior to planting.
 - b. Percolation tests of water through the soil shall be performed where trees 24" box size and larger are proposed. If trees are to be planted over a large area, several percolation tests will be required.
 - 1) Excavate two planting pits 24" deep by 2 times rootball diameter. Install sand filled drainage sump as specified in 3.9.K, below, in one of the pits.
 - 2) Fill the pits with water and allow to drain completely.
 - 3) Fill the pits with water a second time.
 - 4) Results:
 - a) If the pit with no sump drains completely within 24 hours, no drain sump is necessary for trees planted within the vicinity of the test pit.
 - b) If the pit with no sump does not drain completely within 24 hours, but the pit with the sump does, sumps are required for trees planted in the vicinity of the test pit.
 - c) If the pit with the sump does not drain completely within 24 hours, advise the Owner prior to planting.
- K. Pre-Plant weed Control:
 - "Grow & Kill": If weeds exist on site at the beginning of work, spray with a nonselective systemic contact herbicide, recommended by an approved licensed landscape Pest Control Advisor and applied by a licensed Pest Control Operator. Leave sprayed plants intact to allow systemic kill as directed by Advisor. After
recommended kill period, water thoroughly to encourage new weed growth, and reapply systemic herbicide.

- 2. Treat planting areas, except for those to be seeded, with pre-emergent herbicide, recommended by an approved licensed landscape Pest Control Advisor and applied by a licensed Pest Control Operator
- 3. Maintain site weed free until final acceptance by Owner by utilizing mechanical, manual, or chemical treatment.
- L. Slope Stabilization
 - 1. Slopes greater than 3:1 are to be stabilized with jute mesh.
 - 2. Prepare soil as noted above.
 - 3. Unroll jute from top of slope to bottom. Secure at top of slope by toeing jute in 6" deep. Reinforce with a row of at least five staples, spacing each about a foot apart, and covering with soil.
 - 4. Place staples 18" to 24" apart throughout to secure matting to ground. Staples must be driven flush with soil surface.
 - 5. Overlap edges of rolls 6", minimum. Securely staple the two layers to the ground.
 - 6. Install jute mesh loosely do not stretch.
 - 7. Check slots may be needed on steep slopes to prevent subsurface erosion.
 - a. Dig 6" deep trench perpendicular to water flow.
 - b. Drop two or three folds of fabric in the slot.
 - c. Staple fabric securely in bottom of trench, and continue rolling downhill.
 - 8. Use approximately 200 staples per 100 square yards of fabric.

3.8 PLANTING INSTALLATION – GENERAL

- A. Timing: Actual planting shall be performed during those periods when weather and soil conditions are suitable and in accordance with locally acceptable practice.
- B. Tree Materials and excavation:
 - 1. Tree Pit Excavation:
 - a. Contractor shall excavate tree pits according to plans and specifications including auguring for the tree standpipe (observation tubes)
 - b. Contractor shall ensure open pits are covered or protected until filled in.
 - c. Contractor shall ensure all general requirements are adhered to for their portion of the work and shall inform the CCC of requirements pertaining to the associated scope of work.
 - 2. Contractor shall furnish all materials required for tree installation by CCC (California Conservation Corps). Contractor shall provide materials at each proposed tree location and associated planting pit so a complete "kit" is available to plant each tree per plan with all materials cut or measured out into the quantities required in the plans. These materials shall consist all required materials per plans and specifications including:
 - a. Tree Standpipe Materials: perforated pipe, drainage rock, grate cap, filter fabric in lengths
 - b. Tree Staking Materials: Stakes and ties in lengths and quantities as required per plan.
 - c. Gopher Wire Mesh Tree Protection: Cut wire mesh and provide landscape staples as required at each tree installation location.

- d. Amendments and fertilizers: The amendments and fertilizers shall be provided dependent upon soil test results. They should include plant fertilizer tablets, mycorrhizal tablets, backfill, compost, etc.
- e. Bark Mulch
- C. Tree Installation: All trees shall be installed by the CCC as identified in the grant requirements.
- D. Layout of planting: Locations shall be approved by the Landscape Architect. All container plants shall be set by the Contractor in their final location in their respective containers prior to digging holes and/or planting. All plant locations shall be checked for possible interference with existing underground utility lines.
- E. Backfill for trees and shrubs: shall be as specified in this section. If artificial drainage is requested, then drains shall be installed first, then backfilled with soil.
- F. Disposal of excess soil and debris all excess excavated subsoil, rocks and debris shall be legally disposed of off the site by the Contractor at his or her cost or utilized on the site as directed by and at the option of the Owner. Use the more suitable soil excavated from the planting pit, and dispose the less suitable soil. Do not place unamended soil over amended soil.

3.9 EXCAVATION FOR PLANT MATERIALS

- A. Planting Pits and Trenches: Excavate circular planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are not acceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
- B. Excavate approximately 2 times as wide as ball diameter for boxed and container-grown stock.
- C. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
- D. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
- E. Maintain required angles of repose of adjacent materials as shown on the Drawings. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
- F. Excavation shall include the stripping and stacking of all acceptable soil encountered within the areas to be excavated for plant pits and planting beds. Protect all areas that are to be trucked over and upon which soil is to be temporarily stacked pending its re-use for the filling of holes, pits, and beds.
- G. Maintain supervision of excavations during working hours.
- H. Keep excavations covered or otherwise protected when unattended by Installer's personnel.

- I. Subsoil and topsoil removed from excavations may be used as planting soil.
- J. Obstructions: Notify Landscape Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
- K. Hardpan Layer: The following method shall be used in the excavation of planting pits for trees sized 24" box and larger. Drill 6-inch diameter holes, 24-inches apart, into free draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material. Provide two holes for 24" to 36" box trees, 3 holes for 48" to 60" box trees, and 4 holes for 72" box and larger trees.
- L. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.
- M. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.10 PLANTING TREES, SHRUBS, ORNAMENTAL GRASSES, AND VINES

- A. Soil moisture level in planting areas at time of planting shall be no less than horticulturally acceptable. The Contractor shall request approval of moisture, and if found to be insufficient for planting, the planting pits shall be filled with water and allowed to drain before starting any planting operations.
- B. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root -flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.
- C. Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.
- D. Install Gopher Wire Mesh Tree Protection per detail on drawings prior to final tree placement. Installer shall plan for tree stakes and tree observation tubes to be installed, and install wire mesh around the irrigation installed by contractor. Refer to staking installation information below. Cut mesh as necessary and mark out the planned staking locations as to ensure staking can be achieved following the completion of the backfilling process. Use Landscape Stapes with 18" maximum spacing to ensure the wire remains in place. Coordinate timing of irrigation installation with contractor, prior to backfilling if not installed previously. Prior to backfilling, fold the wire mesh 12 inches down to ensure no sharp ends are near the soil surface. The mesh should be 1-1/2" minimum and 3" maximum below the finish grade. The resulting fold of wire mesh shall be done at a 1 " minimum radius; it should not be bent with a sharp angle, to prevent breaking of the wire and creating sharp edges near the surface. Cover with mulch per plans and specifications.
- E. Set container-grown stock plumb and in center of excavated planting pit or trench with root flare 1-inch above adjacent finish grades.
 - 1. Carefully remove root ball from container without damaging root ball or plant.
 - 2. Use planting soil with the heretofore specified amendments for backfill.
 - 3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.

- 4. Do not cover the top of the rootball with backfill soil, which might create soil interface conflicts and inhibit aeration and gaseous exchange.
- 5. Place planting tablets in each planting pit when pit is approximately one half filled; in amounts recommended below. Place tablets beside the root ball about 1-inch from root tips; do not place tablets in bottom of the hole. See below for application rates.
- 6. Continue backfilling process. Water again after placing and tamping final layer of soil.
- F. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.
- G. Create rootball drainage for all boxed trees by removing the bottom of the box before planting, or cutting drainage holes in the bottom of the box, or separating the boards on the bottom after planting, or other approved method.
- H. cThe Contractor shall be responsible for all surface and subsurface drainage required which may affect his / her guarantee of any planting material.
- I. Mycorrhizal fungi: Place the following numbers of 4 gram packs within the backfill of each plant:

1 gallon- 1 Pak 5 gallon- 3 Paks 15 gallon- 8 Paks 24" box- 12 Paks 36" box- 18 Paks 48" box- 22 Paks

- J. Planting tablets shall be placed in each planting hole at the following rates and per the manufacturer's recommendations (soil reports from soil-testing laboratory supercede application rates in this section, if different):
 - 1. One 5-gram tablet per individual liner and flat size plant.
 - 2. One 21-gram tablet per 1 gallon container.
 - 3. Three 21-gram tablets per 5 gallon container.
 - 4. Four 21-gram tablets per 15 gallon container.
 - 5. One 21-gram tablet per each 4-inch of box size.

Random testing to verify planting tablet installation shall be conducted by the Owner.

- K. Tree trunks shall be set vertical and plumb, unless otherwise noted on the drawings or at the direction of the Landscape Architect.
- L. Immediately after planting, install a soil berm around the perimeter of each planting pit to create an enclosed water basin, except in turf locations. The height of the soil berm shall be 4-inches for trees and 3-inches for shrubs. All plants shall be thoroughly watered to the full depth of each planting hole. If water slowly moves into the rootball from the backfill soil, dual berms may be needed. One over the rootball and another one at the edge of the backfill so that each one can be separately irrigated. Drip irrigation can be used to irrigate difficult rootballs.
- M. Staking and tying: All trees and any other plants indicated on the plans shall be staked per detail. Stakes shall be driven into the ground of the windward side of the tree. The

stakes shall be driven in plumb and secure. Special care shall be taken that the driving in of the stake does not damage the tree bark, tree roots or root ball. Tree ties shall be wrapped around the tree trunk and the stake, twisting to form a figure-eight. The tree ties shall be long enough to provide for 3-inches of slack to permit the tree trunk limited movement in any direction. Secure the tree tie with the double-back locking configuration. cSecure each tree tie with one galvanized nail driven through the tree tie and into the stake to prevent slippage (see Drawings). The staking shall be accomplished by the Installer in such a manner as to ensure the proper and healthy growth and the safety of the plants, property, and the public.

N. Pruning after planting shall be required on all trees, shrubs, and vines when necessary to provide the specified or approved standard shapes, form and/or sizes characteristic to each plant. Pruning shall be required when necessary to provide horizontal and/or vertical sight line clearance. Pruning may include thinning and/or cutting and shall be under the direction of the Landscape Architect. Pruning cuts shall not be painted with tree sealants.

3.11 SOD

- A. Prior to the placement of sod, all turf areas shall be leached with water, rototilled with soil amendments, and all rock and debris shall be removed. Remove all weeds including roots, or treat with approved systemic weed control prior to sodding application. Finish grade shall be uniform and level with all walks, curbs, and all other paving surfaces. The Contractor shall obtain approval of finish grades prior to the placement of sod. The soil shall be lightly moistened immediately prior to laying the sod.
- B. Laying of sod shall be same day it is delivered. Sod shall not be left on pallets in the hot sun or wind and allowed to dry out. Do not place on hot surfaces such as pavement.
- C. Starter strip: the first row of turfgrass sod shall be laid in a straight line with subsequent rows placed [parallel to and tightly against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Care shall be exercised to ensure that the pieces are not stretched or overlapped and that all joints are butted tightly to prevent voids that would cause air-drying of the roots.
- D. Do not install sod within a two-foot (2') circular radius away from the edge of the trunk on any new and existing trees. Cleanly cut sod to create the circular radius of turf. Install bark mulch within this radius area.
- E. Watering and rolling: Contractor shall water the turfgrass sod immediately after transplanting to prevent excessive drying during progress of the work. As sodding is completed in any one section, the entire area shall be lightly rolled. It shall then be thoroughly watered to a depth sufficient that the underside on the new sod pad and soil immediately below the pad are thoroughly wet. The Contractor shall be responsible for having adequate water available at the site prior to and during installation.
- F. Re-sodding: sodded areas which do not show a proper or healthy growth of grass within ten (10) days after installation shall be re-sodded until an acceptable strand of grass is assured. Determine the cause of failure and make corrections as necessary to correct the problem(s) prior to resodding.

3.13 BARK MULCH

- A. All planter areas and areas identified on the plans to receive bark mulch shall be evenly covered with bark mulch to a uniform depth of 3 inches.
- B. Provide 4-inches of horizontal clearance away from the collar of tree trunks, 3- inches of horizontal clearance away from the collar of shrubs and ornamental grasses, and 2- inches of horizontal clearance away from the basal stem of ground covers.
- C. Bark mulch will be required on all planter areas with a slope gradient shallower than twoto-one (2:1).

3.14 PESTICIDE APPLICATIONS.

- A. Apply pesticides and other chemical products and biological control agents in accordance with manufacturer's written recommendations.
- B. Coordinate applications with Owner's operations and others in proximity to the Work.
- C. Notify Owner before each application is performed.
- D. No restricted pesticides shall be used.
- E. Pre-Emergent Herbicides (Selective and Non-Selective): Apply to tree, shrub, and groundcover areas in accordance with manufacturer's written recommendations. Do not apply to seeded areas.
- F. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.16 TREE DRAIN STANDPIPE

- A. Install tree drain standpipes as per construction detail at all trees, on directly opposite sides of the tree root ball.
- B. Ensure that standpipes are installed at the depth shown on the construction detail.
- C. Standpipe hole below tree rootball shall be augered to a 12-inch width minimum.
- D. Stand pipes shall be set vertical (plumb) in the augered hole.
- E. Wrap standpipes with filter fabric.
- F. Backfill hole around standpipe below tree rootball with gravel. Do not fill standpipe with gravel.
- G. Coordinate Standpipe installation with gopher wire mesh fabric to ensure a complete barrier is provided at perimeter of tree pit.
- H. Cap standpipe with plastic drain grate. Install flat-type drain grates.
- I. Top of installed cap shall be at finish grade.

3.17 CLEAN UP

- A. After planting operations have been completed, remove trash, excess soil, empty plant containers, and rubbish from the property, and dispose of legally.
- B. Cleanup shall be performed at the end of each working day, with a maximum cleanup effort (in a manner satisfactory to the Owner) for each weekend or Holiday.
- C. The Contractor shall sweep the site and shall wash down pavement within the Contract area, leaving the premises in a clean condition.
- D. Walks shall be left in a clean and safe condition.
- E. Scars, ruts, or other marks in the ground caused by this work shall be repaired and the ground left in a smooth condition throughout the site.

3.18 GENERAL MAINTENANCE AND THE MAINTENANCE PERIOD

- A. Keeping the plants in a healthy, growing condition by watering, fertilizing, pruning, spraying, weeding and all other necessary operations of maintenance. All paving and walks shall be kept clear, clean and washed down.
- B. Protection: The Contractor shall be responsible for providing adequate protection of all planting areas against traffic or other use by erecting fencing or other acceptable means immediately after the planting is completed. Warning signs and barricades shall be placed in various high traffic areas. Damaged areas shall be repaired immediately by the Contractor.
- C. Weeding and cultivating: All turf areas shall be kept free of weeds, noxious grasses, rocks over 1-inch in diameter, clods, trash and debris on a weekly basis. Groundcover and shrub areas shall be cultivated at intervals of not more than 14 days minimum.
- D. Replacement of Plants installed by Contractor (sod): During the Maintenance Period, plants installed by contractor which die or which are in an unhealthy or badly impaired condition shall be replaced by the contractor within 14 days after unsatisfactory condition is evident. No replacement of plantings shall be made in any season definitely unfavorable for planting. At the conclusion of the Maintenance Period, the Landscape Architect will make an inspection of the work to determine the condition of all plants. All unhealthy plants installed by contractor shall be removed from the site and replaced with plants of the same kinds and sizes as originally specified. Such replacement shall be made in the same manner as specified for the original planting and at no extra cost to the Owner.
- E. Replacement of Trees: During the Maintenance Period, Contractor shall notify Owner and Architect of any tree plantings which die or which are in an unhealthy or badly impaired condition, which shall be replaced by the Owner in a timely fashion after unsatisfactory condition is evident. No replacement of plantings shall be made in any season definitely unfavorable for planting. At the conclusion of the Maintenance Period, the Landscape Architect will make an inspection of the work to determine the condition of all plants. All unhealthy trees shall be removed and replaced by the Owner.
- F. Fertilization:

- 1. Trees post fertilization shall occur at 100-day intervals after planting. Apply fertilizer at the rate of 1-lb. per 1-inch caliper of tree trunk diameter at breast height. Fertilizer shall be 14-7-3 or approved equal.
- 2. Shrubs post fertilization shall occur 60 days after planting and apply fertilizer at the rate of 1 teaspoon per each one-gallon plant and 1 tablespoon per five-gallon plant. Fertilizer shall be 14-7-3, or approved equal.
- 3. Groundcover and lawn areas post fertilization shall occur 60 days after planting and apply fertilizer at the rate of 7-lbs per 1,000 square feet fertilizer shall be 14-7-3, or approved equal.
- G. Maintenance Period: The Maintenance Period shall begin on the first day after the premaintenance observation acceptance and shall continue thereafter for no less than 90 continuous calendar days. If any plants are replaced during the Maintenance Period, then the 90-day Maintenance Period for those plants shall begin at the date of installation for that plant, if so directed by the Landscape Architect or the Owner.
- H. Extended Maintenance Period: When, in the opinion of the Landscape Architect, there is improper maintenance, and/or poor condition of plant materials, and/or unhealthy condition of plant materials, then the Contractor shall be responsible for additional maintenance of the work at no additional cost to the contract until all work is acceptable by the Landscape Architect. Extended Maintenance period shall not apply to contractor for trees.

SECTION 331000 WATER UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Description: This section specifies materials and procedures for construction of underground water distribution for domestic outside the building that are complete and ready for operation. This includes piping, structures, appurtenances and all other incidentals.
- B. Reference Sections:

1.3 SCOPE OF WORK

The work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of "water utilities," complete as shown on the drawings and as specified herein.

1.4 RELATED SECTIONS

- A. Section 312000 for "Earth Moving" Subsection 3.10 "Utility Trenches"
- B. Section 033000 for "Cast In-Place Concrete"
- C. Section 220511 for "Common Work Results for Plumbing"
- D. Section 013323 for "Shop Drawings, Product Data and Samples"
- E. Section 312000 for "Earth Moving" Subsection 3.10 "Utility Trenches"

1.5 DEFINITIONS

- A. Water distribution system: Pipelines and appurtenances which are part of the distribution system outside the building for potable water and fire supply.
- B. Water service line: Pipeline from main line to proposed facility.
- C. PVC: Polyvinyl chloride plastic.
- D. WOG: Water, Oil and Gas.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Ensure that valves are dry and internally protected against rust and corrosion. Protect valves against damage to threaded ends and flange faces.
- B. Use a sling to handle valves and fire hydrants if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

- C. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
- D. Protect stored piping from moisture and dirt by elevating above grade. Protect flanges, fittings, and specialties from moisture and dirt.
- E. Store plastic piping protected from direct sunlight and support to prevent sagging and bending.
- F. Cleanliness of Piping and Equipment Systems:
 - 1. Care shall be exercised in the storage and handling of equipment and piping material to be incorporated in the work. Debris arising from cutting, threading and welding of piping shall be removed.
 - 2. Piping systems shall be flushed, blown or pigged as necessary to deliver clean systems.

1.7 COORDINATION

- A. Coordinate connection to water main with Public Utility company.
- B. Coordinate water service lines with building contractor.

1.8 QUALITY ASSURANCE

- A. Products Criteria:
 - 1. When two or more units of the same type or class of materials or equipment are required, these units shall be products of one manufacturer.
 - 2. A nameplate bearing manufacturer's name or trademark, including model number, shall be securely affixed in a conspicuous place on equipment. In addition, the model number shall be either cast integrally with equipment, stamped, or otherwise permanently marked on each item of equipment.
- B. Materials and equipment shall be the standard products of a manufacturer regularly engaged in the manufacture of the products for at least three years. Digital electronic devices, software and systems such as controls, instruments or computer workstations shall be the current generation of technology and basic design that has a proven satisfactory service record of at least three years.
- C. Regulatory requirements:
 - 1. Comply with the rules and regulations of Kern County Department of Public Works having jurisdiction over the connection to public water lines and the extension and/or modifications to public utility systems.
 - 2. Comply with the rules and regulations of the Kern County Health Department having jurisdiction for potable water-service.
 - 3. Comply with rules and regulations of Kern County Fire Department having jurisdiction for fire-suppression water-service piping including materials, hose threads, installation and testing.

- D. Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be furnished to the Resident Engineer prior to installation.
- E. Applicable codes:
 - 1. Plumbing Systems: IPC, International Plumbing Code.
- 1.9 APPLICABLE PUBLICATIONS
 - A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
 - B. American Society of Mechanical Engineers (ASME):
 - 1. A112.1.2-2004 Air Gaps in Plumbing Systems (for Plumbing Fixtures and Water-Connected Receptors))
 - 2. B31 Code for Pressure Piping Standards
 - C. American Society for Testing and Materials (ASTM):
 - 1. D2466-06 Poly (Vinyl Chloride) (PVC) Pipe Fittings, Schedule 40
 - D. American Water Works Association (AWWA):
 - 1. C605-11 Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water
 - 2. C651-05 Disinfecting Water Mains
 - 3. C700-09 Cold-Water Meters, "Displacement Type," Bronze Main Case
 - 4. M23-2nd Ed. PVC Pipe, Design and Installation
 - 5. M44-2nd Ed. Distribution Valves: Selection, Installation, Field Testing and Maintenance
 - E. NSF International (NSF):
 - 1. NSF/ANSI 14 (2013) Plastics Piping System Components and Related Materials
 - 2. NSF/ANSI 61-2012 Drinking Water System Components Health Effects
 - 3. NSF/ANSI 372-2011 Drinking Water System Components Lead Content

PART 2 - PRODUCTS

- 2.1 MATERIALS
 - A. Material or equipment containing a weighted average of greater than 0.25 percent lead shall not be used in any potable water system intended for human consumption and shall be certified in accordance with NSF/ANSI 61 or NSF 372.
 - B. Plastic pipe, fittings, and solvent cement shall meet NSF/ANSI 14 and shall be NSF listed for the service intended.

2.2 FACTORY-ASSEMBLED PRODUCTS

A. Standardization of components shall be maximized to reduce spare part requirements. The contractor shall guarantee the performance of assemblies of components and shall repair or replace elements of the assemblies as required to deliver specified performance of the complete assembly.

2.3 SAFETY GUARDS

A. All equipment shall have moving parts protected to prevent personal injury. Pump shafts and couplings shall be fully guarded by a sheet steel guard, covering coupling and shaft but not bearings. Material shall be minimum 16-gauge sheet steel; ends shall be braked and drilled and attached to pump base with minimum of four 1/4 inch (6 mm) bolts. Reinforce guard as necessary to prevent side play forcing guard onto couplings.

2.4 LIFTING ATTACHMENTS

A. Equipment shall be provided with suitable lifting attachments to enable equipment to be lifted in its normal position. Lifting attachments shall withstand any handling conditions that might be encountered, without bending or distortion of shape, such as rapid lowering and braking of load.

2.5 POLYVINYL CHLORIDE PIPE AND FITTINGS

- A. PVC, Schedule 40 Pipe: ASTM D-1785.
 - 1. PVC, Schedule 40 Socket Fittings: ASTM D-2466.
- B. PVC, Schedule 80 Pipe: ASTM D-1785.
 - 1. PVC, Schedule 80 Socket Fittings: ASTM D-2467.
 - 2. PVC, Schedule 80 Threaded Fittings: ASTM D-2464.
- 2.6 VALVES
 - A. Gate Valves: AWWA C509, Non-rising Stem, Resilient Seat, 200 psi (1380 kPa).
 - 1. Valves 3 inches (75 mm) and larger: Resilient seat valve with gray- or ductile iron body and bonnet; cast iron or bronze double-disc gate; bronze gate rings; non-rising bronze stem and stem nut.
 - 2. Interior and exterior coating: AWWA C550, thermo-setting or fusion epoxy.
 - 3. Underground valve nut: Furnish valves with 2 inch (50 mm) nut for socket wrench operation.
 - 4. Aboveground and pit operation: Furnish valves with hand wheels.
 - 5. End connections shall be mechanical joint.
 - B. Gate Valve Accessories and Specialties
 - 1. Tapping-Sleeve Assembly: ANSI MSS SP-60; sleeve and valve to be compatible with the drilling matching.

- a. Tapping Sleeve: // Cast // or // Ductile Iron // or // Stainless-Steel //, two-piece bolted sleeve. Sleeve to match the size and type of pipe material being tapped.
- b. Valve shall include one raised face flange mating tapping-sleeve flange.
- 2. Valve Boxes: AWWA M44 with top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," and bottom section with base that fits over valve and with a barrel.
- 3. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut. (Provide two wrenches for Project.)

2.7 WATER METER BOXES

A. Polymer-concrete body and cover for disc-type water meter, with lettering "WATER METER" in cover; and with slotted, open-bottom base section of length to fit over service piping, vertical and lateral design loadings of 15,000 lb minimum over 10 by 10 inches (6800 kg minimum over 254 mm by 254 mm) square.

2.8 CONCRETE VAULTS

- A. Precast, reinforced-concrete vault: ASTM C858, designed for AASHTO H20-44 load designation.
 - 1. Ladder: ASTM A36, steel or polyethylene-encased steel steps.
 - 2. Drain: ASME A112.6.3, cast iron floor drain with outlet. Include body anchor flange, light-duty cast iron grate, bottom outlet, and integral or field-installed bronze ball or clapper-type backwater valve.
 - 3. Manhole Frame and Cover: ASTM A48, Class No. 35A minimum tensile strength, 24 inch (610 mm) minimum diameter, unless otherwise indicated.
 - 4. Manhole Frame and Cover: ASTM A536, Grade 60-40-18, ductile iron, 24 inch (610 mm) minimum diameter, unless otherwise indicated.

PART 3 - EXECUTION

- 3.1 PIPING APPLICATIONS
 - A. Use pipe, fittings, and joining methods for piping systems according to the following applications.
 - 1. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used, unless otherwise indicated.
 - 2. Do not use flanges or unions for underground piping.
 - 3. Flanges, unions, grooved-end-pipe couplings, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.
 - B. Underground water-service piping NPS 3/4 to NPS 3 (DN 20 to DN 80) shall be
 - 1. PVC, Schedule 40 pipe, socket fittings; and solvent-cemented joints.
 - C. Water Meter Box Water-Service Piping NPS 3/4 to NPS 2 (DN 20 to DN 50) shall be same as underground water-service piping.

- 3.2 PVC Pipe
 - A. PVC piping shall be installed in strict accordance with the manufacturer's instructions and AWWA C605. Place selected material and thoroughly compacted to one foot above the top of the pipe.
 - B. Install Copper Tracer Wire, No. 14 AWG solid, single conductor, insulated. Install in the trench with piping to allow location of the pipe with electronic detectors. The wire shall not be spiraled around the pipe nor taped to the pipe. Wire connections are to be made by stripping the insulation from the wire and soldering with rosin core solder per ASTM 828. Solder joints shall be wrapped with rubber tape and electrical tape. At least every 1000 feet (300 m) provide a 5 pound (2.3 kg) magnesium anode attached to the main tracer wire by solder. The solder joint shall be wrapped with rubber tape and with electrical tape. An anode shall also be attached at the end of each line.
 - C. Magnetic markers may be used in lieu of copper tracer wire to aid in future pipe location. Generally, install markers on 20 foot (6 m) centers. If pipe is in a congested piping area, install on 10 foot (3 m) centers. Prepare as-built drawing indicating exact location of magnetic markers.

3.3 VALVE INSTALLATION

- A. AWWA Valves: Install each underground valve with stem pointing up and with valve box.
- B. Pressure-Reducing Valves: Install in vault or aboveground between shutoff valves. Install full-size valved bypass.

3.4 DETECTOR-CHECK VALVE INSTALLATION

- A. Install in vault or aboveground and for proper direction of flow. Install bypass with water meter, gate valves on each side of meter, and check valve downstream from meter.
- B. Support detector check valves, meters, shutoff valves, and piping on brick or concrete piers.

3.5 WATER METER INSTALLATION

A. Install water meters, piping, and specialties according to utility company's written instructions.

3.6 ROUGHING-IN FOR WATER METERS

A. Rough-in piping and specialties for water meter installation according to utility company's written instructions.

3.7 WATER METER BOX INSTALLATION

- A. Install water meter boxes in paved areas flush with surface.
- B. Install water meter boxes in grass or earth areas with top 2 inches (50 mm) above grade.

3.8 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties. Install water service lines to a point of connection within approximately 5 feet (1500 mm) proposed tiein location to which service is to be connected and make connections thereto.

3.9 FIELD QUALITY CONTROL

- A. Conduct piping tests before joints are covered and after concrete thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.
- B. Prior to final acceptance, provide a video record of all piping from the building to the municipal connection to show the lines are free from obstructions, properly sloped and joined.
- C. Perform hydrostatic tests at not less than one-and-one-half times working pressure for two hours.
 - 1. Increase pressure in 50-psi (350-kPa) increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psi (0 kPa). Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts (1.89 L) per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.
- D. Prepare reports of testing activities.

3.10 IDENTIFICATION

A. Install continuous underground warning tape 12 inches (300 mm) directly over piping.

3.11 CLEANING

- A. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.
- B. Use purging and disinfecting procedure prescribed by local utility provider or other authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 or do as follows:
 - 1. Fill the water system with a water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.
 - 2. Drain the system of the previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow system to stand for 3 hours.
 - 3. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.
 - 4. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.
- C. Prepare reports of purging and disinfecting activities.

SECTION 333119 SMALL-DIAMETER SANITARY SEWERAGE GRAVITY PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Small-diameter sanitary sewer gravity piping, fittings, manholes, and appurtenances.
- B. Geotechnical Report:
 - 2. Review methods and procedures related to earthmoving, including:
 - a. Personnel and equipment needed to make progress and avoid delays.
 - b. Coordination of Work with utility locator service.
 - c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
 - d. Extent of trenching.
 - e. Field quality control.

1.3 SCOPE OF WORK

The work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of "small diameter sanitary sewerage gravity piping," complete as shown on the drawings and as specified herein.

1.4 RELATED SECTIONS

- A. Section 312000 for "Earth Moving" Subsection 3.15 "Utility Trenches"
- B. Section 312000 for "Earth Moving" Subsection 2.1.F "Trench Bedding"

1.5 REFERENCES

A. ASTM D-3034: Standard Specification for PVC Sewer Pipe and Fittings.

1.6 SUBMITTALS

- A. Product Data: Provide manufacturer's product data for pipes, fittings, and jointing systems.
- B. As-Built Drawings: Submit drawings showing piping layouts, manholes, and joint details.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Contractors must have prior experience in installing similar pipelines.
- B. Regulatory Requirements: Comply with Kern County codes.

- C. Geotechnical Report: See recommendations in the Geotech Investigation.
- D. If any conflicts arise between these specifications and the Geotechnical report, the Geotechnical report shall prevail.
- E. Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

PART 2 - PRODUCTS

- 2.1 PIPING MATERIALS
 - A. PVC Pipes: Conform to ASTM D-3034, SDR 35 for flexible, lightweight pipes.
 - B. Fittings: Match piping material and conform to ASTM standards.
 - C. Jointing Systems: Use solvent cement joints for PVC or elastomeric gasket joints.

2.2 CLEANOUTS

A. Cleanouts: Provide at intervals not exceeding 100 feet or at changes in direction.

2.3 BEDDING AND FOUNDATION MATERIALS

- A. See subsection 3.15 Utility Trenches of Section 31 20 00 Earth Moving
- B. Bedding Material: Granular material, free of stones and debris, conforming to ASTM D-2321. See Section 31 20 00 – Earth Moving subsection 2.1.F Trench Bedding
- C. Backfill Material: Compacted granular material ensuring pipeline stability.

PART 3 - EXECUTION

- 3.1 INSTALLATION
 - A. Trenching: Excavate trenches to required depth, providing adequate support and prevent collapse.
 - B. Pipe Installation: Lay pipes in straight lines with uniform slopes, ensuring tight joints.
 - C. Cleanouts: Install per manufacturer's guidelines, ensuring visibility and accessibility.

3.2 FIELD QUALITY CONTROL

- A. Testing: Conduct hydrostatic tests per standards, ensuring no leaks or pressure drops.
- B. Inspection: Regularly inspect during installation and after completion for compliance.
- 3.3 PROTECTION
 - A. Installed Work: Protect piping from impact, weight, and any external damage until fully backfilled and stabilized.

SECTION 353100 PRE-MANUFACTURED SLOPE PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Description: This work consists of furnishing and placing a Flexamat system in accordance with the manufacturer's specification, and conforming to the lines, grades, design, and dimensions shown on the plans.
- B. Geotechnical Report: Kern County commissioned a geotechnical report in accordance with the requirements of the CBC. This report is a part of the Contract Documents. The report is available for Contractor's examination.
 - 1. Geotechnical Report Publication Information:
 - a. Title: Geotechnical Investigation for the Buena Vista Aquatic Recreational Area
 - b. Date: August 16, 2023
 - c. Author: Soils Engineering, Inc.
 - d. Document / Project Number: 23-18994

1.3 RELATED SECTIONS

- A. Section 312000 for "Earth Moving"
- B. Section 312000 for "Earth Moving" Subsection 3.2 "Erosion and Sedimentation Control"

1.4 REFERENCES

- C. Flexamat Plus Stream & Riverbank Mat Layout Steep Slope Anchoring (attached)
- D. Flexamat Plus Wave Impact Shoreline Armoring (attached)

1.5 DEFINITIONS

- A. Flexamat: Manufactured from individual concrete blocks tied together with high strength knitted polypropylene bi-axial geogrid. Each block is tapered, beveled and interlocked and includes connections that prevent lateral displacement of the blocks within the mats when they are lifted for placement.
- 1.6 SUBMITTALS
 - A. Section 01 33 00 Submittal Procedures: Requirements for submittals.
 - B. Materials Source: Submit name of imported materials suppliers.
 - C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- 1.7 QUALITY ASSURANCE
 - A. Perform Work in accordance with Kern County Grading Ordinance.

- B. Maintain one copy of documents on site.
- C. Geotechnical Testing Agency Qualifications: The Contractor will retain an accepted soil and compaction testing agency according to ASTM E-329 and ASTM D-3740 for testing indicated. If any conflicts arise between these specifications and the Geotechnical report, the Geotechnical report shall prevail.
- D. If any conflicts arise between these specifications, the drawings and the Geotechnical report, the Geotechnical report shall prevail.

1.8 FIELD CONDITIONS

- A. Utility Locator Service: Retain a professional utility locator service and have all existing underground utilities located and surface-identified before beginning earth-moving operations.
- B. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in section 3.2 in this section.

PART 2 - PRODUCTS

- A. Flexamat: Tied Concrete Block Mats with 10oz non-woven underlayment shall be Flexamat-10NW, manufactured by Motz Enterprises, Inc.
- B. Blocks: Blocks are manufactured from concrete conforming to ASTM C150 (cement) and ASTM C33 (aggregates) requirements. Each block has a minimum weight of 3 lbs and is placed no further than 2 inches apart2. Blocks should have a 2.25" profile and a coarse finish without protrusions, and a minimum compressive strength as follows:
 - 1. 7-day: 5000 psi
 - 2. 14-day: 6000 psi
 - 3. 28-day: 6900 psi
- C. Polypropylene Bi-Axial Geogrid: An open knitted fabric composed of high tenacity, multifilament polypropylene yarns, coated in tension with an acrylic based coating. The geogrid should meet the following requirements:
 - 1. Mass/Unit Area: 6.5 oz/yd²
 - 2. Aperture Size: 1.4 x 1.4 inch
 - 3. Ultimate Wide Width Tensile Strength: 2,055 lb/ft
 - 4. Elongation at Ultimate Tensile Strength: 6%
- D. Underlayment Materials: Flexamat Standard is a three-layered system, including:
 - 1. Concrete block mat
 - 2. 5-Pick Leno Weave
 - 3. Curlex® II
- E. The underlayment materials should be packaged within the roll of the Flexamat Standard.

PART 3 - EXECUTION

- A. Site Preparation: The installation site must be properly graded, free from debris, and compacted to appropriate levels. See drawings C-07, C-08, C-09 and C-10.
- B. Mat Placement: Unroll and position the Flexamat mats, ensuring the geogrid remains in tension. Overlap adjacent mats as necessary, securing with specified anchors.
- C. Anchoring: Use appropriate anchors at regular intervals to ensure mat stability. See Flexamat Plus Stream & Riverbank Mat Layout Steep Slope Anchoring (attached) and Flexamat Plus Wave Impact Shoreline Armoring (attached)
- D. Backfilling and Compaction: Backfill over the Flexamat mat as specified and compact to appropriate density to ensure functionality.