

PROJECT MANUAL

HART MEMORIAL PARK ADVENTURE PLAY AREA

Bid Opening Tuesday, December 17, 2024, Before 11:00 A.M.



Project Number: 1650.7014-21

Approved: October 22, 2024

Required Contractor's License Classification: B

Construction Estimate: \$3,639,986

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

NON-MANDATORY PRE-BID JOBWALK

**TUESDAY, NOVEMBER 5, 2024, AT 10:00AM
6952 LAKE ROAD, BAKERSFIELD, CA 93308 AT
LEVEE & LAKE ROAD AT HART PARK**

**INTERESTED CONTRACTORS SHALL ASSEMBLE AT
THE FACILITY LOCATED AT 6952 LAKE ROAD,
BAKERSFIELD, CA 93308. PLEASE MEET AT LEVEE &
LAKE ROAD AT HART PARK.**

CERTIFICATIONS PAGE

PROJECT TITLE: HART MEMORIAL PARK ADVENTURE PLAY AREA

CLIENT DEPARTMENT:





LOCATION: 6952 LAKE ROAD. LEVEE & LAKE ROAD IN HART MEMORIAL PARK

PROJECT NUMBER: 1650.7014-21

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

OWNER PROJECT MANAGER: Michael Woodruff

CONSULTANT:

		
ARCHITECT	CIVIL ENGINEER	ELECTRICAL
		
STRUCTURAL		

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, December 17, 2024** - for the following public work:

HART MEMORIAL PARK ADVENTURE PLAY AREA – 1650.7014-21

- 1.02 Project Description:** In general, this project consists of, but is not limited to, the installation of a new water spray park, adventure playgrounds, trees, landscape, accessible restrooms, parking, and walkways.

Work shall be completed within two hundred and ten (210) 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 Pre-Bid Site Visit:** Owner will conduct a Non-Mandatory Pre-Bid Conference and Site Visit at 6952 Lake Road, Bakersfield, CA 93308 at Levee & Lake Road on Tuesday, November 5, 2024, at 10:00 A.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, <http://www.dir.ca.gov/Public-Works/PublicWorks.html>
- 2.05** For projects without Federal Funding, each Bidder must be licensed, as required by law, at the time the bid is submitted. For projects with Federal Funding, each Contractor must be licensed at the time the Contract is awarded.

END OF DOCUMENT

**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. Document 00 4100 (Bid Form). 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. Document 00 4411 (Bond Accompanying Bid). 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. Document 00 4412 (Bidder Registration and Experience Form). Bidders must submit Document 00 4412 (Bidder Registration and Experience Form), completed in accordance with the provisions of Document 00 4412.
- D. Document 00 4430 (Subcontractors List). 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. Document 00 4452 (Non-Collusion Affidavit). Bidders must submit Document 00 4452 (Non-Collusion Affidavit) completed in accordance with the provisions of Document 00 4452.
- F. Document 00 4455 (Bidder Certifications). Bidders must submit Document 00 4455 (Bidder Certification) completed in accordance with the provisions of Document 00 4455.
- G. Document 00 4453 (Iran Contracting Act Certification) 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. Document 00 5200 (Agreement), fully executed by successful Bidder. Submit three originals, each bearing an original signature.
- B. Document 00 6001 (Construction Performance Bond), fully executed by successful Bidder and surety, in the amount set forth in Document 00 6001. Submit three originals.
- C. Document 00 6002 (Construction Labor and Material Payment Bond), fully executed by successful Bidder and surety, in the amount set forth in Document 00 6002. Submit three originals.
- D. Document 00 6003 (Guaranty), fully executed by successful Bidder. Submit three originals.
- E. Insurance certificates and endorsements required by Document 00 7300 (Supplementary Conditions—Insurance): 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).

END OF DOCUMENT

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.

END OF DOCUMENT

**DOCUMENT 00 4100
BID FORM**

TO THE COUNTY OF KERN

THIS BID IS SUBMITTED BY:

(Firm/Company Name)

Project: **Hart Memorial Park Adventure Play Area**
Project Number: **1650.7014-21**

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 Representative(s):

(Name/Title)

(Name/Title)

(Name/Title)

Officers Authorized to Sign Contracts

(Name/Title)

(Name/Title)

(Name/Title)

Telephone Number(s):

(Area Code) (Number)

(Area Code) (Number)

Fax Number(s):

(Area Code) (Number)

(Area Code) (Number)

Date of Bid:

END OF DOCUMENT

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 **Hart Memorial Park Adventure Play Area (1650.7014-21)**.

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 should be sent to the surety at the following address:

PRINCIPAL

SURETY

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 Number: _____

Contractor's License # _____

Date: _____ Fed I.D. # _____

Full Corporate Name of Company: _____

Street Address: _____

Mailing Address: _____

Phone: _____ Fax: _____

Name of Principal Contact: _____

Type of Business: _____ Sole Proprietor _____ Partnership
 _____ Non-Profit 501(c)(3) _____ Corporation
 _____ other (please explain: _____)

INSURANCE

Workers' Compensation:

Carrier: _____

Address: _____

Phone and Fax: _____

Policy Number: _____

General Liability:

Carrier: _____

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.

BIDDER:

By: _____
Signature

Its: _____
Title

Date _____

END OF DOCUMENT

SUBCONTRACTORS LIST

Contractors Name: _____

Project Name/Number: **Hart Memorial Park Adventure Play Area (1650.7014-21)**

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 Address of Mill or Shop	Description of Work: Reference To Bid Items	Subcontractor's License No.	DIR 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: **HART MEMORIAL PARK ADVENTURE PLAY AREA (1650.7014-21)**

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 _____,
(State) (Date) (City)

(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.

END OF DOCUMENT

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

Project Name/Number: HART MEMORIAL PARK ADVENTURE PLAY AREA (1650.7014-21)

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 has 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.

END OF DOCUMENT

**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] By: _____
(Signature)

Name: _____
(Print Name)

Its: _____
(Title)

END OF DOCUMENT

**DOCUMENT 00 5199
PROPOSED CONTRACT DOCUMENTS TRANSMITTAL**

Contractor
Address
City State Zip

Date

SUBJECT Hart Memorial Park Adventure Play Area (1650.7014-21)

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 _____, 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

END OF DOCUMENT

**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:

HART MEMORIAL PARK ADVENTURE PLAY AREA – 1650.7014-21

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 ten [210] 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 five hundred dollars (\$1,500.00)** 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

- 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
COUNTY ADMINISTRATIVE OFFICE

CONTRACTOR:

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 _____
Geoffrey Hill,
Chief General Services Officer

NOTICE: 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.

END OF DOCUMENT

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 [Insert number] (the "Contract") for construction of Owner **Hart Memorial Park Adventure Play Area** located at **6952 Lake Road, Bakersfield, CA 93308**.
- 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

COUNTY OF KERN

By _____
Brian Van Wyk, Deputy County Counsel

By _____
Geoffrey Hill

"COUNTY"

APPROVED AS TO CONTENT:
CONSTRUCTION SERVICES

Contractor's Name

By _____
Supervising Engineer

Type of Entity
(corporation, partnership, sole proprietorship)

By _____
Signature

Typed Name

Title of Individual Executing
Document on behalf of Firm

END OF DOCUMENT

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:

HART MEMORIAL PARK ADVENTURE PLAY AREA (1650.7014-21)

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__.

CONTRACTOR AS PRINCIPAL

SURETY

Company (Corp. Seal)

Signature

Name & Title

Address

City, State, Zip Code

Company (Corp. Seal)

Signature

Name & Title

Address

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:

HART MEMORIAL PARK ADVENTURE PLAY AREA (1650.7014-21)

- 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 **Hart Memorial Park Adventure Play Area** located at **6952 Lake Road, Bakersfield, CA 93308**.

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.

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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: **Hart Memorial Park Adventure Play Area (1650.7014-21)**.

- [] 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 Escrow Agreement is made and entered into on _____ by and between 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"),

W I T N E S S E T H:

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

Signature

or

Geoffrey Hill,
Chief General Services Officer
1115 Truxtun Avenue, 3rd Floor
Bakersfield, CA 93301

Signature

(b) On behalf of the Contractor

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.

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 _____
Geoffrey Hill,
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
proprietorship)

By _____
Brian Van Wyk, Deputy

By _____
Signature

NAME OF BANK

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.
- B. 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 as-built 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.
- B. 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 decision, or if Contractor contends that Owner failed to provide a decision timely, then Contractor'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 select a qualified neutral third party to mediate with regard to the disputed portion of the Claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of 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 forty-five (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:
 - 1. 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.

- 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. Workers' Compensation and Employers Liability Insurance Requirement -- 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 self-insurance 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. General Liability Insurance Requirements – 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. Automobile Liability Insurance Requirements – 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. Contractor's Pollution Legal Liability Insurance Requirements, 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 one of the following three options: (i) on ISO form CG 20 10 11 85; or (ii) on ISO form CG 20 37 10 01 plus 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 claims-made 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** Cancellation of Insurance -- 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 pre-approved 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

**HART MEMORIAL PARK ADVENTURE PLAY AREA
PROJECT NO. 1650.7014-21**

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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. Base Bid, Alternates, and Allowances
3. Work Under Other Contracts
4. Future Work
5. Work Sequence
6. Work Days and Hours
7. Shutdown for Discovery of Cultural Resources
8. Cooperation of Contractor and Coordination with Other Work
9. Partial Occupancy/Utilization Requirements
10. Contractor Use of Site
11. Air Quality Standards
12. Construction Staking and Monument Protection
13. Protection of Existing Structures and Underground Facilities
14. Permits
15. Owner-Furnished Products

1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work comprises of the construction of the County of Kern's (hereinafter "Owner") **Hart Memorial Park Adventure Play Area** project located at **6952 Lake Road. Levee & Lake Road in Hart Memorial Park**. The Work includes, without limitation, **the installation of a new water spray park, adventure playgrounds (2-5 years) (5-12 years) ADA compliant restrooms, parking and walkways**. 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 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: **N/A**
- C. Allowances: **N/A**

1.04 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. **N/A**

1.05 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.

1.06 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.

1.07 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.

1.8 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.

1.9 CONTRACTOR USE OF SITE

- A. Confine operations at Site to areas permitted by Contract Documents, permits, ordinances, and laws. Do not unreasonably encumber Site with materials or equipment.
- B. 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.
- C. 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.
- D. 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.
- E. The Contractor shall follow all applicable County and local jurisdictional ordinances in force during the duration of this Contract.
- F. It is essential that the Contractor perform the Work with as little interference and disturbance as possible to the surrounding neighborhood.
- G. 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.

1.10 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.

1.11 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.

1.12 GEOTECHNICAL DATA AND EXISTING CONDITIONS

- A. Available Documentation: 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. **BSK Associates – Geotechnical Engineering Investigation, BSK project G00-000-166**

1.13 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**
Address: 4101 Wible Road, Bakersfield, CA 93313
Office: (661) 743-5000
 - 2. **Water: California Water Service Company**
Address: 3725 South H Street, Bakersfield, CA 93304
Office: (661) 837-7200
- 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).

1.14 PERMITS

- A. The Building Permit has been applied for or obtained by Owner.

- B. 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).

1.15 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-Furnished Products: **N/A**

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

- 1. 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.

D. Allowance Items

1. Allowance Work will be authorized by Owner in writing, following change order procedures to determine cost, supporting documentation and authorization to proceed. Unused allowance amounts at Contract completion shall reduce the Contract price accordingly.

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

1. 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

PROJECT: _____ Invoice or Estimate No. _____
 CONTRACTOR: _____
 PROJECT NO: _____ PERIOD: _____ TO: _____

ITEM NO.	DESCRIPTION	SCHEDULED VALUE	PREVIOUS ESTIMATE	COMPLETED THIS PERIOD	TOTAL TO DATE	%
1		0.00	0.00	0.00	0.00	
2		0.00	0.00	0.00	0.00	
3		0.00	0.00	0.00	0.00	
4		0.00	0.00	0.00	0.00	
5		0.00	0.00	0.00	0.00	
6		0.00	0.00	0.00	0.00	
7		0.00	0.00	0.00	0.00	
8		0.00	0.00	0.00	0.00	
9		0.00	0.00	0.00	0.00	
10		0.00	0.00	0.00	0.00	
11		0.00	0.00	0.00	0.00	
12		0.00	0.00	0.00	0.00	
13		0.00	0.00	0.00	0.00	
14		0.00	0.00	0.00	0.00	
15		0.00	0.00	0.00	0.00	
16		0.00	0.00	0.00	0.00	
17		0.00	0.00	0.00	0.00	
18		0.00	0.00	0.00	0.00	
19		0.00	0.00	0.00	0.00	
SUBTOTAL ORIGINAL CONTRACT		\$0.00	\$0.00	\$0.00	\$0.00	
CO1		0.00	0.00	0.00	0.00	
CO2		0.00	0.00	0.00	0.00	
CO3		0.00	0.00	0.00	0.00	
CO4		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 Time due to Change Orders (Working Days) (Enter number) _____ 0 Days
 D. Contract Completion Date <Completion Date Calculated Here>

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

Approved by Contractor: _____ Date: _____

Approved 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 _____
Contractor (Name of Company)

By _____
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

By: _____

Date _____

Title: Supervising Engineer

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 _____

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.
2. 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 ½ 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. Profit. 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. Home Office Expenses. 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. Assumption of Risk. 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-conforming 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.
5. General Conditions and Division 01 General Requirements. 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; extra security 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):

1. 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.
2. 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 all-inclusive. 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
Contract Number _____

CP Number: _____
Date: _____
In Response To _____
IB#, etc.

To: County of Kern

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: _____

Date: _____

REQUEST FOR INFORMATION (RFI)

PROJECT:	RFI NO.:
OWNER: County of Kern 1115 Truxtun Avenue, 3 rd Floor Bakersfield, CA 93301	DATE:
CONTRACTOR:	

PROJECT NO.:

Send all RFI's to County Project Manager

DRAWING REFERENCE:	SPECIFICATION REFERENCE:
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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:** _____ **DATE:** _____
RESPONSE: _____

REFER TO INSTRUCTION BULLETIN NO. _____ **ATTACHED.**

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. Schedule of Submittals.

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. Contractor to Submit Shop Drawings, Product Data and Submittals

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 an explanation for the deviation on a separate sheet entitled "Submittal Exceptions to Contract Documents."

C. Owner Review of Shop Drawings, Product Data and Submittals

1. 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. Preconstruction Conference. 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 Contractor's 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. Biweekly Project Meetings. 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. Progress Schedule And Billing Meetings

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. Pre-Installation Conferences

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 may 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

- 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. Federal:
 - 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. State of California Agencies:
 - 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. Regulatory Requirements of all Local Agencies with jurisdiction (including, without limitation, cities, counties, and fire departments)

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. Caution. 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. Procedure:
 - 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.
2. **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 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;
 - l. 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. Electricity:
 - 1. Provide, install and pay for power service required from Utility source and pay permit fee established by Building Inspection Division of the Kern County Engineering and Survey Services Department.
 - 2. Provide and install temporary electric feeder electrical service at location as directed.
 - 3. Pay cost of energy used.
 - 4. Complement existing power service capacity and characteristics as required.
 - 5. Provide power outlets for construction operations, with branch wiring and distribution boxes located such that a 100 ft. extension cord is the maximum length extension required. Provide flexible power cords as required.
 - 6. Provide meter.
 - 7. Permanent existing convenience receptacles may not be utilized during construction.

8. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.
 - a. Provide one 20 ampere duplex outlets, single phase circuit for power tools for every 1000 sq. ft. of active Work area.
 - b. Provide 20 ampere, single phase branch circuits for lighting.
9. Provide overload protection and ground fault interrupters where required.

B. Temporary Water Service:

1. Provide, maintain and pay for water service connection to existing water source for construction operations including setting of meter, if required. Pay connection charges.
2. Pay cost of water used.
3. Extend branch piping with outlets located so water is available by hoses with threaded connections, at a pressure of 30 psi minimum.
4. Sterilize temporary water piping prior to use.

C. 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 flow.
 - 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.

1.07 PROJECT SIGN (WITH RENDERING)

- A. Provide 8 foot wide x 8 foot high x ¾ inch thick project sign of exterior grade "B" or better Douglas Fir veneer permanently factory surface with a smooth, resin fiber coating and wood frame construction, painted, with exhibit lettering by professional sign painter, to Architect/Engineer's design and colors. Building rendering as provided. Install sign on three (3) 4 x 4 x 14 foot redwood posts with bottom 3 feet above finish grade, and locate onsite per the Architect/Engineer's instruction.
- B. List title of Project, names of County, Board of Supervisors, County Department Heads, Architect/Engineer, Consulting Engineers, and Contractor and other information as specified by County.
- C. Erect on site within five (5) working days after the execution of construction agreement at location directed.
- D. No other signs are allowed except those required by law.

1.08 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 loads 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 particulate matter (PM₁₀).

1.09 NOISE CONTROL

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

1.10 PEST CONTROL

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

1.11 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.

1.12 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 soffits 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.

1.13 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 provided 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

1.14 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.

1.15 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: Hart Memorial Park Adventure Play Area	Contractor:
Owner Project No: 1650.701-21	

Substitution Request By:	Firm:
---------------------------------	--------------

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:
B.	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:

H.	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 Manufacturer

Submitted by: _____ Signature: _____

Firm: _____ Date: _____

Address: _____ Phone/ Fax: _____

Remarks: _____

<div style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 10px;"> <p>Consultant Response:</p> <p><input type="radio"/> Accepted</p> <p><input type="radio"/> Not Accepted</p> <p><input type="radio"/> Accepted As Noted</p> <p><input type="radio"/> Received Too Late</p> </div>	<div style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 10px;"> <p>Owner Representative Response:</p> <p><input type="radio"/> Accepted</p> <p><input type="radio"/> Not Accepted</p> <p><input type="radio"/> Accepted As Noted</p> <p><input type="radio"/> Received Too Late</p> </div>
<p>Remarks: _____</p> <p>_____</p>	<p>Remarks: _____</p> <p>_____</p>
<p>By: _____</p>	<p>By: _____</p>

END OF DOCUMENT

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 on computer flash drives prior to requesting the Final Walk
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.
2. 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

1. 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	
EQUIPMENT DESCRIPTION	ELECTRICAL OR MECHANICAL DATA	
Name:	Size:	
Serial No.:	Model:	
Vendor:		
Vendor Address:	Type:	
	Mfr.:	
Vendor Rep:	Voltage:	Amps:
Phone:	Phase:	rpm:
Maintenance Work to be Done		Frequency*
OPERATING REQUIREMENTS AND REFERENCE		

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

SAMPLE

Preventive Maintenance and Operating Requirement Sheets

Preventive Maintenance Program		Equipment Record Number	
EQUIPMENT DESCRIPTION		ELECTRICAL OR MECHANICAL DATA	
Name: Influent Pump No. 1 Tag No.: P01-1		Size: 15 hp	
Serial No.: 123456ABC		Model: 140T Frame Serial No. 987654ZY Class F Insulation W/Space Heater	
Vendor: ABC Pump Co.			
Vendor Address: 1111 Pump Circle Newport Beach, CA 92663		Type:	
		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*
<ol style="list-style-type: none">1. Operate all valves and check such things as a) bearing 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.3. Checking pumping unit for any dust, dirt, or debris. <p style="text-align: center;">(Continued on attached sheet)</p>			D
			D
			W
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.

SAMPLE

Preventive Maintenance and Operating Requirement Sheets

Preventive Maintenance Program	Equipment Record Number	
EQUIPMENT DESCRIPTION	ELECTRICAL OR MECHANICAL DATA	
Name:	Size:	
Serial No.:	Model:	
Vendor:		
Vendor Address:	Type:	
	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	
5. Disassemble and change or repair the following: a) impeller, b) shafts, c) shaft sleeve, d) rotary seals, and e) sleeve bearings.	A	
OPERATING REQUIREMENTS AND REFERENCE		

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

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 21 13 (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 02 2100
CONSTRUCTION SURVEY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. The work under this section includes all construction surveying, setting grades and layout of facilities, and locating, resetting, and recording monuments, as necessary, under the direction and oversight of a currently licensed land surveyor in the state of California.
- B. Related Sections:
 - 1. Section 01 33 00 - Submittal Procedures
 - 1. Section 01 35 00 – Special Project Procedures
 - 2. Section 31 00 00 - Earthwork

1.3 SUBMITTALS

- A. Copy of recorded Corner Record or Record of Survey for any disturbed property corner markers or centerline monuments.
- B. Construction staking cut sheets for all staking required on the project

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

- A. Construction Staking:
 - 1. Establish horizontal and vertical control of all facilities to be constructed by this contract.
 - 2. Set stakes for vaults, tanks, underground facilities and manholes, structures, gravity sewers and storm drains, catch basins/diversion structures, and other facilities shown on the plans.
- B. Replace disturbed centerline monuments.
 - 1. Re-establish any centerline monuments disturbed by the Contractors activities. This work shall be performed by a person licensed to perform surveying in the State of California. Prepare and file for recordation the appropriate corner record or record of survey.

2. Centerline monuments shall be assumed to exist at the intersection of all street centerlines shown on the drawings.
- C. Property corner restoration:
1. Re-establish any property corner markers disturbed by the Contractors activities. This work shall be performed by a person licensed to perform surveying in the State of California. Prepare and file for recordation the appropriate corner record or record of survey.
 2. Property corner markers shall be assumed to exist at all intersections of property lines shown on the drawings.

END OF SECTION

SECTION 02 4200

DEMOLITION/CLEARING AND GRUBBING

PART 1 -

PART 2 - GENERAL

2.1 SUMMARY

A. Section Includes:

1. Surface demolition
2. Tree Removal
3. Playground Equipment Removal
4. Clearing and Grubbing
5. Underground pipe and structure removal
6. Underground pipe and structure abandonment
7. Removing demolished materials
8. Salvaging Materials to County

2.2 SUBMITTALS

N/A

2.3 QUALITY ASSURANCE

- ###### A.
- Conform to applicable codes for procedures when hazardous or contaminated materials are discovered.

2.4 SCHEDULING

- ###### A.
- Describe demolition, removal and salvage procedures and include them in the project schedule.
- ###### B.
- Comply with the requirements for traffic control and maintaining utility service.

PART 3 - PRODUCTS

Not Used.

PART 4 - EXECUTION

4.1 EXAMINATION

- A. Examine the site before demolition. Notify the City's Representative immediately of any item in question.
- B. Verify with City that hazardous material abatement is complete before beginning demolition.

4.2 PREPARATION

- A. Call Local Underground Service Alert (USA) not less than seven working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Notify affected utility companies before starting work and comply with utility's requirements.
- C. Erect, and maintain temporary barriers including warning signs and lights, and similar measures, for protection of the public.

4.3 DEMOLITION REQUIREMENTS

- A. Use of explosives is not permitted.
- B. Conduct demolition to minimize dust and other airborne debris.
- C. Apply water to minimize dust. Provide hoses and water connections required for this purpose. Water used for dust abatement shall be recycled on non-potable water if available.
- D. Do not burn or bury materials on site. Leave sites in clean condition.

4.4 SURFACE DEMOLITION

- A. Within the limits shown on the drawings, remove and dispose:
 - 1. All asphalt paving and base
 - 2. All concrete curbs, gutters, and walks
 - 3. All other surface features indicated to be removed such as landscape, fencing, and other surface improvements.
 - 4. Clear and Grub to the project limits
- B. Coordinate the demolition with the construction schedule to maintain access and utility service.

- C. Continuously clean-up and remove demolished materials from site to an authorized dump site. Do not allow materials to accumulate on site.

4.5 BURIED PIPE, TREE, PLAYGROUND EQUIPMENT REMOVAL

- A. Within the limits shown on the drawings, remove and dispose of:
 - 1. All buried pipe, fittings, valves, thrust blocks and appurtenances shown to be removed.
 - 2. Trees shown to be removed including removal of stump and large roots.
 - 3. All components of manholes, inlets and other structures.
- B. Coordinate the demolition with the construction schedule to maintain access and utility service.
- C. Completely remove playground equipment and foundations.
- D. Backfill excavations as described in Section 31 00 00, Earthwork.
- E. Maintain utility service as described in Section 01 50 00, Temporary Facilities and Controls.
- F. Cap the ends of all pressure pipe to be abandoned in place. The cap shall be manufactured for the purpose. Use concrete plugs only for gravity/non-pressurized utilities and where specifically called out on the plans. If approved by the Engineer, a slurry cement plug may be used in lieu of a cap. Concrete/slurry plugs shall extend a minimum length of 2 times the pipe diameter. Remove conflicting portions of pipe near existing manholes or catch basins to be removed.
- G. Catch basins to be abandoned in place. Crack bottom of existing catch basin, or drill holes in bottom of catch basin such that they will not retain water. Fill catch basin with sand. Remove upper portion of catch basin to allow for base material and new concrete sidewalk.
- H. Record termination or capped location on Record Documents.
- I. Continuously clean-up and remove demolished materials from site to an authorized dump site. Do not allow materials to accumulate on site.

4.6 SALVAGE

- A. Salvage items that are requested by the County to be salvaged. Deliver to location designed by the County.

4.7 DISPOSAL

- A. Dispose of all items removed and not salvaged. Comply with all laws and regulations regarding transport and disposal of waste. Pay all disposal and transport

fees.

END OF SECTION

SECTION 03 1000
CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1 SCOPE

- A. This specification section governs the furnishing, installing and removing of formwork to confine and shape concrete, including shoring and form supports, and installation of embedded items and joints.

1.2 RELATED SECTIONS

- A. Section 03 20 00 - Concrete Reinforcing
- B. Section 03 30 00 - Cast-in-Place Concrete

1.3 REFERENCED CODES AND STANDARDS

- A. California Building Code (CBC) 2019.
- B. American Concrete Institute (ACI) Standards
 - 1. 301-16 – Specifications for Structural Concrete
 - 2. 318-19 – Building Code Requirements for Structural Concrete
 - 3. 350-06 – Code Requirements for Environmental Engineering Concrete Structures
 - 4. 347R-4 – Guide to Formwork for Concrete
 - 5. SP-15 – Field Reference Manual: Specifications for Structural Concrete (ACI 301-10) with Selected ACI and ASTM References
- C. The Engineered Wood Association
 - 1. PS-1 – Construction and Industrial Plywood

1.4 SUBMITTALS

- A. Form-Facing Materials: Submit data on form-facing materials proposed if different from that specified in Division 01.
- B. Construction and Contraction Joints: Submit location and detail of construction and contraction joints if different from those indicated in Contract Drawings.

- C. Reshoring and Backshoring Procedure: Before using reshoring or backshoring that is required or permitted, submit procedure, including drawings signed and sealed by a professional civil or structural engineer experienced in design of this work and is licensed in the State of California. Include on shop drawings formwork removal procedure and magnitude of construction loads permitted during reshoring and backshoring.
- D. Submit manufacturer's product information including storage, handling, and application procedures on the following:
 - 1. Formwork release agent
 - 2. Form liner
 - 3. Form ties
 - 4. Expansion joint materials
 - 5. Waterstop materials and splices

1.5 QUALITY ASSURANCE

- A. Design formwork under direct supervision of a professional civil or structural engineer experienced in design of this work and licensed in the State of California.
- B. Allowable tolerances shall be in accordance with the requirements of ACI 347 unless otherwise noted on Contract Drawings or specified.
- C. Maintain copies of all applicable Codes and Standards at the project site at all times.
- D. Conform to the requirements of the Division of Industrial Safety, State of California, and all other codes and regulations.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store, protect, and handle products in accordance with manufacturer's instruction.
- B. Store materials in a manner that will preclude any damage or deterioration and provide easy access for inspection and identification of each item.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Form-Facing Materials

1. General: Form face material in contact with concrete shall be lumber, plywood, tempered concrete-form-grade hardboard, metal, plastic, or paper that creates specified appearance and texture of concrete surface.
2. Exposed to View Surfaces:
 - a. Douglas Fir boards, Structural grade, 10 inch width, unless otherwise noted. Use dressed side of lumber for surface in contact with the concrete.
3. Unexposed Surfaces:
 - a. Wood forms shall be constructed of sound lumber or plywood of suitable dimensions, free from knotholes and loose knots; plywood shall be sanded smooth and fitted with tight joints between panels.
 - b. Metal forms shall be of an acceptable type for the class of work involved and of the thickness and design required for rigid construction.
4. Curved Surfaces: Form with metal, plywood, or adequately supported, surfaced and matched Douglas fir boards not more than 4-inches wide.

B. Formwork Accessories

1. Form Ties: Metal, removable to a depth of at least 1-1/2 inches below the surface of the concrete. Ties shall be of sufficient strength to prevent the spreading of the forms during concrete placement. The use of wire ties will not be permitted.
2. Form Release Agents: Use an approved non-staining coating which will permit the ready release of forms and which will not affect application of applied finishes. Form release agents containing mineral oils or petroleum solvents such as paraffin will not be permitted. Use specially formulated coatings for metal forms to prevent rust stains on concrete.
3. Chamfer Strips: Except as noted on Contract Drawings and at flush joints between concrete and other construction, provide 3/4 inch triangular wood or plastic strips, place and secure in forms at external corners.
4. Expansion and Isolation Joint Material: Fosroc Hydrocell XL – provide Fosroc Expancell backer chord & seal joint with Fosroc Colpor 200 joint sealant.
5. Water Stop Material: Waterstop material shall be manufactured by Sika or approved equal.
 - a. Ribbed Waterstop where specifically noted in Contract Drawings: Shall be Sika Greenstreak 709
 - b. Swellable Waterstop at all other waterstops: Shall be Hydrotite CJ-1020 or 1030

- C. All other materials, not specifically described, but required for proper completion of concrete formwork, shall be as selected by Contractor and subject to the approval of the City Representative.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Contractor shall conform to the recommendations in ACI 318, Chapter 6.
- B. Vertical and Horizontal Controls: Establish and maintain necessary benchmarks, lines, or controls throughout construction.
- C. Obtain necessary information and provide for openings, sleeves, chases, pipes, recesses, nailers, anchors, ties, inserts, and similar embedded items. Coordinate with concrete and other related work for requirements governing embedment and sleeving of pipes and conduit.
- D. Obtain written approval from the City Representative before framing openings not shown on Contract Drawings.
- E. Install all waterstops and joint materials in accordance with manufacturer's written instructions.

3.2 CONSTRUCTION OF FORMS

- A. General:
 - 1. Construct formwork to produce concrete surfaces conforming to tolerances in ACI 301. Construct formwork to the exact shapes, lines and dimensions of concrete members, arranged to allow erection in proper sequence and to permit removal without damage to concrete finish.
 - 2. Unless otherwise indicated on Contract Drawings, construct formwork panels in sections as large as practicable. Construct forms of boards or plywood of same widths, shapes, and design for accurate location of form joints as indicated on the shop drawings. Fasten together with cleats; joists and studs may be used, at Contractor's option, in lieu of cleats if required for structural integrity of formwork. Verify clear space between forms to insure allowable coverage for reinforcing steel and allowable tolerances for construction.
- B. Framing and Bracing: Framing, bracing and supporting members shall be of ample size and strength to safely carry, without excessive deflection (exceeding allowable tolerances), all dead and live loads to which formwork may be subjected, and shall be placed sufficiently close to prevent any apparent bulging or sagging of forms.
- C. Exposed Concrete Surfaces:

1. Make plywood panel patterns regular and symmetrical, joints plumb and level, horizontal joints continuous. Control reuse of forms for exposed surfaces to provide surface of uniform color and texture without sharp demarcation between adjacent surfaces.
 2. Form ties for exposed concrete surfaces shall be arranged symmetrically and shall be aligned both vertically and horizontally (do not stagger).
 3. In general, provide $\frac{3}{4}$ -inch chamfer at corners for exposed concrete unless otherwise noted. At chamfers, the concrete cover for reinforcement is critical and the minimum specified thickness shall strictly apply.
 4. Edges of all form panels in contact with concrete shall be flush within $\frac{1}{32}$ -inch and form for plane surfaces shall be such that the concrete will be plane within $\frac{1}{16}$ -inch in 4 ft. Form joints shall be tight to prevent the passage of mortar, water and grout.
- D. Embedded Items: Contractor shall secure all inserts, bolts, plates, and other embedded items. Use templates for equipment anchor bolts and other embedded items where final alignment is critical. Fill voids with readily removable material to prevent entry of concrete.
- E. Waterproofing Conditions: Concrete surfaces to receive waterproofing and damp-proofing materials shall be formed to provide a relatively smooth surface free of sharp corners, projections, and offsets at form joints. Form ties shall not penetrate or damage applied waterproofing and damp-proofing.
- F. Camber forms for slabs and beams as required for compensating deflection of form members. Positive means of adjustment (wedges or jacks) of shores and struts shall be provided to permit realignment or readjustment.
- G. Forms for walls of considerable height shall be arranged with tremies and hoppers for placing concrete in a manner that will prevent segregation and accumulation of hardened concrete on the forms or reinforcements above the fresh concrete.
- H. Provide temporary openings at bottom of forms where necessary to facilitate cleaning and inspection before concrete placement. Provide blockouts for mechanical and electrical work wherever necessary.
- I. Provide forms for footings wherever concrete cannot be placed against solid earth excavation.
- J. Construction joints and expansion joints shall be provided where indicated on the Contract Drawings. Otherwise, Contractor shall provide the layout for review and approval.

3.3 APPLICATION OF FORM COATINGS

- A. Thoroughly clean forms and coat with approved form-coating material prior to initial use and before each reuse. Excess form coating material shall not stand in

puddles in the forms nor shall such coating come in contact with hardened concrete against which fresh concrete is to be placed.

- B. Apply form-coating material before reinforcing steel, anchoring devices and embedded items are placed and in strict accordance with manufacturer's directions.

3.4 FALSEWORK

- A. Contractor shall be fully responsible for the proper strength, safety of the falsework, supports and bearing surfaces which are used in connection with the work. Falsework shall be designed to support imposed loads without deformation, deflection or settlement.
- B. Wedges in pairs or jacks shall be used where required to maintain and/or adjust forms and formwork for beams, slabs and other parts of the structure at exact elevations. To ensure uniform bearing, single wedges are not permitted. Comply with requirements of ACI 347.
- C. Vertical and lateral loads shall be carried to ground by falsework framing, or by the completed structure after it has attained the requisite strength. Falsework supports, when placed on ground, shall be protected against undermining or settlement.

3.5 REMOVAL OF FORMS AND FALSEWORK

- A. Responsibility: The sole responsibility for removal of forms/falsework and for any resulting structural or finish damage rests with the Contractor. If forms are to remain, The Contractor shall adhere to all governing requirements and/or recommendations.
- B. The removal of forms and falsework shall be carried out in such manner as to ensure the complete safety of the structure. Supports shall not be removed until members have sufficient strength to safely support their own weight and all superimposed loadings with proper factor of safety.
- C. Unless otherwise specified in the Drawings, the minimum time for forms to remain in place shall be:
 - 1. Side forms for footings, foundations, slabs on grade, or other components that do not resist bending shall not be removed in less than 48 hours after concrete placement. At times of low temperature or other adverse weather conditions, the City Representative may increase the required time to five (5) days.
 - 2. The falsework and forms supporting concrete girders, beams, joists, slabs, walls, or other members subject to bending stress, shall not be removed or released in less than 14 days after the concrete has been placed. In any case, the falsework and forms supporting the members shall not be removed until the concrete has attained a compressive

strength of at least 80% of the design strength based on test results of field cured cylinders. Furthermore, such members shall not be loaded until the concrete has attained its 28-day compressive strength.

- D. All forms, supports, and falsework shall be arranged so that they may be readily removed without hammering or prying against the concrete.
- E. As soon as the forms have been stripped and the concrete surfaces exposed, fins and other projections shall be removed, recesses left by the removal of form ties shall be filled, and surface defects which do not impair structural strength shall be repaired. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete.

3.6 REUSE OF FORMS

- A. Reuse of forms will be accepted, providing they are in good condition and have been cleaned, repaired, and resealed as required to achieve concrete of the specified quality and texture. Do not reuse form facing more than four times.

END OF SECTION

SECTION 03 2000
CONCRETE REINFORCING

PART 1 - GENERAL

1.1 SCOPE

- A. This specification section governs materials, fabrication, placement, and inspection of steel reinforcement and reinforcement supports.

1.2 RELATED SECTIONS

- A. Section 03 10 00 – Concrete Forming and Accessories
- B. Section 03 30 00 – Cast-In-Place Concrete

1.3 REFERENCED CODES AND STANDARDS

- A. California Building Code (CBC) 2019
- B. American Concrete Institute (ACI) Standards
 - 1. 117 – Specifications for Tolerances for Concrete Construction and Materials, Latest Edition
 - 2. 301 – Specifications for Structural Concrete, Latest Edition
 - 3. 350– Code Requirements for Environmental Engineering Concrete Structures, Latest Edition
 - 4. 318 – Building Code Requirements for Structural Concrete, Latest Edition
 - 5. SP-66(04) – ACI Detailing Manual
- C. AWS - American Welding Society
 - 1. D1.4 – Structural Welding Code – Reinforcing Steel, Latest Edition
- D. American Society for Testing and Materials (ASTM) International Standards
 - 1. A615/A615M – Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
 - 2. A706/A706M – Standard Specification for Low Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

3. A1064/A1064M – Standard Specification for Carbon Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

E. Concrete Reinforcing Steel Institute (CRSI)

1. CRSI MSP-2-01 – Manual of Standard Practice, Latest Edition

1.4 SUBMITTALS

A. Submittals shall be in accordance with Division 01.

B. Shop Drawings:

1. Contractor shall submit the reinforcing steel shop drawings to Engineer and County Representative for review and approval, prepared in accordance with ACI SP-66, showing list of materials, sizes, dimensions, cutting, bending, placement details, and splicing and lapping.
2. Contractor shall coordinate with architectural, structural, mechanical, and electrical Contract Drawings for the location of anchors, bolts, inserts, conduits, sleeves, and any other embedded items, which are required to be cast in concrete. Contractor shall make all necessary provisions as required for the reinforcing steel that will not interfere with the placement of the embedded items.
3. Reinforcing steel shall not be fabricated or placed before the shop drawings are reviewed and approved by the Engineer and County Representative, and returned to the Contractor. Such review does not relieve the Contractor from the full responsibility for both the accuracy of the shop drawings, and the accurate and complete placing of the work.
4. Shop drawings shall not be reproductions of the Contract Documents, nor shall they use or incorporate reproductions of parts of the Contract Documents.

C. Mill Test Reports: Certified mill test reports (tensile and bending), for each heat or melt of steel, showing physical and chemical analyses, shall be submitted to the Engineer and County Representative for review and approval before the material delivery to the job site. Where reinforcing is required to be welded, mill test reports shall verify the weldability of the steel or the use of weldable steel (ASTM A706).

1.5 QUALITY ASSURANCE

- A. Concrete reinforcement work shall be in accordance with CRSI Manual of Standard Practice and conform to ACI SP-66. Also see Article 3.04 for reinforcing steel special inspection requirements.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Reinforcement shall be shipped and stored with reinforcement of the same size and shape fastened in bundles with durable tags, marked in a legible manner with waterproof markings showing the same designations as shown on the submitted placing drawings.
- B. Reinforcement shall be stored off the ground and be protected from moisture. Keep free from soil, oil, or other injurious contaminants. All steel, which cannot be properly identified, will be rejected, and shall be immediately removed from the job site.

PART 2 - PRODUCTS

2.1 MATERIAL

- A. Reinforcing bars: Reinforcing bars shall be deformed, except spirals, load-transfer dowels, and welded wire reinforcement, which may be plain.
 - 1. Reinforcing bars shall conform to ASTM A615, Grade 60, unless otherwise indicated.
- B. Wire: Use plain or deformed wire as indicated in the Contract Drawings. Plain wire may be used for spirals.
 - 1. Plain wire shall conform to ASTM A82.
 - 2. Deformed wire size D4 and larger shall conform to ASTM A496.
- C. Welded Wire Reinforcement: Use welded wire reinforcement as indicated in the Contract Drawings.
 - 1. Plain welded wire reinforcement shall conform to ASTM A1064, with welded intersections spaced no greater than 12 inches apart in direction of principal reinforcement.
- D. Mechanical Couplers: Mechanical couplers shall be Type 2 and shall be capable of developing 125% of the specified yield strength and the ultimate tensile strength of the reinforcing bar.

2.2 ACCESSORIES

- A. Tie wire: Minimum 16 gage black annealed wire.
- B. Supports and spacers: Provide spacers, chairs, bolsters, and other devices to support and secure the reinforcement in place. Use plastic tip chairs for exposed finished concrete surfaces. Supports for reinforcing bars on ground, aggregate base or sand over vapor barrier shall be precast concrete blocks of sufficient strength, size and spacing to support the bars in proper locations.

2.3 FABRICATION

- A. All reinforcing bars shall be shop fabricated to conform to the required shapes and dimensions, in accordance with CRSI standards.
- B. All reinforcement shall be bent cold.
- C. Reinforcement partially embedded in concrete shall not be field bent, except as shown on the Contract Drawings or permitted by the Engineer and County Representative.
- D. Bends shall be as shown in Contract Drawings.
- E. Standard hooks shall be as shown in Contract Drawings.
- F. Reinforcing bars that are to be butt spliced, placed through limited diameter holes in metal or have a threaded end shall have the applicable end saw-cut.
- G. Reinforcing bars shall not be damaged in bending or straightening, and reinforcing bars with kinks or improper bends shall not be used on the job.
- H. Welding of reinforcing bars shall conform to AWS D1.4. Type and location of welded splices and other required welding of reinforcing bars shall be indicated on the Contract Drawings.

PART 3 - EXECUTION

3.1 PLACEMENT

- A. Before placing concrete, reinforcement shall be cleaned of oil, grease, soil, loose mill scale, loose rust, and any other coating of a character that would destroy or reduce the bond.
- B. Reinforcing bars shall be secured firmly in position. Use No. 16-gauge black annealed wire at each steel intersection. Use precast mortar blocks, metal chairs, spacers, metal hangers, supporting wires, and other approved devices to set steel in position with sufficient strength to resist crushing under full load and to prevent displacement during concrete placing operations.
- C. Precast Concrete Blocks: Precast concrete blocks shall not be less than 3 inches square with embedded wires and shall have at least the same 28-day compressive strength as the surrounding concrete. Space concrete blocks no less than 1'-6" and no more than 3 feet apart.
- D. Minimum concrete cover for reinforcement and minimum clear bar spacing shall be as specified on Contract Drawings, but in no case shall be less than values specified in ACI 318 or ACI 350
- E. Placing bars on layers of fresh concrete as the work progresses, or adjusting bars during the concrete placement, will not be permitted.

3.2 SPLICING

A. Lap Splices:

1. Reinforcing bars shall be lap spliced as indicated on the Contract Drawings. Splices at locations other than those indicated are subject to the approval of the Engineer and County Representative and, if permitted, shall conform to the lap lengths specified in the Drawings.
2. Locate splices not indicated on the Contract Drawings at points of minimum stress. Indicate splice locations on shop drawings. Splice locations shall be well staggered with no more than 50% of the bars spliced at any section, subject to review by the Engineer and County Representative. Welded splices or mechanical couplers may be substituted for contact lap splices at the discretion of the Contractor, subject to approval by the Engineer and County Representative.

B. Welded Splices:

1. No reinforcing bars shall be welded either during fabrication or placement unless specifically shown on the Contract Drawings, specified herein, or with prior written consent of the Engineer and County Representative. All reinforcing bars that have been welded without such approval shall be rejected and immediately removed from the work site. When welding of reinforcement is approved or shown, it shall conform to AWS D1.4. All welded splices shall be subjected to Special Inspection performed by a certified Special Inspection and Testing Agency.

3.3 REINFORCEMENT AROUND OPENINGS

- A. Whenever conduit, piping, sleeves, bolts, hangers, boxes or other embedded items interfere with the proper placement of reinforcing steel as detailed, the Contractor shall submit to the Engineer and County Representative the proposed reinforcement adjustment for review. Reinforcing bars shall not be bent around openings or sleeves, except with the Engineer and County Representative's prior approval.

3.4 INSPECTION

- A. Before concrete is placed, reinforcement placement shall be inspected by a certified Special Inspection Agency. Any errors or discrepancies shall be corrected before placing concrete. Re-inspection shall be paid for by the Contractor. The Special Inspection Agency shall be notified for reinforcing steel special inspection not less than 48 hours prior to concrete placement.

END OF SECTION

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SCOPE

- A. This specification section governs the construction of cast-in-place concrete including the following:
 - 1. Requirements for materials, proportioning, production, and delivery of concrete
 - 2. Production of cast-in-place structural concrete including methods and procedures for obtaining quality concrete through proper handling, placing, finishing, curing, and repair of surface defects.

1.2 RELATED SECTIONS

- A. Section 03 10 00 – Concrete Forming and Accessories
- B. Section 03 20 00 – Concrete Reinforcing
- C. Section 05 05 19 – Post-Installed Concrete Anchors

1.3 REFERENCED CODES AND STANDARDS

- A. California Building Code (CBC) 2019
- B. American Concrete Institute (ACI) Standards
 - 1. 117 – Specifications for Tolerances for Concrete Construction and Materials, Latest Edition
 - 2. 301 – Specifications for Structural Concrete, Latest Edition
 - 3. ACI 302.1R – Guide to Concrete Floor and Slab Construction, Latest Edition
 - 4. 304R – Guide for Measuring, Mixing, Transporting, and Placing Concrete, Latest Edition
 - 5. 305R – Guide to Hot Weather Concreting, Latest Edition
 - 6. 306R – Guide to Cold Weather Concreting, Latest Edition
 - 7. 308R – Guide to External Concrete Curing, Latest Edition

8. 309R – Guideline for Consolidation of Concrete, Latest Edition
 9. 318 – Building Code Requirements for Structural Concrete, Latest Edition
 10. 350 – Code Requirements for Environmental Engineering Concrete Structures, Latest Edition
 11. 347 – Guide to Formwork for Concrete, Latest Edition
 12. SP– Field Reference Manual: Specifications for Structural Concrete (ACI 301) with Selected ACI and ASTM References, Latest Edition
- C. American Society for Testing and Materials (ASTM) International Standards
1. C31/C31M – Standard Practice for Making and Curing Concrete Test Specimens in the Field
 2. C33/C33M – Standard Specification for Concrete Aggregates
 3. C39/C39M – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
 4. C42/C42M – Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 5. C94/C94M – Standard Specification for Ready-Mixed Concrete
 6. C150/C150M – Standard Specification for Portland Cement
 7. C171 – Standard Specification for Sheet Materials for Curing Concrete
 8. C227 – Standard Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar-Bar Method)
 9. C260/C260M – Standard Specification for Air-Entraining Admixture for Concrete
 10. C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
 11. C494/C494M – Standard Specification for Chemical Admixtures for Concrete
 12. C618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
 13. C881/C881M – Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete

14. C1017/C1017M – Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
 15. C1077 – Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
 16. C1602/C1602M – Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
 17. D1751 – Standard Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction
 18. E329 – Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special inspection
- D. Concrete Reinforcing Steel Institute (CRSI)
1. CRSI MSP-2-01 – Manual of Standard Practice, 28th edition

1.4 SUBMITTALS

The Contractor shall submit the following to the County Representative for review prior to concrete placement in accordance with Division 01:

- A. Mixture Proportions: Submit concrete mixture proportions and characteristics including water-cementitious material (w/cm) ratio, weights, slump and compressive strength at 28 days.
- B. Mixture Proportion Data: Submit field test records and/or trial mixture records used to establish the required average strength for the concrete mixture to be used.
- C. Concrete Materials:
 1. Cementitious materials: Information showing type, manufacturing locations, shipping locations, manufacturer's quality control reports, and certificates showing compliance with ASTM C150, ASTM C595, ASTM C618, ASTM C845, ASTM C989, ASTM C1157, or ASTM C1240.
 2. Aggregates: Information showing types, pit or quarry locations, producers' names, gradings, specific gravities, and evidence not more than 90 days old demonstrating compliance with requirements herein.
 3. Admixtures: Information showing types, brand names, producers' names, manufacturers' technical data sheets, and certificates showing compliance with ASTM C494/C494M, or ASTM C1017/C1017M.

- D. Curing Materials: Submit manufacturer's product information including storage, handling, and application procedures.
- E. Sealing Compounds: Submit manufacturer's product information including storage, handling, and application procedures.
- F. Epoxy Bonding Adhesives: Submit manufacturer's product information including storage, handling, and application procedures.
- G. Contraction or Expansion Joints: Submit manufacturer's product information including storage, handling, and application procedures. When contraction or expansion joints other than those indicated in the Drawings are proposed, submit locations for acceptance.
- H. Construction Joints: Submit information for acceptance of proposed location and treatment of construction joints not indicated in the Drawings.
- I. Manufacturer's specifications with application and installation instructions for all proprietary materials and item including admixtures, bonding agents, joint systems, and curing compounds.

1.5 QUALITY ASSURANCE

- A. Specifications herein set minimum results required. The Contractor is responsible for the quality of concrete cast-in-place and bears the burden of proof that all concrete as cast meets minimum requirements.
- B. Codes and Standards: Comply with provisions specified in latest editions of all applicable standards of "ACI Manual of Concrete Practice", including but not limited to the following:
 - 1. ACI 301 – Specifications for Structural Concrete
 - 2. ACI 302.1R – Guide to Concrete Floor and Slab Construction
 - 3. ACI 304R – Guide for Measuring, Mixing, Transporting, and Placing Concrete
 - 4. ACI 305R – Guide to Hot Weather Concreting
 - 5. ACI 306R – Guide to Cold Weather Concreting
 - 6. ACI 308 – Guide to Concrete Curing
 - 7. ACI 309 – Guideline for Consolidation of Concrete
 - 8. ACI 318 – Building Code Requirements for Structural Concrete

Maintain copies of all applicable Codes and Standards at the project site

at all times.

C. Acceptance tests for materials and concrete mixture designs, were required by the construction documents:

1. Concrete mixture designs, including material certificates, shall be furnished by the Contractor and reviewed by the Engineer and County Representative and the Special Inspection and Testing Agency. No concrete shall be used in the work until the materials and mixture designs have been accepted by the Engineer and County Representative.
2. Concrete manufactured and intended for placement in the work shall be tested and certified by a Special Inspection and Testing Agency. The Special Inspection and Testing Agency shall comply with ASTM C1077 and E329
3. The Special Inspection and Testing Agency shall sample, cast and test fresh concrete with standard concrete test cylinders.
4. The Special Inspection and Testing Agency shall provide special inspection of the concrete placement. The responsibility for furnishing and placing concrete conforming to the requirements of the Drawings and/or Specifications rests solely with the Contractor.

D. Tolerances:

1. Formed surfaces: Tolerances on formed surfaces shall be as specified in ACI 347, except where other tolerances are indicated.
2. Unformed surfaces: Tolerances on unformed surfaces shall be as specified in ACI 301 for the applicable surface finish, except where other tolerances are indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cementitious Materials: Cementitious materials shall be of the same brand and type and from the same manufacturing plant as the cementitious materials used in the concrete represented by the submitted field test records or used in the trial mixtures. Cementitious materials shall conform to the following:

1. Portland Cement: ASTM C150, Type II
2. Fly Ash: ASTM C618, Class F. When fly ash is used, the minimum amount shall be 15% by weight of the total cementitious materials, unless otherwise noted.
3. Blast-Furnace Slag: ASTM C989, finely ground granulated

4. Silica Fume: ASTM C1240
- B. Aggregates: Both fine and coarse aggregates shall conform to the requirements of ASTM C33 and shall be from sources with a proven history of successful use. Aggregates used in concrete shall be obtained from the same sources and have the same size range as aggregates used in the concrete represented by the submitted field test records or used in the trial mixtures. The maximum size of aggregates shall be 3/4 inch for normal weight aggregate.
1. Coarse: Cleanness value shall not be less than 75 when tested in accordance with California Test Method No. 227.
 2. Fine: Sand equivalent shall not be less than 75 when tested in accordance with California Test Method No. 217.
 3. For exposed exterior surfaces, do not use fine or coarse aggregates that contain substances that cause spalling.
 4. Sample of coarse and fine aggregates shall be tested for alkali reactivity in accordance with ASTM C227. Submit certification of materials for review with the concrete mix design submittal.
- C. Lightweight Aggregates: Both fine and coarse aggregates shall conform to the requirements of ASTM C330 and shall be from sources with a proven history of successful use. Aggregates shall be vacuum saturated. Maximum dry weight shall be 115 pcf. The maximum size of aggregates shall be 3/4-inch for lightweight concrete.
- D. Water: Water shall be clean and potable, free from impurities detrimental to concrete.
- E. Admixtures:
1. Admixtures shall be compatible and contain no chlorides, sulfides or nitrides
 2. Admixtures for water reduction and setting time modification shall conform to ASTM C494
 3. Admixtures for use in producing flowing concrete shall conform to ASTM C1017
 4. Air entraining admixture shall conform to ASTM C260
- F. Curing Materials:
1. Liquid Membrane-Forming Curing Compounds: ASTM C309, Type 1, approved clear resin type, free of oil, wax, grease, or other substance which

might discolor concrete or prove deleterious to or adversely affect the bonding of any material applied to the concrete.

- 2. Curing paper: ASTM C171, non-staining waterproof paper, regular type.
- G. Sealing Compounds: ASTM C1315
- H. Epoxy Bonding Adhesives: ASTM C881
- I. Expansion Joint Materials: Premolded, ½ inch thick unless otherwise noted, composed of asphalt impregnated vegetable fiber, and mineral filler conforming to the requirements of ASTM D1751; size for installation 1/4-inch below concrete surface.
- J. Polymer Grit Additive: Additive shall be compatible with sealer and applied per manufacturer's instruction.

2.2 CONCRETE MIXTURE DESIGNS

- A. Concrete mixture designs for concrete shall be at the Contractor's expense. The designs shall be tested by a qualified Testing Agency, approved by the County. Concrete mixture designs, including quantities of admixture, shall be submitted for review and approval at least 30 days prior to placing any concrete. Refer to Division 01.
- B. Concrete mixture designs shall be proportioned in accordance with ACI 318 Section 5.3, "Proportioning on the Basis of Field Experience or Trial Mixtures or Both" with a maximum w/cm ratio of 0.49. The w/cm ratio shall be based on total cementitious material, including Supplementary Cementitious Material (SCM). SCM, as a percentage of total weight of cementitious material shall be a minimum of 25 percent and a maximum of 50 percent. Fly ash shall be a maximum of 20 percent. Submit mix designs for each class of concrete for review.
- C. Concrete mixture proportions shall be such as to produce a dense, workable mix that can be placed without segregation or excess free surface water. Superplasticizers may be used to improve workability in thin or congested sections.
- D. If the concrete is to be placed by pumping, recommendations of ACI 304.2R shall be followed.

2.3 SCHEDULE OF CONCRETE CLASSES

- A. General: The concrete class and slump for the various types of construction shall be as designated in the following table:

Location	Strength [psi]	Test Age [days]	Maximum Slump [inches]	Maximum Aggregate Size [inches]	Maximum Water/Cement Ratio
All Concrete Work	4,000	28	4 ½	1"	0.49

- B. Strength: Concrete shall develop compressive strengths as noted above and on Drawings. The tests shall be performed on concrete cylinders in accordance with ASTM C39. The averages of all sets of three consecutive strength tests shall be equal to or greater than the specified strength and no individual strength test result shall fall below the specified strength by more than 500 psi.
- C. Slump: Concrete shall be of such consistency and mix composition that it can be readily worked into the corners and angles of the forms and around the reinforcement, inserts, and wall castings without permitting materials to segregate or free water to collect on the surface.

PART 3 - EXECUTION

3.1 PRODUCTION OF CONCRETE

- A. Concrete shall be ready-mixed concrete in conformance with ASTM C94. Measure, batch, and mix concrete materials and concrete in conformance with ASTM C94. Equipment shall be adequate for the purpose and kept in good mechanical condition at all times. No hand-mixing will be permitted.
- B. Ready-mixed concrete shall be transported to the site in watertight agitator or mixer trucks loaded not in excess of rated capacities for the respective conditions as stated on the name plate. Discharge at the site shall be completed within 1-1/2 hours, or before the drum has revolved 300 revolutions, whichever comes first, after the introduction of water to the mix. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85°F or above, discharge of concrete shall be completed within 1 hour. Central mixed concrete shall be plant-mixed a minimum of 1-1/2 minutes per batch and then shall be truck-mixed or agitated a minimum of 8 minutes. Agitation shall begin immediately after charging the truck, followed by agitation without interruption until discharged.
- C. Mixers shall be equipped with an automatic device for recording number of revolutions of drum or blades prior to completion of mixing operation. Revolution

counters shall be set at "0" and shall commence to operate when drum revolution begins after introduction of ingredients into the mixer. Delivery tickets shall show departure time from plants.

- D. Retempering of concrete, that is, remixing with or without additional cement, aggregates, water, or admixtures, will not be permitted.
- E. No water shall be added to the mix after the initial introduction of mixing water for the batch except when, on arrival at the job site, the slump of the concrete is less than that specified. In this case, additional water may be added only if neither maximum permissible w/cm ratio nor maximum slump is exceeded and if the addition of water is approved by the Engineer and County Representative. The drum or blades shall then be turned an additional 30 revolutions or more until the mix is uniform.
- F. All concrete used in suspended slabs and slabs-on-grade shall be designed with a shrinkage limitation of 0.04% after 28 days of drying.

3.2 PLACEMENT OF CONCRETE

A. General:

- 1. Maintain continuous and accurate log of placing of concrete in structure. Record date, location, quantity, air temperature, test samples taken. A copy of the log shall be given to the County Representative.
- 2. Notify County Representative a minimum of 72 hours prior to placing of any concrete.
- 3. Do not place concrete until data on materials and mixture proportions are accepted by the County Representative.

B. Preparation:

- 1. Forms shall be constructed to sizes, shapes, lines, and dimensions as required to obtain accurate alignment, location, grades, level, and plumb work in the finished structure. Refer to Specification Section 03 10 00.
- 2. Remove debris, mud, water, and all foreign materials from places to receive concrete. All surfaces of forms and embedded materials shall be cleaned of all mortar or grout before the surrounding or adjacent concrete is placed.
- 3. Absorbent forms shall be thoroughly wetted before concrete is placed. Aggregate base/sand beds for slabs on grade shall be moist but not saturated when concrete is placed.
- 4. No concrete shall be placed until reinforcing is fastened in place and inspected nor until forms are complete. No concrete shall be placed before

work that is to be embedded has been set. Reinforcement or other materials that have been set in place shall not be disturbed.

5. Before placing concrete, embedded pipes and conduits shall be sleeved providing $\frac{1}{4}$ " minimum clearance all around. Sleeves shall be positioned so as not to impair the strength of surrounding elements. All items to be embedded in the concrete shall be free from oil, or foreign matter, that would impede the bond of the concrete to these items.
6. Where new concrete is to be cast against existing concrete, the existing concrete surface shall be roughened to a minimum of $\frac{1}{4}$ " amplitude by sandblasting or bush hammering. The existing surface shall be cleaned and laitance removed. Apply bonding adhesive to existing concrete surface prior to placement of new concrete in accordance with manufacturer's recommendations.

C. Weather Considerations:

1. Hot Weather: Comply with the recommended practices of ACI 305R and the requirements specified herein. Procedures for hot weather concreting will be subject to the approval of the Engineer and County Representative.
2. Cold Weather: Comply with the recommended practices of ACI 306R and the requirements specified herein. Procedures for cold weather concreting will be subject to the approval of the Engineer and County Representative.

D. Conveying:

1. Transport concrete from mixer to place of final deposit as rapidly and directly as practicable and by methods which prevent segregation or loss of ingredients and displacement of reinforcement, and which avoid rehandling. Do not deposit partially hardened concrete.
2. Conveying equipment shall be acceptable to the Engineer and County Representative and shall be of a size and design such that detectable setting of concrete shall not occur before adjacent concrete is placed. Conveying equipment shall be cleaned at the end of each operation or work day. Equipment having components made of aluminum or magnesium alloys, which would have contact with plastic concrete during pumping, chuting or tremie operations, shall not be used.

E. Depositing:

1. Place no concrete when sun, wind, heat or other limitation of facilities will prevent proper finishing and curing procedures. Depositing under water will not be permitted.
2. Within the planned placement, deposit concrete continuously and as near as practicable to the final position.

3. Concrete shall not be dropped through the reinforcing steel in such a manner as to cause segregation of the aggregates. In no case, within the formwork or otherwise, shall concrete be permitted to fall from a height greater than 4 feet except through elephant trunks or other approved devices.
4. Deposit concrete in layers not exceeding 18 inches in thickness, force concrete around and under reinforcing and embedded items without displacing them. Integrate fresh concrete with that already placed; no retempering of concrete already placed will be allowed. After concrete has taken an initial set, protect forms from jarring and do not place any strain on ends of projecting reinforcement.
5. Splash or accumulation of hardened or partially hardened concrete shall be removed. Contact faces of forms for exposed concrete shall be protected from splash during placing of adjacent concrete.
6. Do not deposit fresh concrete on concrete that has hardened sufficiently to cause formation of cold joints, unless construction joint requirements are met.
7. Do not place concrete over columns or walls until concrete in columns and walls has reached final set.
8. Place concrete for beams, girders, brackets, column capitals, haunches, and drop panels at the same time as the concrete for adjacent slabs.
9. Interruption in depositing longer than 45 minutes shall be cause for discontinuing casting of the section of work. In this event, cut back concrete and provide construction joints as the Engineer and County Representative directs; clean forms and reinforcing as necessary to receive concrete at later time.

F. Consolidating:

1. Concrete shall be thoroughly consolidated by placing the mechanical vibrator directly in concrete at 18" to 30" intervals for a period of approximately 5 to 15 seconds and withdrawing slowly or as directed. Thoroughly work concrete around reinforcing and embedded items and into corners and shapes of formwork. One vibrator will be required for each location where simultaneous concrete placing takes place, to ensure thorough vibrating of all sections. Provide sufficient spare vibrators on the job so as to have them readily available in case any vibrator in use should suddenly cease to function properly.
2. Mechanical vibrator shall be of the flexible immersion type having a frequency of not less than 8,000 rpm. Use and type of vibrator shall conform to ACI 309.
 - a. Penetrate placed layer and at least 6 inches into preceding lay-

er. Do not consolidate placed concrete by mechanical vibrating supplemented by hand spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete complying with ACI 309.

b. Do not use vibrators to transport concrete inside forms. Move the vibrators vertically at uniform spaced locations with no effectiveness of the machine function. Place vibrators into the lower layers of concrete that have begun to set.

3. Consolidate slabs six inches and less in thickness by means of vibrating screeds or, for small areas such as curbs, wood tampers.

4. Completely eliminate honeycombing or planes of weakness due to air voids and stone pockets.

G. Construction Joints:

1. All pours shall be terminated at construction joints.

2. Placement of construction joints and the manner in which they are provided for shall be approved by the Engineer and County Representative or as shown on the Drawings. Construction joints shall be as few as possible and will not be permitted simply to save forms.

3. Construction joints including keys shall be cleaned and roughened in an acceptable manner that exposes aggregate uniformly and does not leave laitance, loosened aggregate particles, or damaged concrete at the surface. Forms and reinforcing shall be cleaned of drippings, debris, etc. Apply bonding adhesive to hardened concrete surface prior to placement of fresh concrete in accordance with manufacturer's recommendations.

3.3 CONCRETE FINISH

A. Exposed Surfaces: At all exposed surfaces of the structure, produce smooth form finish in accordance with ACI 301, unless otherwise noted.

B. Concrete Finishes for Vertical Wall Surfaces:

1. Form facing material shall produce a smooth, hard, uniform texture.

a. Use forms specified for surfaces exposed to view in accordance with the Plans and other Specification Sections.

2. At a minimum, repair the following surface defects:

a. Tie holes

b. Honeycombs deeper than ¼"

- c. Air pockets deeper than 1/4"
 - d. Rock holes deeper than 1/4"
 - e. Scabbing
3. Chip or rub off fins exceeding 1/8" in height.
 4. Provide Class 1 finish for:
 - a. Walls being waterproofed, painted, coated with some other material.
 - b. Use at all exposed surfaces not specified to receive another finish.

C. Related Uniform Surfaces (Except Slabs):

1. Strike smooth tops of walls or buttresses, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces after concrete is placed.
2. Float surface to a texture consistent with that of formed surfaces.
3. Continue treatment uniformly across unformed surfaces.

D. Concrete Finishes for Horizontal Slab Surfaces:

1. General: Tamp concrete to force coarse aggregate down from surface. Screed with straightedge, eliminate high and low places, bring surface to required finish elevations; slope uniformly to drains. Dusting of surface with dry cement or sand during finishing processes not permitted.
2. Slab Finish shall be as follows:
 - a. Sidewalks, garage floors, drive-throughs and ramps: Broom finish.
 - b. Exterior slabs, platforms, steps and landings, exterior and interior pedestrian ramps and interior stairs and all process equipment areas, not covered by other finish materials: Broom finish.
3. Specified Overall Values (SOV) and Minimum Local Values (MLV) shall be $F_F = 25$ and $F_L = 20$
4. No tolerance will be allowed that will result in the maximum running, or cross, slope exceeding the requirements of the Americans with Disabilities Act.

3.4 SAWED JOINTS

- A. Where saw-cut joints are required or permitted, start cutting as soon as concrete has gained sufficient strength to prevent raveling, or the dislodgment of coarse aggregate particles.
- B. Saw a continuous slot to a depth one-fourth the thickness of the slab but not less than 1 inch.
- C. Complete sawing within 12 hours after placement.

3.5 CURING AND PROTECTION

- A. Curing: All newly placed concrete shall be cured by one or more of the following methods:
 - 1. Water Method. The concrete shall be kept continuously wet by the application of water for a minimum of 7 days after the concrete has been placed. Cotton-mats, rugs, carpets, or earth or sand blankets may be used as a curing medium to retain the moisture during the curing period.
 - 2. Waterproof Membrane Method for Slabs. All slabs shall be saturated such that free moisture occurs over the entire area. After dampening, slabs shall be immediately covered with curing paper lapped 4 inches at all joints and sealed with adhesive tape or waterproof glue. Curing paper shall remain in place for not less than 10 calendar days. Curing floor slab with chemical hardener/sealer may be used. Application shall be promptly in accordance with the manufacturer's instructions. Impervious sheeting is then applied over the slabs with sealed laps, and planks are laid over the slab to prevent injury from traffic.
 - 3. Use an approved Liquid Membrane-Forming Curing Compound. Application shall commence immediately following completion of specified finishing. When applying compound, the surfaces shall be damp but shall be free from standing water. Using pressurized spray equipment, apply as recommended by Manufacturer. Curing compounds shall not be used on surfaces when their use may be detrimental to bonding of concrete, caulking and sealants or the specified surface hardener.
 - 4. Forms-in-Place Method: Keep formed concrete surfaces continuously wet both in forms and after removal of forms for at least seven (7) days after placing. Wood forms and any metal forms exposed to the sun shall be kept wet. If forms are removed prior to expiration of curing period, exposed concrete surfaces shall be kept continuously wet by means of fog sprays or non-staining cotton or burlap mats kept moist or by approved curing compound.

5. Difficult Access: For formed concrete surfaces that have access difficulties, Contractor shall provide a method for concrete curing to Engineer and County Representative for review and approval.

B. Protection:

1. All concrete placed in forms shall have a temperature of between 50°F and 70°F and adequate means shall be provided for maintaining this temperature for as much time as is necessary to ensure proper curing of the concrete. The housing, covering or other protection used in connection with curing shall remain in place and intact at least 24 hours after the artificial heating is discontinued.
2. Wherever practicable, finished surface and slabs shall be protected from the direct rays of the sun to prevent checking and crazing. During hot weather, as defined in ACI 305R, the Contractor shall implement the requirements of ACI 305R.

3.6 REPAIR OF SURFACE DEFECTS

- A. Immediately after removing forms, all concrete surfaces shall be inspected and any pour joints, voids, rock pockets, tie holes, etc., shall be patched within 48 hours after removal of forms, but not until surfaces have been first been examined by the County Representative.
- B. If rock pockets exceed the tolerances specified or, in the opinion of the County Representative, are of such an extent or character as to affect the strength of the structure materially or does not provide adequate protection of steel reinforcement, the County Representative may declare the concrete defective and require the removal and replacement of the portions of the structure affected at the Contractor's expense.
- C. Sacking: Tie holes, superficial air voids and irregularities shall be filled solid with a cement mortar grout with all excess grout "sacked" off without the use of water. The following formula (by volume) for cement grout shall be used for this purpose:

5 ½ parts sand
2 ½ parts Portland
Cement 1 ½ parts lime
hydrate

Care shall be taken in the application of the grout and in sacking the excess grout from the surface in order that all voids are filled without grout built up on the smooth surface.
- D. Patching: Honeycombed or otherwise defective areas shall be cut out to solid concrete to a depth of not less than 1 inch. The edges of the cut shall be perpendicular to the surface of the concrete. After cleaning the exposed concrete by air-blasting, saturate the area to be patched and at least 6 inches adjacent thereto

with water before placing the mortar. Mix the mortar approximately one hour before placing and remix occasionally during this period with a trowel without the addition of water. A grout of cement and water mixed to the consistency of paint shall then be brushed on to the surfaces to which the mortar is to be bonded. The mortar shall be compacted into place and screeded slightly higher than the surrounding surface. Finish patches on exposed surfaces to match the adjoining surfaces, after they have set for an hour or more. Cure patches as specified for the concrete. Application of patch mortar shall be in accordance with ACI 301. Patchwork mixture shall match adjacent surfaces in color and texture. Determine exact mix by trial mixtures before patching, and obtain approval of mix proposed prior to application.

- E. Site-Mixed Portland Cement Repair Mortar: Mix repair mortar using the same materials as concrete to be patched, with no coarse aggregate. For repairs in exposed concrete, make a trial batch and check color compatibility of repair material with surrounding concrete. Use a repair mortar at a stiff consistency with no more mixing water than necessary for handling and placing.

3.7 FIELD QUALITY CONTROL

- A. Certification: In addition to the information specified in ASTM C94 to be provided on the delivery ticket with each batch of concrete, provide the following information on the same ticket:
 - 1. Reading of the revolution counter at the first addition of aggregates to the mixer.
 - 2. Times of day at which cement and aggregates are first intermingled, and at which water and cement are first intermingled.
 - 3. Mix identification.
 - 4. Weight of cement, aggregate, water and admixtures, and aggregate size.
 - 5. Indicate that all ingredients are as previously approved for use.
- B. Testing:
 - 1. Compression Tests: Work related to compression tests shall be performed by the Testing and Inspection Agency. During progress of work, 4 compression test cylinders shall be taken for each placement of 150 cubic yards or 5,000 square feet of surface area for slabs or walls, or fraction thereof of each class of concrete placed each day. Make, cure and store test cylinders as per ASTM C31. One cylinder shall be tested at 7 days for information; two at 28 days for acceptance; and the fourth held in reserve. Cylinders will be numbered in sets (1A, 1B, 1C, 1D) and a record kept on extent of pour represented by each set and type of concrete tested. Cylinders will be tested in accordance with ASTM C39. If any test report indicates 28-day specimen below required strength level (within standard of acceptability established by ACI 318), and if required by County Representative, the Testing Agency will take test cores of hard-

ened concrete in accordance with ASTM C42. Such concrete shown to be defective shall be removed and replaced. Cost of core tests, repairs and removal and replacement of defective concrete shall be paid by the Contractor.

2. Slump Test: Slump tests will be performed as per ASTM C143 at time of taking test cylinders.

C. Inspection:

1. The Contractor shall advise the County Representative of his readiness to proceed at least 72 hours prior to each concrete placement. No placement shall be made without the inspection and acceptance of the County Representative.
2. When forms are removed, voids, stone pockets and other defects shall not be remedied until the County Representative has inspected them and given directions.
3. Continuous special inspection by a Special Inspection and Testing Agency is required during concrete placement. As a minimum, two special inspectors are required – one at the concrete truck/pump and one at the point of concrete placement.

3.8 DEFECTIVE CONCRETE PATCHING AND REPAIRS

A. Concrete shall be considered defective for the following reasons:

1. Failure of finished concrete profiles, and dimensional tolerances, to conform to the requirements specified in the Formwork section of this specification or the requirements specified in ACI 117, whichever is more critical for the surface or profile being considered.
2. Failure to meet the specified cylinder strength requirements set forth in paragraph 16.5.1 of ASTM C94.
3. Concrete showing cracks, rock pockets, voids, spalls or other defects that adversely affect the structural adequacy of the concrete.

B. All defective concrete shall be subject to removal and replacement by the Contractor, at his expense, unless it is determined by the County Representative that it can be patched as specified below or that the location of this defective concrete is not detrimental to the function and the appearance of the structure.

C. As directed by the County Representative, the Contractor shall take cores, as needed, from any questionable area in the concrete work, for determination of concrete quality. The Contractor shall repair all core holes as required. Core specimens shall be drilled and tested in accordance with the requirements of ASTM C42. The results of tests on such cores shall be the basis for acceptance, rejection or determining the continuation of concrete work.

3.9 DAMAGED WORK

- A. Before final acceptance of the work, damaged surfaces, corners of concrete, and concrete finish, whether such damage shall have resulted from the action of the elements or from any cause whatsoever, shall be neatly repaired. Any damaged places where surface repairs are permitted shall be brought to a smooth, dense, watertight condition to the satisfaction of the County Representative.

3.10 CLEAN-UP

- A. Remove from site all debris resulting from the work of this section.
- B. Ensure removal of bituminous materials, form release agents, bond breakers, curing compounds or other materials employed in work of concreting which would otherwise prevent proper application of sealants, liquid waterproofing, or other delayed finishes or treatments.
- C. Where cleaning is required, take care not to damage surrounding surfaces or leave residue from cleaning agents.

END OF SECTION

SECTION 03 3001

MINOR CONCRETE

PART 1 GENERAL

1.1 DESCRIPTION

- A. The work shall include furnishing and placing all materials and labor and equipment to construct cast in place, non-structural concrete including walkways, parking, and general flatwork including the installation of detectable warning surfaces for ADA compliance.
- B. Except as specified herein, all concrete work shall be performed in accordance with the applicable sections of the Caltrans 2022 Standard Specifications.

1.2 STANDARDS

- A. Caltrans Section 52 Reinforcement
- B. Caltrans Section 73 Concrete Curbs and Sidewalks
- C. Caltrans Section 90-2 Minor Concrete

1.3 SUBMITTALS

- A. Concrete Mix Design
- B. Delivery tickets (Load Slips) for all concrete supplied.
- C. Material certifications

PART 2 PRODUCTS

2.1 GENERAL

- A. Unless specified otherwise all products used for cast in place concrete shall conform to the Caltrans material specifications for the type of concrete required.

2.2 CONCRETE CLASSIFICATIONS

- A. Unless otherwise specified, concrete used on the project for flatwork, walkways, parking stalls, concrete curb and gutter, fence posts, mow strip, and general non-structural concrete shall be considered minor concrete as defined in Section 90-2 of

the Caltrans Standard Specifications. Cement shall be Type II cement and concrete mix shall have a minimum compressive strength of 2,500 psi.

- B. Steel reinforcement bars shall be Grade 60 conforming to Caltrans Standards Specifications Section 52-1.02B.
- C. Detectable warning surface shall conform to Caltrans Standards Section 73-3.

PART 3 EXECUTION

3.1 GENERAL

- A. Unless specified otherwise, execution of work for cast in place concrete shall conform to the Caltrans Standard Specifications.

3.2 PAYMENT

- A. Payment for cast in place concrete shall be as described in Section 01 20 00, Price and Payment procedures.

END OF SECTION

SECTION 03 6000

GROUTING

PART 1 - GENERAL

1.1 SUMMARY

- A. This specification section governs the furnishing, materials, production, and application of the following:
 - 1. Cementitious grout
 - 2. Epoxy grout
 - 3. Epoxy adhesive

1.2 RELATED SECTIONS

- A. Section 03 30 00 – Cast-In-Place Concrete
- B. Section 05 05 19 – Post-Installed Concrete Anchors

1.3 REFERENCED CODES AND STANDARDS

- A. California Building Code (CBC) 2019
- B. American Concrete Institute (ACI) Standards
 - 1. 503.2-92(03) – Standard Specification for Bonding Plastic Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive
- C. American Society for Testing and Materials (ASTM) International Standards
 - 1. C33/C33M – Standard Specification for Concrete Aggregates
 - 2. C109/C109M – Standard Test Method for Compressive Strength of Hydraulic Cement Mortars
 - 3. C157/C157M – Standard Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete
 - 4. C579 – Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacing, and Polymer Concretes
 - 5. C827/C827M – Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures

6. C881/C881M – Specification for Epoxy-Resin-Base Bonding Systems for Concrete
 7. C1090/C1090M – Standard Test Method for Measuring Changes in Height of Cylindrical Specimens of Hydraulic Cement Grout
 8. C1107/1107M – Standard Specification for Packaged Dry, Hydraulic Cement Grout (Nonshrink)
- D. U.S. Army Corps of Engineers, Concrete Research Division (CRD)
1. CRD-C 620 – Standard Method of Sampling Fresh Grout
 2. CRD-C 621 – Specification for Non-shrink Grout

1.4 SUBMITTALS

The Contractor shall submit the following to the Engineer and County Representative for review in accordance with the provisions of Division 1.

- A. Product Data: Submit manufacturer's product data and installation instructions.
- B. Certification: Submit certificates of compliance or laboratory test reports which indicate the following:
 1. Materials used in the grout are free from metallic components and corrosion-producing elements.
 2. Materials meet specified shrinkage and compressive strength requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cementitious Grout: Pre-packaged, non-shrink, non-metallic, non-corrosive cement-based grout conforming to the following requirements:
 1. ASTM C1107 and CRD-C621
 2. Grout shall be manufactured specifically for use in supporting heavy loads (loads in excess of 300 pounds per square foot concentrated load or 100 pounds per square foot uniform load). Grout: ASTM C1107, Grade A, B, or C, as appropriate for the condition or circumstance.
 3. Shrinkage at twenty-eight (28) days: No shrinkage before hardening (0.00 shrinkage when tested in accordance with ASTM C827); no shrinkage after hardening (0.00 shrinkage when tested in accordance with CRD-C621).

4. Compressive strength, minimum:

At three (3) days	3,000 psi
At twenty-eight (28) days	7,000 psi

5. Initial setting time, after addition of water: Approximately one (1) hour at seventy (70) degrees F.
6. Provide non-sag trowelability or flowability as necessary for the particular application.
7. Aggregate for cement grout: Fine aggregate, ASTM C33, except maximum size of sand not larger than $\frac{1}{2}$ the size of the recess, hole, or space where grout is to be placed.

B. Water: Clean, potable, and containing no substances deleterious to the grout.

C. Epoxy Grout: Pre-packaged, non-shrink, non-metallic, non-corrosive epoxy grout conforming to the following requirements:

1. Shrinkage at twenty-eight (28) days: None (0.00 shrinkage when tested in accordance with ASTM C827) with a minimum effective bearing area of ninety-five (95) percent coverage of the tested base plate.
2. Compressive strength, minimum: 5,000 psi at twenty-eight (28) days when tested in accordance with ASTM C579.
3. Initial setting time: Approximately one (1) hour at seventy (70) degrees F.
4. Provide flowable consistency as necessary for the particular application.
5. Epoxy grouts which are volatile and which give off noxious fumes are not acceptable.

D. Epoxy Adhesives: Two-part, pre-packaged epoxy adhesive conforming to the following requirements:

1. Bonding Agent and Concrete Repairs: Non-sagging materials that conform to ACI 503.2 and ASTM C881.

E. Curing materials shall be in accordance with Section 03 30 00.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. Concrete surfaces to receive grout shall be prepared by chipping, sandblasting, water blasting, or other accepted methods to remove defective concrete, laitance, and loose material.

tance, dirt, oil, grease, and other foreign matter to achieve sound, clean concrete surfaces. Lightly roughen concrete for bond, but not enough to interfere with proper placement of grout.

- B. Cover concrete areas with protective waterproof covering until ready to place grout.
- C. Remove foreign matter from steel surfaces to be in contact with grout. Clean contact steel surfaces as necessary by wire brushing and wiping dust clean.
- D. Align and level components in position at the proper elevation by steel wedges or double nuts on the anchor bolts and maintain in final position until grout placement is complete and accepted.
- E. Install form for grout around the column base plates and other spaces to be grouted. The tops of such forms shall be one inch above the surfaces to grouted or as noted on the Contract Drawings.
- F. Remove protective waterproof covering and clean contaminated surfaces immediately before grouting.
- G. Provide air-relief holes in large baseplates and in baseplates where underneath obstructions may cause air entrapment.
- H. Saturate concrete surfaces with clean water, and remove excess water immediately before grouting.
- I. Where necessary or appropriate for better bond, epoxy adhesive may be applied to clean, dry substrate surfaces in accordance with applicable requirements of ACI 503.2.

3.2 MEASUREMENT OF INGREDIENTS

- A. Measurements for cement grout shall be made accurately by volume using containers. Shovel measurement shall not be allowed.
- B. Prepackaged grouts shall have ingredients measured by means recommended by the manufacturer.

3.3 MIXING

- A. Mix grout ingredients for both cementitious grout and epoxy grout in accordance with the respective manufacturer's mixing instructions and recommendations. Mix grout materials in proper mechanical mixers.
- B. Mix grout as close to work area as possible.

3.4 PLACING GROUT

- A. Place grout in accordance with manufacturer's installation instructions and recommendations. Pour grout from one side only until grout rises at least one inch above the plate on opposite side of said plate. Strapping and plunging or other recommended method may be used to force grout to flow under the entire area.
- B. The consistency of grout shall be as necessary to completely fill the space to be grouted for the particular application. Dry pack consistency is such that the grout is plastic and moldable but will not flow. Where "dry-pack" is required by the Drawings, it shall mean a grout of that consistency; the type of grout to be used shall be as indicated herein for the particular application.
- C. Neatly trowel edges of grout base, tapered at an angle of sixty (60) degrees when measured from the horizontal, or as indicated in the Contract Drawings. Provide dry-pack cementitious grout where additional grout is required for shoulders.
- D. Do not remove leveling shims for at least forty-eight (48) hours after grout has been placed.
- E. After shims have been removed, if used, fill voids with grout, packing the material with a suitable tool.
- F. Do not use grout which has begun to set or if more than one hour has elapsed after initial mixing.

3.5 QUALITY ASSURANCE

- A. Cementitious Grout:
 - 1. Inspections: Perform special inspection of grout mixing and placement by a certified Special Inspection Agency as specified in the Contract Drawings and as required by the County Representative.
 - 2. Tests: Perform shrinkage and compressive strength tests by a certified Testing Laboratory as specified in the Contract Drawings and as required by the County Representative. Sampling and testing of grout shall conform to applicable ASTM or CRD-C 620 requirements.
- B. Epoxy Grout:
 - 1. Inspections: Perform special inspection of grout mixing and placement by a certified Special Inspection Agency as specified in the Contract Drawings and as required by the County Representative.
 - 2. Tests: Perform shrinkage and compressive strength tests by a certified Testing Laboratory as specified in the Contract Drawings and as required by the County Representative. Sampling and testing of grout shall conform to applicable ASTM C579 and ASTM C827.

END OF SECTION

SECTION 04 0500

COMMON WORK RESULTS FOR MASONRY

PART 1 - GENERAL

- 1.1 SUMMARY: Provide Common Work Results for Masonry, as shown and specified per Contract.
- 1.2 REFERENCES:
 - A. American Society for Testing and Materials (ASTM):
 1. General: Materials and testing standards as identified throughout this Section or with in referenced manufacturers' standard specifications.
 2. ASTM C144: Aggregate for Masonry Mortar.
 3. ASTM C150: Portland Cement.
 4. ASTM C207: Hydrated Lime for Masonry Purposes.
 5. ASTM C404: Aggregates for Grout.
 6. ASTM C1019: Method of Sampling and Testing Grout.
 - B. California Building Code (CBC): Section 2103A.
- 1.3 SUBMITTALS:
 - A. General: Submit product data, shop drawings, samples and test reports.
 - B. Mix Design for Mortar and Grout: Submit for review.
 - C. Supplier's Certificates: Indicating materials are in compliance with specifications, including but are not necessarily limited to aggregates, cement and admixtures.
- 1.4 QUALITY ASSURANCE:
 - A. Tests and Inspections:
 1. All tests and inspections herein are to be performed by an independent testing laboratory approved by the building official.
 2. Mortar and Grout Tests:
 - a. General: At the beginning of Masonry Work, take 1 test sample of mortar and grout on 3 successive working days; thereafter once per week with at least one sample taken for each 5000 square feet of wall area, or fraction thereof.

- b. Compressive Strength: Mortar not less than 2500 psi at 28 days; grout not less than 2500 psi at 28 days.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Mortar and Grout:

- 1. Cement: ASTM C150, Type I or II, grey color.
- 2. Lime Putty:
 - a. General: Made from hydrated lime or quicklime.
 - b. Hydrated Lime: ASTM C207, Type S; slaked for not less than 48 hours and cool when used.
 - c. Quicklime: ASTM C5; slake lime and screen through a No. 16 mesh sieve. Store and protect slaked and screened lime putty for not less than 10 days.
- 3. Aggregate:
 - a. Mortar: ASTM C144 ; light grey color
 - b. Grout: ASTM C404.
- 4. Admixtures:
 - a. General: "Sika Grout Aid Type II" manufactured by the Sika Corp.
 - b. Alternate Manufacturers: Comparable products manufactured by Laticrete International, Inc., or accepted equal.
- 5. Water: Clean and potable.

B. Masonry Reinforcing:

- 1. General: Refer to Section 03 30 10 - CONCRETE.
- 2. Continuous Joint Reinforcing:
 - a. General: DA3100 Truss single-wythe reinforcement manufactured by the Dur-O-Wall Division of Dayton Superior.
 - b. Alternate Manufacturers: Comparable products manufactured by Blok-Lok Ltd.

2.2 MIXES:

A. Mortar:

1. General: ASTM C270, Type M using the property specification.
 2. Ready Mixed Mortar: ASTM C1142, Type RM.
 3. Strength: Provide minimum 28 day strength of 1,800 psi per CBC Section 2105.4.
 4. Mixing:
 - a. General: Thoroughly mix mortar ingredients per ASTM C270 in quantities needed for immediate use. Maintain sand uniformly damp immediately before the mixing process. Add admixtures and mortar color in accordance with manufacturer's instructions. Provide uniformity of mix and coloration. Do not use anti-freeze compounds to lower the freezing point of mortar. If water is lost by evaporation, re-temper only within one (1) hour of mixing. Use mortar within one (1) hour after mixing.
 - b. Admixtures: Proportioned, added and mixed per manufacturer's directions.
- B. Grout:
1. General: Ready mixed grout per ASTM C94, mixed in accordance with ASTM C476, fine grout as required.
 2. Strength: 2500 psi.
 3. Admixtures: Per manufacturer's instructions; mix uniformly. Do not use anti-freeze compounds to lower the freezing point of grout.
- C. Clay Content: Not to exceed 2% of sand content or 6% of cement content.
- D. Partial Sack Batches: Not permitted.

PART 3 - EXECUTION

3.1 PREPARATION:

- A. Examination: Examine conditions of work in place before beginning work; report defects.
- B. Measurements: Take field measurements; report variance between plan and field dimensions.

3.2 INSTALLATION:

- A. General: Install in conformance with referenced standards, manufacturer's written directions, as shown, and as specified.
- B. Placement: Refer to Section 04 22 00 - CONCRETE UNIT MASONRY.

END OF SECTION

SECTION 04 2200

CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY: Provide Concrete Unit Masonry, as shown and specified per Contract Documents.

1.2 REFERENCES:

A. American Concrete Institute (ACI):

1. ACI 530: Building Code Requirements and Specification for Masonry Structures.
2. ACI SP-66: Detailing Manual.

B. American Society for Testing and Materials (ASTM):

1. General: Materials and testing standards as identified throughout this Section or within referenced manufacturers' standard specifications.
2. ASTM C140: Standard Test Methods for Sampling and Testing of Concrete Masonry Units.

C. National Concrete Masonry Association (NCMA): TEK Bulletin No. 28.

D. Underwriters Laboratories, Inc. (UL): Fire Resistance Directory and Building Material Directory.

1.3 SUBMITTALS:

A. General: Submit product data, test reports, and mill certificates.

B. Shop Drawings: Submit manufacture and installation details for reinforcing per ACI, including fastenings, for review prior to fabrication of work. Show bar schedules, diagrams of bent bars, stirrup spacing, lateral ties, and other arrangements and assemblies as required for fabrication and placement of reinforcement for unit masonry work.

C. Samples:

1. General: Submit the following listed samples for review prior to fabrication of work.
2. Masonry Units: One of each type, texture and color.
3. Color Mortar: Full range of samples.
4. Laboratory Samples: Masonry units, cement, mortar and aggregates for tests as called for in this Section.

D. Closeout: Submit maintenance data.

1.4 QUALITY ASSURANCE:

A. Testing:

1. General: Refer to Section 01 45 23 - TESTING AND INSPECTION SERVICES.
2. Retesting: Agency selected and paid for by the Owner; retesting paid for by Contractor.
3. Masonry Testing: Test concrete masonry units, mortar and grout; comply with CBC Chapter 21A.

B. Fire Performance Characteristics: Provide materials and construction identical to those of assemblies whose fire resistance has been determined per ASTM E119.

C. Single-source Responsibility:

1. General: Obtain masonry materials from one manufacturer for each different product required.
2. Masonry Units: Uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, for each continuous surface or visually related surfaces.
3. Mortar Materials: Ingredients of uniform quality, including color for exposed masonry, for each cementitious component and from one source and producer for each aggregate.

PART 2 - PRODUCTS

2.1 MANUFACTURE:

A. General: Basalite Blocks manufactured by Basalite, a Division of Pacific Coast Building Products, Inc.

B. Alternate Manufacturers: Comparable products manufactured by Calstone, or accepted equal.

C. Concrete Masonry Units:

1. General: Hollow load-bearing block units (CMU); ASTM C90, Grade N, Type I – Moisture Controlled, normal weight.
2. Non-load Bearing Block Units: ASTM C129.
3. Size: Manufacturer's standard units with nominal face dimensions of 16 inches long x 8 inches (15-5/8 inches x 7-5/8 inches actual), unless otherwise indicated; thickness as shown.

4. Special Shapes: Provide special units for 90 degree corners, lintels and bond beams. Where required, provide special shapes for jambs, sash, control joints, headers and other special conditions.
- D. Mortar and Grout: Refer to Section 04 05 00 - COMMON WORK RESULTS FOR MASONRY.
- E. Masonry Reinforcing and Accessories: Refer to Section 03 30 10 - CONCRETE.
- F. Lintels: As shown; refer to Section 05 12 00 - STRUCTURAL STEEL FRAMING.
- G. Miscellaneous Masonry Accessories:
 1. Nonmetallic Expansion Joint Strips: Premolded, flexible cellular neoprene rubber filler strips complying with ASTM D1056, Grade RE41El: width and thickness as shown.
 2. Premolded Control Joint Strips: Styrene-butadiene rubber compound complying with ASTM D2000, Designation 2AA-805, designed to fit standard sash block and to maintain lateral stability in masonry wall.
 3. Bond Breaker Strips: 15 lb. asphalt roofing felt per ASTM D226, Type I.
- H. Cleaning Solution: Non-acidic; not harmful to masonry work or adjacent materials.

2.2 MIXES:

- A. Mortar and Grout: Refer to Section 04 05 00 - COMMON WORK RESULTS FOR MASONRY.
- B. Partial Sack Batches: Not permitted.

PART 3 - EXECUTION

3.1 PREPARATION:

- A. Environmental Requirements:
 1. Cold Weather: Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and for 48 hours after completion of masonry work.
 2. Hot Weather: Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and for 48 hours after completion of masonry work.
- B. Examination:
 1. General: Examine conditions of work in place before beginning work; report defects.
 2. Inserts: Verify that anchors, inserts, etc., placed under other Sections have been properly installed.

- C. Measurements: Take field measurements; report variance between plan and field dimensions.
- D. Storage:
 - 1. General: Store and handle masonry units to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion, and other causes. Pile masonry units on plant platforms in dry location. Protect masonry units during freezing weather with tarpaulins or other suitable material.
 - 2. Moisture Absorption of Concrete Masonry Units: Limit during delivery and until time of installation to the maximum percentage specified for Type I units for the average annual relative humidity available through the National Weather Service, Monterey Forecast Office.
- E. Protection:
 - 1. General: Protect masonry surfaces not being worked on during construction. When rain is imminent and work is discontinued, cover tops of masonry walls exposed to weather with a well-secured waterproof membrane.
 - 2. Stains: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Remove grout, mortar, or soil immediately on contact with masonry. Protect base of walls from rain-splashed mud and mortar splatter with coverings on ground and over wall surface.
 - 3. Loading:
 - a. General: Do not apply uniform floor or roof loading for at least 48 hours after construction of masonry walls or columns.
 - b. Concentrated Loads: Do not apply concentrated loads for at least four (4) days after construction of masonry walls or columns.
- F. Surface Preparation: Clean surfaces to be in contact with mortar or grout free of deleterious materials.

3.2 INSTALLATION:

- A. General: Install in conformance with referenced standards, manufacturer's written directions, as shown, and as specified. Establish lines, levels, and coursing indicated. Protect from displacement. Maintain masonry courses to uniform dimension.
- B. Placing and Bonding:
 - 1. General: Lay hollow masonry units with face shell bedding on head and bed joints. Buttering corners of joints or furrowing of mortar joints is not permitted. Remove excess mortar as Work progresses. Interlock intersections and external corners. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

2. Cutting Masonry Units: Use dry cutting motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Wherever possible use full-size units without cutting.
3. Wetting: DO NOT WET CONCRETE MASONRY UNITS.
4. Bond: Running.
5. Mortar Joints: Concave; form vertical and horizontal joints of uniform thickness. Install mortar per ASTM C270. Place mortar in masonry unit bed joints back 1/4 inch from edge of unit grout spaces, bevel back and upward. Permit mortar to cure seven (7) days before placing grout. Remove excess mortar from grout spaces.

C. Reinforcement and Anchorage:

1. General: Clean reinforcement of all rust, mill scale, earth, ice or other materials that will reduce bond to mortar or grout. Do not use reinforcement bars with kinks or bends not specifically shown or required for installation.
2. Placement: Position reinforcement accurately, as shown, before grouting; support and secure vertical bars against displacement. Lap reinforcement ends minimum 6 inches. Maintain position within 1/2 inch of dimensioned position. Provide a clear distance between masonry unit surfaces and reinforcing of not less than one bar diameter.
3. Vertical Reinforcement: Place before laying masonry units. Tie vertical reinforcement to matching dowels at base of masonry and thread masonry units over or around reinforcement. Support vertical reinforcement at 10'-0" intervals, maximum. Where vertical bars are shown in close proximity, provide a clear distance between bars of not less than the nominal bar diameter or 1 inch (whichever is greater). For columns, piers and pilasters, provide a clear distance between vertical bars as shown, but not less than 1-1/2 times the nominal bar diameter or 1-1/2 inches, whichever is greater. Provide lateral ties as shown.
4. Horizontal Reinforcement: Place as the masonry units are laid in bond beam units. Depth of bond beam channel below the top of the unit shall be a minimum of 1-1/2 inches, with a minimum width of 3 inches.

- D. Lintels: As shown; do not splice reinforcing bars. Allow masonry lintels to attain specified strength before removing temporary supports.

E. Built-in Work:

1. General: As work progresses, install built-in and other items to be installed in the work and furnished by other Sections. Install items plumb and level.
2. Fabricated Metal Frames: Bed anchors in adjacent mortar joints; fill frame voids solid with grout. Fill adjacent masonry cores with grout.

F. Grouting:

1. General: Install grout per CBC Section 2104A.6. Work grout into masonry cores and cavities to eliminate voids. Do not displace reinforcement while placing grout.
2. Low Lift Grouting: Place first lift of grout to a height of 16 inches and rod for grout consolidation. Place subsequent lifts in 8 inch increments and rod for grout consolidation.
3. Embedded Items: Place in masonry as necessary for work of other trades. Grout solidly in place with not less than 1 inch of grout surrounding inserts.
4. Curing: Maintain masonry continuously moist for at least 3 days after laying.

G. Construction Tolerances:

1. General: Per Section 01 43 00 - QUALITY ASSURANCE. Install to allow application of subsequent finish materials within specified tolerances.
2. Variation From Alignment of Columns: 1/4 inch, maximum.
3. Variation From Unit to Adjacent Unit: 1/32 inch, maximum.
4. Variation from Plane of Wall: Maximum of 1/4 inch in 10'-0" and 1/2 inch in 20'-0" or more.
5. Variation from Plumb: Maximum of 1/4 inch per story non-cumulative; 1/2 inch in two (2) stories or more.
6. Variation from Level Coursing: Maximum of 1/8 inch in 3'-0" and 1/4 inch in 10'-0"; 1/2 inch in 30'-0".
7. Variation of Joint Thickness: 1/16 inch in 3'-0", maximum.

H. Repairing and Pointing:

1. General: Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or if units do not match adjoining units. Install new units to match adjoining units and in fresh mortar or grout, pointed to eliminate evidence of replacement.
2. Pointing: During the tooling of joints, enlarge voids or holes, except weep holes, and completely fill with mortar. Point-up all joints including corners, openings, and adjacent construction to provide a neat, uniform appearance.

3.3 FIELD QUALITY CONTROL:

- A. Inspection: Continuous inspection of grouted masonry will be for inspection of that work.
- B. Field Testing:

1. Mortar and Grout:
 - a. General: Tested for compression per CBC 2105A.3.3.
 - b. Samples: At beginning of masonry work, at least one (1) test sample of mortar and grout shall be taken on three (3) successive working days, and at one (1) week intervals thereafter. Mortar samples shall be made in 2 inch x 4 inch cylinders. Additional samples will be taken for each day's work.
 - c. Grout Prisms: Provide 4 inch x 4 inch x 8 inch, made with masonry molds; break molds away after grout has set, but before it has hardened. Test specimens in vertical position, at age of seven (7) days and at age of twenty-eight (28) days.
2. Test Cores: Take a minimum of two (2) cores, and an additional two (2) cores for each additional 5,000 square feet of grouted masonry walls, at points selected by Architect in compliance with CBC 2105A.3.1. Owner will pay for coring and testing of walls, but Contractor will repair walls cored at no extra cost. In event more than two (2) cores are required to be taken to establish acceptability of work as result of low or questionable tests or suspected faulty workmanship, costs of coring in excess of two (2) cores will be paid by Owner and backcharged to Contractor.

- C. Retesting: Make necessary corrections to non-conforming Work; retest at Contractor's expense.

3.4 CLEANING AND SEALING:

A. Cleaning:

1. General: Remove mortar droppings while still fresh. Dry brush exposed masonry at the end of each day's work and after final pointing to remove mortar spots; use cleaning solution as required to provide a uniformly clean surface per NCMA TEK Bulletin No. 28.
2. Walls: At completion of work, thoroughly saturate walls with water and clean with high pressure water.

B. Water Sealing:

1. Surface Preparation: Surface must be clean, dry and free of efflorescence, dust and mortar. Cure for ten (10) days minimum, prior to application. Apply under dry weather conditions; mask adjacent areas to protect from overspray.

END OF SECTION

SECTION 05 0519

POST-INSTALLED CONCRETE AND MASONRY ANCHORS

PART 1 - GENERAL

1.1 SUMMARY

- A. This specification section governs the furnishing of materials, labor, equipment, and services necessary for the installation of reinforcing bars, steel rods threaded full length, or anchor bolts into existing concrete.

1.2 RELATED SECTIONS

- A. Section 03 20 00 – Concrete Reinforcing
- B. Section 03 30 00 – Cast-In-Place Concrete
- C. Section 03 60 00 - Grouting

1.3 REFERENCED CODES AND STANDARDS

- A. California Building Code (CBC) 2019
- B. American Concrete Institute (ACI) Standards
 - 1. 318-14 – Building Code Requirements for Structural Concrete
 - 2. 355.2– Qualification of Post-Installed Mechanical Anchors in Concrete and Commentary, Latest Edition
- C. American Society for Testing and Materials (ASTM) International Standards
 - 1. A36/A36M – Standard Specification for Carbon Structural Steel
 - 2. A153/A153M – Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware
 - 3. A193/A193M – Standard Specification for Alloy Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications
 - 4. A307 – Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
 - 5. A510/A510M – Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel

6. A615/A615M – Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement
7. B633 – Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel
8. B695 – Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel
9. C881/C881M – Specification for Epoxy-Resin-Base Bonding Systems for Concrete
10. C882/C882M – Standard Test Method for Bond Strength of Epoxy Resin Systems used with Concrete by Slant Shear
11. D695 - Standard Test Method for Compressive Properties of Rigid Plastics
12. E488/E488M – Standard Test Methods for Strength of Anchors in Concrete Elements
13. E1512 – Standard Test Methods for Testing Bond Performance of Bonded Anchors
14. F593 – Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs

D. International Code Council (ICC) Acceptance Criteria

1. ICC AC 193 – Acceptance Criteria for Mechanical Anchors in Concrete Elements
2. ICC AC 308 – Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements

a. SUBMITTALS

The Contractor shall submit the following to the Engineer and County Representative for review in accordance with the provisions of Division 1.

- 1) Product Data: Submit manufacturer's product data and installation instructions and manufacturer's recommended application procedures for product.
- 2) Test Reports: Submit ICC-ES Evaluation Report (ESR) for each product.

b. QUALITY CONTROL

- 1) Installer Qualifications: Drilled-in anchors shall be installed by a Contractor with at least five (5) years of experience performing similar installations.
- 2) Installer Training: Conduct a thorough training with the manufacturer or the manufacturer's representative for the Contractor on the project. Training to consist of a review of the complete installation process for drilled-in anchors, to include but not limited to:
 - a) Hole drilling procedure
 - b) Hole preparation & cleaning technique
 - c) Adhesive injection technique & dispenser training / maintenance
 - d) Rebar dowel preparation and installation
 - e) Proof loading/torquing
- 3) All installation of anchors in hardened concrete shall be inspected by a Special Inspector.
- 4) Special inspection and testing of anchors/dowels shall be provided per Article 4.06.
 - a. DELIVERY, STORAGE AND HANDLING
 - 1) Deliver products to job site in manufacturer's or distributor's packaging undamaged, complete with installation instructions.
 - 2) Protect and handle materials in accordance with manufacturer's recommendations to prevent damage or deterioration.
 - 3) Ensure storage facilities are weather-tight and dry.
 - 4) Do not use remnant portions of epoxy solids exposed to air or mixed beyond pot life.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fasteners and Anchors:

1. Bolts and Studs: ASTM A307; ASTM A449 where "high strength" is indicated on the Drawings
2. Carbon and Alloy Steel Nuts: ASTM A563
3. Carbon Steel Washers: ASTM F436
4. Carbon Steel Threaded Rod: ASTM A36; ASTM A 193 Type B7; or ASTM F1554

5. Wedge Anchors: ASTM A510; or ASTM A108
6. Stainless Steel Bolts, Threaded Rod, Hex Cap Screws, and Studs: ASTM F593 CW1 or CW2
7. Stainless Steel Nuts: ASTM F594 CW1 or CW2
8. Zinc Plating: ASTM B633
9. Hot-Dip Galvanizing: ASTM A153
10. Reinforcing Dowels: ASTM A615 Grade 60

2.2 DRILLED-IN ANCHORS

- A. Mechanical Anchors: For anchoring into cracked and uncracked concrete, mechanical anchors shall have been tested in accordance with ACI 355.2 and/or ICC-ES AC193 for cracked and uncracked concrete. For anchoring into grout-filled concrete masonry units mechanical anchors shall have been tested in accordance with ICC-ES AC01 (expansion anchors) or ICC-ES AC106 (screw anchors). Type and size as indicated on Drawings.
 1. Interior Use: Unless otherwise indicated on the Drawings, provide carbon steel anchors with zinc plating in accordance with ASTM B633, Type III Fe/Zn 5 (SC1).
 2. Exterior Use: As indicated on the Drawings, provide stainless steel anchors. Stainless steel anchors shall be AISI Type 316 stainless steel provided with stainless steel nuts and washers of matching alloy group and minimum proof stress equal to or greater than the specified minimum full-size tensile strength of the externally threaded fastener. Stainless steel nuts shall conform to ASTM F594 unless otherwise specified. Avoid installing stainless steel anchors in contact with galvanically dissimilar metals.
 3. Where anchor manufacturer is not indicated, subject to compliance with requirements and acceptance by the Engineer and County Representative, provide the following or approved equal:
 - a. Simpson Titen HD, ICC-ES ESR-1056 (carbon steel and AISI Type 316 Stainless Steel).
- B. Cartridge Injection Adhesive Anchors: Threaded steel rod, inserts or reinforcing dowels, complete with nuts, washers, polymer or hybrid mortar adhesive injection system, and manufacturer's installation instructions. Type and size as indicated on Drawings.

1. Interior Use: Unless otherwise indicated on the Drawings, provide carbon steel threaded rods unless otherwise noted in construction documents.
2. Exterior Use: As indicated on the Drawings, provide stainless steel threaded rod. Provide with stainless steel nuts and washers of matching alloy group and minimum proof stress equal to or greater than the specified minimum full-size tensile strength of the externally threaded fastener. All nuts shall conform to ASTM F594 unless otherwise specified. Avoid installing stainless steel anchors in contact with galvanically dissimilar metals.
3. Reinforcing dowels shall be as previously noted.
4. Where anchor manufacturer is not indicated, subject to compliance with requirements and acceptance by the Engineer, provide the following or approved equal:
 - a. Threaded rod anchor with Simpson SET-3G, ICC-ES ESR-4057.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to be drilled and verify access conditions, existing materials and interferences.

3.2 PREPARATION

- A. Protect existing exposed surfaces from grouting operations.
- B. Clean dowels free of grease, paint and mill scale by wire brushing or washing with petroleum solvents as required. If solvents are used, surfaces shall be completely dry prior to installation.

3.3 INSTALLATION

- A. Drilled-In Anchors:
 1. Drill holes with rotary impact hammer drills using carbide-tipped bits, hollow drill bit system. Drill bits shall be of diameters as specified by the anchor manufacturer. Unless otherwise shown on the Drawings, all holes shall be drilled perpendicular to the concrete surface.
 - a. Cored Holes: Only where anchors are permitted to be installed in cored holes, use core bits with matched tolerances as specified by the manufacturer. Properly clean cored hole per manufacturer's instructions. Only use cored holes were specifically identified in the construction documents or as recommended by the engineer.

- b. Embedded Items: Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Exercise care in coring or drilling to avoid damaging existing reinforcing or embedded items. Notify the Engineer and County Representative if reinforcing steel or other embedded items are encountered during drilling. Take precautions as necessary to avoid damaging pre-stressing tendons, electrical and telecommunications conduit, and gas lines.
 - c. Base Material Strength: Unless otherwise specified, do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength and a minimum of (7) days.
- 2. Perform anchor installation in accordance with manufacturer instructions.
- 3. Cartridge Injection Adhesive Anchors: Clean all holes per manufacturer instructions to remove loose material and drilling dust prior to installation of adhesive. Inject adhesive into holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive. Follow manufacturer recommendations to ensure proper mixing of adhesive components. Sufficient adhesive shall be injected in the hole to ensure that the annular gap is filled to the surface. Remove excess adhesive from the surface. Shim anchors with suitable device to center the anchor in the hole. Do not disturb or load anchors before manufacturer specified cure time has elapsed.
- 4. Observe manufacturer recommendations with respect to installation temperatures for cartridge injection adhesive anchors.

3.4 REPAIR OF DEFECTIVE WORK

- A. Remove and replace misplaced or malfunctioning anchors. Fill empty anchor holes and patch failed anchor locations with high-strength non-shrink, nonmetallic grout. Anchors that fail to meet proof load or installation torque requirements shall be regarded as malfunctioning.

3.5 PROTECTION

- A. Protect grouted dowels from accidental disturbance during curing time specified by manufacturer or for twelve (12) hours minimum, whichever is greater.
- B. Do not place pull-out or shear loads on dowels for minimum three (7) days after grouting.

3.6 QUALITY ASSURANCE

- A. Inspection and testing will be performed under provisions of Section 01 45 00 and in accordance with 2019 California Building Code. Contractor shall be re-

sponsible for obtaining and paying for inspections and testing described in this Article.

- B. Testing and Inspection Agency shall:
 - 1. Review manufacturer's recommended application procedures.
 - 2. Periodically inspect installation for conformance with Contract Documents and manufacturer's recommendations.
- C. Where specifically noted on plans, the Testing Agency will proof test dowels in tension after curing. Test locations will be at Agency's discretion, unless otherwise directed by Engineer and County Representative.
 - 1. Test a minimum of ten (10) percent or three (3), whichever is greater, of each type and size of drilled-in anchor shall be proof loaded by the independent testing laboratory. Adhesive anchors and capsule anchors shall not be torque tested unless otherwise directed by the Engineer and County Representative. Perform tests at different locations and conditions to obtain representative sample.
 - a. Tension testing should be performed in accordance with ASTM E488.
 - b. Torque shall be applied with a calibrated torque wrench.
 - c. Proof loads shall be applied with a calibrated hydraulic ram. Displacement of adhesive and capsule anchors at proof load shall not exceed $D/10$, where D is the nominal anchor diameter.

2. Test to loads indicated in the table below. Maintain load for a minimum of five (5) minutes. There shall be no loosening or movement of dowel out of hole and no cracking or spalling of concrete in which dowel or bolt is set.

Reinforcement	Min. Embedment	Field Test Load
#3 or 3/8" dia.	3-3/8"	2,000 LBS
#4 or 1/2" dia.	4-1/2"	4,000 LBS
#5 or 5/8" dia.	5-5/8"	6,000 LBS
#6 or 3/4" dia.	6-3/4"	9,000 LBS
#7 or 7/8" dia.	7-7/8"	12,000 LBS
#8 or 1" dia.	9"	15,000 LBS

3. Should any dowel or bolt fail to meet this criteria, increase level of testing of similar dowels by hundred (100) percent. If other failures occur during additional testing, test all similar dowels.

- D. Contractor shall pay for increased testing caused by anchor failures.

END OF SECTION

SECTION 05 1200
STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. This specification section governs the furnishing, materials, storage and handling, and erection of structural steel and miscellaneous metal, including, but not limited to, columns, beams, plates, and anchor bolts.

1.2 RELATED SECTIONS

- A. Section 03 60 00 – Grouting
- B. Section 05 05 19 – Post-Installed Concrete Anchors
- C. Section 05 13 00 – Stainless Structural Steel

1.3 REFERENCED CODES AND STANDARDS

- A. California Building Code (CBC) 2019
- B. American Institute of Steel Construction (AISC)
 - 1. Steel Construction Manual, Latest Edition
 - 2. AISC 360 – Specification for Structural Steel Buildings, Latest Edition
 - 3. AISC 41– Seismic Provisions for Structural Steel Buildings, including all supplements, Latest Edition
 - 4. AISC 303– Code of Standard Practice for Structural Steel Buildings and Bridges, Latest Edition
 - 5. Specification for Structural Joints Using ASTM A325 or A490 Bolts, Latest Edition
- C. American Society for Testing and Materials (ASTM) International Standards
 - 1. A36/A36M – Standard Specification for Carbon Structural Steel
 - 2. A53/A53M – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless
 - 3. A123/A123M – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

4. A307– Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60,000 psi Tensile Strength
 5. A325– Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
 6. A449 – Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use
 7. A500/A500M – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
 8. A563 – Standard Specification for Carbon and Alloy Steel Nuts
 9. A572/A572M – Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
 10. A780/A780M – Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
 11. A992/A992M – Standard Specification for Structural Steel Shapes
 12. F436 – Standard Specification for Hardened Steel Washers
 13. F1554 – Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
 14. F3125/F3125 – Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions
- D. American Welding Society (AWS)
1. AWS D1.1 – Structural Welding Code – Steel, Latest Edition
 2. AWS D1.8 – Structural Welding Code – Seismic Supplement, Latest Edition
- E. National Association of Architectural Metal Manufacturers (NAAMM)
1. Pipe Railing System Manual, Latest Edition
- F. Society for Protective Coatings (SSPC)
1. SP 2 – Hand Tool Cleaning
 2. SP 3 – Power Tool Cleaning
 3. SP 6 – Commercial Blast Cleaning

1.4 SUBMITTALS

- A. Submittals shall be in accordance with Division 1.
- B. Shop Drawings:
 - 1. Contractor shall submit the structural steel shop drawings to Engineer and County Representative for review and approval, showing list of materials, sizes, and dimensions.
 - 2. Contractor shall coordinate with architectural, structural, mechanical, and electrical Contract Drawings for the location of penetrations.
 - 3. Structural steel shall not be fabricated or erected before the shop drawings are reviewed and approved by the Engineer and County Representative, and returned to the Contractor. Such review does not relieve the Contractor from the full responsibility for both the accuracy of these shop drawings, and the accurate and complete erection of the work.
 - 4. Shop drawings shall not be reproductions of the Contract Documents, nor shall they use or incorporate reproductions of parts of the Contract Documents.
- C. Mill Test Reports: Certified mill test reports (tensile and bending), for each heat or melt of steel, showing physical and chemical analyses, shall be submitted to the Engineer and County Representative for review and approval before the material delivery to the job site.
- D. Welding Procedure Specifications (WPS) and Procedure Qualification Records (PQRs): Provide in accordance with AWS D1.1 for each welded joint, including the following:
 - 1. Power source (constant current or constant voltage).
 - 2. Electrode manufacturer and trade name, for demand critical welds.
- E. Welder Certification: Contractor shall submit welder certification and qualifications for all welders for this work.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certificated Plant, Category STD, or is accredited by the IAS Fabricator Inspection Program for Structural Steel (AC 172).
- B. Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector.

- C. Shop-Painting Applicators: Qualified according to AISC's Sophisticated Paint or to SSPC-QP 3, "Standard Procedure for Evaluating Qualifications of Shop Painting Applicators."
- D. Welding:
 - 1. Performed by certified welders in compliance with AWS D1.1.
 - 2. Welders shall be duly qualified (test passed in the preceding 12 months) in the position in which they are to weld and the qualifications and specifications for workmanship shall comply with the AWS D1.1.
- E. Certifications:
 - 1. Prior to fabrication or shipment of materials to the job site, furnish certification of the manufacturer of the structural steel that materials furnished meets or exceeds requirements of ASTM standards specified or noted on drawings for each type of materials
 - 2. Prior to site welding operation, submit welders' written certification and qualification.
- F. Tolerances: All steel exposed to view shall be architectural steel, and tolerances as minimum shall comply with section 10 of AISC Code of Standard Practice.

1.6 CONTRACTORS QUALIFICATIONS

- A. The contractor shall have a minimum of 5 years of proven experience in similar construction. Submit job history to include description, quantity, owner, engineer, addresses and telephone numbers of references.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Exercise care during unloading, storage and erection to avoid damage. Dumping on the ground is not permitted.
- B. Support material stored at the site completely free to the ground, and cover to avoid damage from the elements.

PART 2 - PRODUCTS

2.1 GENERAL

- A. To ensure proper fitting of the work, field-verify critical dimensions at the jobsite prior to preparing of Shop Drawings and before product fabrication begins. Field fabrication will not be permitted.

- B. All exposed steel, including but not limited to steel beams, columns, plates and bolts, shall be hot dip galvanized, ASTM 123.

2.2 MATERIALS (UNLESS NOTED OTHERWISE)

- A. Standard Structural Steel Shapes: ASTMA992
- B. Steel Bars and Plates: ASTM A36
- C. Steel Pipe Columns: ASTM A53, Grade B
- D. Hollow Steel Sections (HSS): ASTM A500, Grade C
- E. Shear Stud Connectors: ASTM A108
- F. Machine Bolts: ASTM A307, Grade A
- G. Anchor Rods: ASTM F1554, Grade 36
- H. Threaded Rods: ASTM F1554, Grade 36
- I. High Strength Bolts, Nuts, and Washers: ASTM A325 galvanized to ASTM A153 for galvanized components.
- J. Welding Electrodes: As permitted by AWS D 1.1. Where exposed and unpainted, select filler metal to match base metal.
- K. Paint (Primer): Fast-dry, lead- and chromate-free, rust-inhibitive shop primer; gray color.
- L. Tubular Railing: Conform to requirements of NAAMM Pipe Railing Systems Manual where same covers points not otherwise detailed or specified. Size as noted on the Contract Drawings.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verification of Conditions:
 - 1. Verify anchor bolt locations, grouting and elevation of base and setting plates, and other material set by other Trades before commencing work.
 - 2. Notify Engineer and County Representative of Work set by others which does not comply with specified tolerances. Do not erect materials upon such work until it has been satisfactorily corrected.

3.2 ERECTION

- A. Erect Work to the proper lines and levels, plumb and true, and in correct relation to other Work. Maintain this condition to completion.
- B. For steel columns, OSHA Section 1926.755 may require additional anchor bolts for stability during construction.
- C. Connections:
 - 1. Machine Bolting:
 - a. Fair-up holes with pins to align holes before bolting.
 - b. Ream unfair holes to obtain
 - c. Enlargement of holes with drift pins or burning of new holes is not permitted.
 - d. Draw bolts up tight after member are aligned and leveled, and set or deform threads to prevent loosening.
 - 2. Welding:
 - a. Weld by shielding arc method per AWS standard code for arc and gas welding in building construction.
 - b. Submit certification that welders have passed AWS code qualification tests.
 - c. Certification must be dated no earlier than 3 months prior to beginning of project.
 - d. Refer to Shop Drawings for weld size and dimensions.
 - e. Close joints exposed to weathering with continuous 1/8 inch weather welds.
 - f. Grind smooth exposed welds, but grinding shall not reduce weld strength or required cross section.
 - g. Protect finish material from damage due to welding.
 - h. Remove unsatisfactory welds by chipping or arc air method.
 - 3. Connect members temporarily and align completely before making permanent connections.
 - a. Temporary conditions shall consist of bolts in not less than 1/3 of the holes and in no case less than 3 bolts in any single connection.

- b. Surfaces in contact shall be thoroughly clean when assembled.
- c. Provide necessary temporary bracing and guying to align the structure properly for permanent connection and safely resist erection dead load and wind stress.
- d. Take particular care to have the work plumb and level (maximum tolerance 1 to 500 for interior member, 0 to 1000 for exterior members) before making permanent connection.
- e. Remove bracing and guys only after permanent alignment and assembly and structure is capable of completely sustaining design and temporary construction loads.

D. Exposed Steel:

- 1. Verify the condition of exposed steel after erection.
- 2. Exert particular care to provide a neat, accurate installation with members straight and true, corners and edge square, sharp and free from burrs and irregularities, adjacent members perfectly matched and no bolts or rivets exposed.
- 3. Removed erection bolts and seats and plug weld and grind holes smooth.
- 4. All exposed steel shall be hot-dipped galvanized.

E. Field Painting.

- 1. Spot paint abrasions, field bolts and field welds with same paint used for shop coat.

3.3 CLEANING

- A. During the course of work and on completion of the work, remove excess materials, equipment and debris and dispose of away from premises.
- B. Leave work ready to receive fireproofing when applicable.

END OF SECTION

SECTION 05 4000
COLD FORMED METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Roof framing

1.3 SUBMITTALS

- A. Product Data: For each type of cold-formed steel framing product and accessory
- B. Shop Drawings
 - 1. Provide Shop Drawings prepared by cold-formed metal framing manufacturer.
 - 2. Include layout, spacings, sizes, thicknesses, and types of cold-formed steel framing; fabrication; and fastening and anchorage details, including mechanical fasteners.
 - 3. Indicate reinforcing channels, opening framing, supplemental framing, strapping, bracing, bridging, splices, accessories, connection details, and attachment to adjoining work.
 - 4. Shop drawings shall be stamped by a professional engineer registered in the jurisdiction of the project.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Welding Certificates.
- C. Product Certificates: Code Compliance certificates for studs and tracks.
- D. Product Test Reports: For each listed product, for tests performed by manufacturer and witnessed by a qualified testing agency.

1. Steel sheet.
2. Mechanical fasteners.
3. Miscellaneous structural clips and accessories.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Member in good standing of the Steel Framing Industry Association (SFIA).
 1. Products to be certified under an independent third-party inspection program administered by an agency accredited by IAS to ICC-ES AC98 IAS Accreditation Criteria for Inspection Agencies.
- B. Provide certification of code compliance with the "Code Compliance Certification Program" implemented by the Steel Framing Industry Association (SFIA).
- C. Provide documentation on the qualifications of the contractor that will install the cold-formed steel framing. Documentation to include contractor's recognition in the Steel Framing Industry Association's (SFIA) "Contractor Certification Program."
- D. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements, including base-steel thickness, yield strength, tensile strength, total elongation, chemical requirements, and metallic-coating thickness
- E. Welding Qualifications: Qualify procedures and personnel according to the following:
 1. AWS D1.1/D1.1M, "Structural Welding Code – Steel."
 2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."
- F. Comply with the following AISI specifications and standards
 1. AISI S100 "North American Specification for the Design of Cold-Formed Steel Structural Members."
 2. AISI S200 "North American Standard for Cold-Formed Steel Framing - General Provisions."
 3. AISI S202 "Code of Standard Practice for Cold-Formed Steel Structural Framing."
- G. AISI S240 "North American Standard for Cold-Formed Steel Structural Framing."

1.6 DELIVERY, STORAGE AND HANDLING

- A. Protect cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling, as required in AISI's "Code of Standard Practice."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Provide products by Steel Framing Industry Association Members in good standing (listing found at http://www.archtest.com/certification/SFIA_SteelFraming_Intertek.aspx).

2.2 PERFORMANCE REQUIREMENTS

- 1. Cold-Formed Steel Framing Design Standards:
 - 2. Floor and Roof Systems: AISI S100 and S240.
- B. AISI Specifications and Standards: Unless more stringent requirements are indicated, comply with AISI S100 and AISI S240.

2.3 COLD-FORMED STEEL FRAMING, GENERAL

- A. Framing Members, General: Comply with ASTM C955 and AISI S240 for Conditions indicated
- B. Steel Sheet: ASTM A1003/A1003M, Structural Grade, Type H, metallic coated, or ASTM A653/A653M of grade and coating weight as follows:
 - 1. Grade: 33 KSI for 18 gauge (0.0428) and lighter and 50 KSI minimum for 16 gauge (0.0538) and heavier.
 - 2. Coating: G90
- C. Steel Sheet for Clips: ASTM A1003/A1003M, ASTM A653/A653M, structural steel, zinc coated, of grade and coating as follows:
 - 1. Grade: 50 KSI minimum
 - 2. Coating: G90

2.4 ROOF RAFTER FRAMING

- A. Steel Rafters: Manufacturer's standard C-shaped steel sections, of web depths indicated, with stiffened flanges, and as follows: with minimum base metal thickness, flange width and section properties required to meet design requirements.

- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and matching properties of steel studs.

2.5 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members.
- B. Provide accessories of manufacturer's standard thickness and configuration, required by design requirements.
- C. Hardware/connectors to be by Simpson Strong-tie as noted on the plans unless noted otherwise. Install per the manufacturer's instruction.

2.6 ANCHORS, CLIPS, AND FASTENERS

- A. Shop drawings shall include the following anchors, clips and fasteners required by the design requirements:
 - 1. Steel Shapes and Clips.
 - 2. Mechanical Fasteners, head type: low-profile head beneath sheathing, manufacturer's standard elsewhere.

2.7 MISCELLANEOUS MATERIALS

- A. Galvanizing Repair Paint: ASTM A780.
- B. Grout: See 03 60 00.
- C. Shims: Load bearing, high-density multimonomer plastic, and nonleaching; or of cold-formed steel of same grade and coating as framing members supported by shims.
- D. Sealer Gaskets: Closed-cell neoprene foam, 1/4-inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

2.8 FABRICATION

- A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
 - 1. Fabricate framing assemblies using jigs or templates.
 - 2. Cut framing members by sawing or shearing; do not torch cut.

3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by no fewer than three exposed screw threads.
 4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.
- C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
 2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Install load bearing shims or grout between the underside of load-bearing wall bottom track and the top of foundation wall or slab at locations with a gap larger than 1/4 inch to ensure a uniform bearing surface on supporting concrete or masonry construction.
- B. Install sealer gaskets at the underside of wall bottom track or rim track and at the top of foundation wall or slab at stud or joist locations.

3.3 INSTALLATION, GENERAL

- A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.
- B. Install cold-formed steel framing according to ASTM C1007 and AISI S200 and to manufacturer's written instructions unless more stringent requirements are indicated.
- C. Install shop or field-fabricated, cold-formed framing and securely anchor to supporting structure.
 - 1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.
- D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.
 - 1. Cut framing members by sawing or shearing; do not torch cut.
 - 2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
 - a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
 - b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.
- E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.
- F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.
- H. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

- I. Erection Tolerances: Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
 - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.4 JOIST INSTALLATION

- A. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.
 - 1. Install joists over supporting frame with a minimum end bearing indicated on Shop Drawings.
 - 2. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist hangers, steel clip angles, or steel-stud sections as indicated on Shop Drawings.
- B. Install bridging at intervals indicated on Shop Drawings. Fasten bridging at each joist intersection as indicated on Shop Drawings.
- C. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

3.5 FIELD QUALITY CONTROL

- A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Field and shop welds will be subject to testing and inspecting.
- C. Testing agency will report test results promptly and in writing to Contractor and Architect.
- D. Remove and replace work where test results indicate that it does not comply with specified requirements.
- E. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.6 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

- B. Provide final protection and maintain conditions, in a manner acceptable to ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 07 0411

PREFORMED (MANUFACTURED) ROOF & WALL

PANELS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. The work includes, but is not necessarily limited to, furnishing and installation of all preformed metal roofing and walls, and accessories as indicated on the drawings and specified herein.

1.2 RELATED SECTIONS

- A. Cold Formed Steel: Section 05 40 00

1.3 SUBMITTALS

A. Product Data

- 1. Submit Manufacturer's technical product data, installation instructions and recommendations for each type of roofing and wall panel required. Include data substantiating that materials comply with requirements.

B. Samples

- 1. Prior to ordering products, submit Manufacturer's standard color Samples for County Representative's/Engineer's selection.
- 2. Prior to starting work, submit (quantity) 12" long Panel Samples showing shape and a representative color chip for County Representative's/Engineer's acceptance.

C. Shop Drawings

- 1. Show panel layout, trim installation, and panel attachment.

D. Site Conditions

- 1. Provide completed site condition form for the specified finish to suit project condition.

1.4 QUALITY ASSURANCE

A. Installer's Qualification

- 1. Installation of panels and accessories by installers with a minimum of 5 years experience on panel projects of this nature.

B. Manufacturer's Qualifications

1. Manufacturer shall have a minimum of 10 years experience supplying metal roofing/siding to the region where the work is to be done.
2. Manufacturer shall provide proof of \$2,000,000 liability insurance for their metal roof system and comply with current independent testing and certification as specified. See specific product literature for testing information.
3. Panel manufacturers without full supporting literature, Flashings & Details Guides, Guide Specifications and Technical Support shall not be considered equal to the specified product.

C. Regulatory Agency Requirements.

1. Comply with UBC and local Building Code requirements if more restrictive than those specified herein.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protect against damage and discoloration.
- B. Handle panels with non-marring slings.
- C. Do not bend panels.
- D. Store Panels above ground, with one end elevated for drainage.
- E. Protect panels against standing water and condensation between adjacent surfaces.
- F. If panels become wet, immediately separate sheets, wipe dry with clean cloth, and allow to air dry.
- G. Remove any strippable film coating prior to installation and do not allow it to remain on the panels in extreme cold, heat or in direct sunlight.

1.6 WARRANTY

A. Manufacturer's Product Warranty

1. Manufacturer's standard coating performance warranty, as available for specified installation and environmental conditions. (Contact an AEP Span representative to determine actual warranty criteria.)

B. Contractor's Warranty

1. Warrant panels, flashings, sealants, fasteners and accessories against defective materials and/or workmanship, to remain watertight and weath-

erproof with normal usage for two (2) years following Project Substantial Completion date.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURER

- A. AEP Span, A Division of ASC Profiles Inc, 2110 Enterprise Boulevard, West Sacramento, Calif 95691 800-733-4955
Fontana: 1095 Beech Avenue, Fontana, California 92337
Tacoma: 2141 Milwaukee Way, Tacoma, Washington 98421
- B. Panel Designation:
 - 1. HR-36® Roof and Wall. Net coverage 36", rib depth 1-1/2" @7.2" o.c.
 - 2. Reversed HR-36® Wall. Net coverage 36", rib depth 1-1/2" @7.2" o.c.
 - 3. Reverse Box Rib Roof and Wall. Net coverage 36", rib depth 1-1/2" @ 7-13/64" o.c.
 - 4. Box Rib Wall. Net coverage 36", rib depth 1-1/2" @ 7-13/64" o.c.
 - 5. Mini-V-Beam. Net coverage 32", rib depth 1-3/8" @ 4-9/16" o.c.
 - 6. Nu-Wave® Corrugated. Net coverage 32" (roof) or 34-2/3" (wall), rib depth 7/8" @ 2-2/3" o.c.

2.2 MATERIALS

- A. Panels
 - 1. Base Metal:
 - a. Material:
 - (1) Steel conforming to ASTM A792 Zincalume®/Galvalume®, minimum yield 50,000 psi.
 - (2) Steel conforming to ASTM A653 G-90 Galvanized, minimum yield 40,000 psi.
 - b. Protective Coating:
 - (1) Conform to ASTM A792, AZ50 (Zincalume/Galvalume). or ASTM A653 G-90
 - 2. Exterior Finish:
 - a. Zincalume® Plus protective coating or G-90.

3. Interior Finish:
 - a. Primer Coat Material: Corrosion-resistant primer; primer coat dry film thickness: 0.15 mils; finish coat material: polyester paint, finish coat dry film thickness: 0.35 mils.
 - b. Color: Off-White to Light Gray
4. Color:
 - a. Manufacturer's standard selection of not less than 22 colors.

B. Fabrication

1. Unless otherwise shown on drawings or specified herein, panels shall be full length. Fabricate flashings and accessories in longest practical lengths.
2. Roofing panels shall be factory formed. Field formed panels are not acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions:
1. Inspect installed work of other trades and verify that such work is complete to a point where this work may continue.
 2. Verify that installation may be made in accordance with approved shop drawings and manufacturer's instructions.

3.2 PREPARATION

- A. Field Measurements
1. Verify prior to fabrication.
 2. If field measurements differ from drawing dimensions, notify County Representative/Engineer prior to fabrication.
- B. Protection
1. Treat, or isolate with protective material, and contacting surfaces of dissimilar materials to prevent electrolytic corrosion.

2. Require workmen who will be walking on Roofing Panels to wear clean, soft-soled work shoes that will not pick up stones or other abrasive material, which could cause damage or discoloration.
 3. Protect work of other trades against damage and discoloration.
- C. Surface Preparation
1. Clean and dry surfaces prior to applying sealant.

3.3 INSTALLATION

A. Panels

1. Follow roof panel manufacturer's directions.
2. Lap panels away from prevailing wind direction.
3. Do not stretch or compress panel side-laps.
4. Secure panels without warp or deflection.

B. Allowable Erection Tolerance.

1. Maximum Alignment Variation: 1/4 inch in 40 feet.

C. Flashing

1. Follow manufacturer's directions and County Representative approved Shop Drawings.
2. Overlap roof panels at least 6 inches.
3. Install flashings to allow for thermal movement.
4. Remove strippable protective film, if used, immediately preceding flashing installation

D. Cutting and Fitting

1. Neat, square and true. Torch cutting is prohibited where cut is exposed to final view.
2. Openings 6 inches and larger in any direction: Shop fabricate and reinforce to maintain original load capacity.
3. Where necessary to saw-cut panels, debur cut edges.

3.4 CLEAN UP AND CLOSE OUT

A.

1. Do not apply touch-up paint to damaged paint areas that involve minor scratches.
2. Panels or flashings that have severe paint and/or substrate damage shall be replaced as directed by the County Representative's or Owner's representative.

Note: AEP Span does not recommend touch-up painting of damaged surfaces (minor scratches, etc.) due to fading and weathering differences of the touch-up paints in comparison to factory applied paint systems.

B. CLEANING AND REPAIRING

1. At completion of each day's work Sand at work completion, sweep panels, flashings and gutters clean. Do not allow fasteners, cuttings, filings or scraps to accumulate.
2. Remove debris from project site upon work completion or sooner, if directed.

END OF SECTION

Section 26 0500
Common Work Results For Electrical

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes: Basic electrical materials and methods.
- B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification.
 - 1. Principal features of this installation include:
 - a. Selective Demolition of existing electrical systems.
 - b. Raceways, boxes, gutters, enclosures, power wire, cable, and conductors.
 - c. Distribution equipment, including panelboards, load centers, switchgear, motor controls, and transformers.
 - d. Fused disconnect switches, safety switches, fuses, and circuit breakers.
 - e. Grounding
 - f. Interior lighting system and controls.
 - g. Exterior lighting system and controls.
 - h. Utility company (electric, telephone, and cable television) provisions for service.
 - i. Underground system installation.
 - j. Connection of equipment.
 - k. Line voltage connection of mechanical and plumbing equipment.
 - l. Owner training.
 - m. Electrical Acceptance.
 - n. Lighting Acceptance.

1.2 RELATED SECTIONS

1. 26 08 10 ELECTRICAL ACCEPTANCE TESTING

- A. Related Sections Under Other Divisions:
 - 1. The drawings and general provisions, including supplementary conditions, of this contract apply to this section.
 - 2. Grading, patching, and repairing of existing surfaces, including but not limited to: asphalt, concrete, and vegetation, as required by the Architect/Civil Engineer.
 - 3. Painting of exposed electrical equipment/raceways as required by the Architect.
 - 4. Concrete work including but not limited to: equipment pads, luminaire bases, as required by the Architect/Structural Engineer.
 - 5. Low voltage mechanical controls including but limited to: control wiring and conduit system, as required by the Mechanical Engineer. Control wiring and conduit shall be the responsibility of DIVISION 25, Mechanical, however, shall be installed in accordance to this specification.
 - 6. Fire smoke dampers and duct mounted smoke detectors shall be the responsibility of DIVISION 25, Mechanical, however, electrical and fire alarm system connection(s) shall be installed in accordance with this specification.

1.3 SYSTEM DESCRIPTION

- A. Furnish, install, and test materials and equipment in accordance with the drawings and this specification in order to provide a complete, working installation.
 - 1. Lighting acceptance testing, documentations, and completion of California State required acceptance forms.
 - 2. Electrical system acceptance, testing, and documentation.
- B. Notify the Architect/Engineer of discrepancies within the drawings, this specification, and/or actual field conditions.
- C. Install equipment at locations indicated on the drawings as closely as field conditions permit. Obtain acceptance of equipment dimensions prior to installation through submittal review. California Electrical Code (CEC) minimum working clearances shall be maintained.
- D. Electrical drawings are diagrammatic in nature and do not reflect minor variations in equipment alignment/installation that may be necessary. Review existing field conditions and make proper adjustments as required to avoid conflict with other trades or portions of work, satisfy the design requirements, and meet code minimums. Obtain acceptance of adjustments from the Architect/Engineer.
- E. Electrical, Telephone, and Cable Television (CATV) Services:
 - 1. Provide work in accordance to Utility Companies requirements, specifications, and design drawings.
 - 2. Coordinate inspections with serving utility company, local, and state authorities having jurisdiction in order to obtain acceptance. Final adjustments and requirements pursuant to inspection(s) shall be adhered to.
 - 3. The owner shall be responsible for utility company charges incurred. The owner shall pay the respective serving utility company directly.
- F. Permits shall be obtained for electrical work. Arrange inspections with the authority having jurisdiction and obtain acceptance.
- G. Two copies of an Operating and Installation Manual shall be provided to the owner prior to final acceptance. Manuals shall reflect the installed system and include the following:
 - 1. Submittal documentation reflecting installed materials, equipment, and systems.
 - 2. Device Settings
 - 3. Testing Reports
 - 4. Maintenance requirements and battery replacement recommendations per manufacturer requirements for exit signs, luminaire battery packs, emergency luminaires, UPS's etc.
 - 5. Maintenance requirements for emergency generators.
 - 6. Certificate of product and installation warranties
 - 7. Lighting Acceptance Documentation
 - 8. Electrical Acceptance Documentation
- H. Owner training shall be prearranged prior to final acceptance. Instruct owner on the operation of equipment and systems including, but not limited to the following: device settings, system programming, and equipment testing, maintenance, and equipment locations. Provide manufacturer support as indicated per this specification.

1.4 REQUIREMENTS

A. PERFORMANCE

1. Final equipment feeder or branch circuit connections shall be coordinated with manufacturer nameplate data and specifications.

B. SUBMITTALS AND SHOP DRAWINGS

1. Shop drawings and product data (including manufacturer specification sheets) shall be submitted demonstrating compliance with the construction documents. Obtain approval from the Engineer prior to procurement.

- a. Electronic submittal packages will be accepted.
- b. Submittals shall be complete. Partial submittals will not be accepted.
- c. Identification shall be made on submittal documentation indicating compliance with contract documents and intended use. Highlighted text, notation, etc. are acceptable.
- d. Submittal documentation pertaining to Utility Company infrastructure, including but not limited to: man holes, vaults, pull boxes, and metering equipment shall be routed to the respective utility company representative (as identified on the drawings) for approval.
- e. The Engineer will review two rounds of product submittals. Should subsequent review be required beyond this to obtain acceptance, the contractor shall be responsible to compensate the engineering for time spent at the engineer's standard hourly billing rate.
- f. Equipment, materials, and components identified in the construction documents with specific manufacturer product numbers limit their use only as to the design, workmanship, and quality, not manufacturer unless otherwise noted specifically. Alternate products will be reviewed and evaluated during the submittal review process, pursuant to conformance with the contract documents. The project team reserves the right to request product samples for evaluation at no cost. The final decision will be made by the Architect. In the event that an alternate product is accepted, the following will be required:
 1. Coordination with other trades. Costs incurred as a result of the substitution will be the responsibility of the Contractor.
 2. Dimensions shall be field verified to ensure product will fit and maintain code required working clearances.
 3. Approval of a substituted product does not alleviate the contractor from providing a complete, working installation compliant with the contract documents, design intent, applicable codes, standards, and local ordinances.

2. Submittals shall include the following:

- a. Manufacturer equipment specifications, including but not limited to the following: Metering Equipment, Main switchboards, multi-meter switchboards, motor control centers, distribution switchgear, distribution panels, panel boards, load centers, transformers, circuit breakers, motor controls, disconnect switches, fuses, and transient voltage surge suppression.
 1. Grounding.
 2. Conduit raceway, innerduct, fittings, and straps.
 3. Ducts and trench racks.
 4. Conductors and terminations.
 5. Junction boxes, pull boxes, gutters, and vaults.
 6. Electrical devices including, receptacles, switches and accessories.
 7. Luminaires, ballasts, and lamps.

8. Low voltage lighting control system, including but not limited to: control panel(s), cabling, terminations, switch banks, dimmers, dimming modules, and relays.
 9. Lighting control system, including but not limited to: time clock, contactors, relays, and bypass switches.
 10. Lighting control devices, including but not limited to the following: occupancy sensors, power packs, photocells, lumen and sensors.
 11. Generator and transfer switch system and components.
 12. Uninterruptible Power Supply (UPS) system and components.
 13. Inverter system and components.
 14. Fire Penetration materials and manufacturer installation details.
 15. Finish samples and color charts.
3. Coordination with other trades to the fullest of ability is required to result in a complete, functioning, and professional installation.
 4. The construction documents are based on the most accurate information available when prepared. Minor adjustments are frequently made due to changes with respect to architectural plans, construction, and equipment furnished by others. This shall be recognized when bidding and during construction. No change in contract price will be allowed for alternate work which requires approximately the same work to adjust/relocate as a result of construction coordination work. Adequate contingency in the bid price shall allow for such coordination and adjustments.
 5. Record drawings shall be provided to the owner prior to final acceptance. Record drawings shall be maintained throughout construction and reflect and illustrate job changes as they occur. Record drawings shall:
 - a. Be submitted to the owner as a set of reproducible drawings. Hand drafted notation is acceptable, provided it is legible and clear unless otherwise noted per Architectural specifications.
 - b. Identify locations of concealed and underground conduit 1" size and larger scaled within 12" of actual field conditions.
 - c. Identify type of luminaire product installed.
 - d. Identify the location of vaults and boxes.

C. QUALITY ASSURANCE

1. Manufacturers shall be regularly engaged in the manufacture of electrical construction products of types required for this project, whose products have been of satisfactory use in similar service for not less than five years.
2. Installers shall have experience in the installation of products required for this project. Installers shall be experienced with proper installation techniques and manufacturer recommendations. In the acceptance or rejection of the finished installation, no allowance will be made for the lack of skill on behalf of the personnel.
3. Installers shall be qualified by the State of California and provide documentation to the owner of the following:
 - a. Valid Contractors License.
 - b. Valid Business License.
 - c. Individuals employed as electricians on the project shall have a valid journeyman electrician pocket card or California State Division of Apprenticeship Standards General Journeyman Electrician Certificate.

4. Electrical work shall be performed in accordance of the latest published requirements of the following codes and standards:
 - a. American National Standards Institute (ANSI)
 - b. American Society for Testing Materials (ASTM)
 - c. Institute of Electrical and Electronic Engineers (IEEE)
 - d. National Electrical Contractors Association (NECA)
 - e. National Electrical Safety Code (NESC)
 - f. National Electrical Manufacturers Association (NEMA)
 - g. California Building Code (CBC)
 - h. National Electrical Code (NEC) with California State Adoptions and Amendments.
 - i. National Fire Prevention Association (NFPA).
 - j. California Code of Regulations, Title 8, Section 290.1 (CAL OSHA).
5. Materials and equipment shall be listed by an independent testing laboratory for the class of service intended (Underwriters Laboratories or equivalent).
6. Prior to final acceptance, the electrical system shall be tested and determined to be free from grounds and short circuits.

D. DELIVERY, STORAGE AND HANDLING

1. Provide for delivery, uploading, transportation and storage of equipment until installation and final acceptance by the owner.
2. Equipment and materials shall be stored in an environment consistent with what the equipment is listed for. Pay special attention and mediate environmental conditions such as, but not limited to: temperature, moisture, water, dust, dirt, etc. Assume liability of storage facilities and equipment and materials stored therein.
3. Electrical equipment shall be free of damage upon installation. Equipment damaged in transport or while in storage on or off the job site will be rejected and shall be replaced free of charge to the owner.
 - a. The Architect, Engineer, and Owner retain the right of continuous access and inspection of stored materials and equipment.
 - b. Once installed, equipment (including luminaires) shall be protected from, but not limited to: construction activities, dirt, debris, temperature, moisture, etc. until project completion and final acceptance by the owner.

1.5 Guarantees

- A. Damaged equipment shall be repaired or replaced as necessary at no cost to the owner prior to final acceptance.
- B. Guarantees shall be submitted to the owner, in writing, prior to final acceptance.
- C. The installation, including labor, shall be warranted free of defects for a minimum of one year from date of owner final acceptance. Any defect related to the contractor's work, during the warrantee period, shall be corrected at the contractor's expense.
- D. Equipment shall be warranted free of defects for a minimum of one year or as stated in this specification, whichever is a longer duration.

Part 2 – PRODUCTS

2.1 Materials

- A. Materials, components, and accessories shall be new unless otherwise noted in this specification.
- B. Manufacturer discontinued product shall not be acceptable. Materials, equipment, and parts comprising any unit or part thereof, shall be new and unused unless otherwise noted in this specification. Damaged materials, equipment, and parts are not considered to be new and will be rejected per this specification.

Part 3 - Execution

3.1 Installation

- A. Work shall be performed by a skilled worker in a manner reflecting best, modern, construction practices and shall be consistent with acceptable means and methods of the trade and code requirements.
- B. Upon completion, work shall have a neat, orderly, and finished appearance. Evidence of debris associated with the work shall be removed from the premise and disposed of legally and appropriately.
- C. Clean equipment, both inside and out, upon final installation. If required, retouch equipment finishes in accordance with manufacturer instructions.
- D. Maintain a safe working environment, including but not limited to:
 - a. Conform to all OSHA workplace requirements.
 - b. Equipment dead front covers shall be in place while equipment is energized.
 - c. Barriers, trench plates, flags, tape, etc. shall be used to keep persons away from unsafe conditions.
 - d. Conform with owner imposed safety requirements and site standards.
- E. Coordinate raceway systems, equipment, and materials with other trades and building construction, in order to:
 - a. Avoid unnecessary project delays and conflicts.
 - b. Ensure penetrations made to exterior walls, foundations, fire rated assemblies, ceilings, and floors are approved and made per structural requirements and details.
 - c. Ensure ceiling systems, i.e. luminaires and ceiling mounted devices, do not conflict with, or limit fire sprinkler coverage.
 - d. Schedule, sequence, move, and position large equipment into the building during construction.
 - e. Coordinate sequence of work installed with other trades. Every effort shall be made to avoid unnecessary modification to work that has already been performed by other trades. Arrange for chases, slots, and openings in building components where needed during the progress of construction to allow for electrical installations.
- F. Install electrical equipment to facilitate future servicing, maintenance, repair, and replacement (either complete assembly or individual components). As much as practical, connect equipment for ease of disconnecting at a later date, with minimal interference with other installations.
- G. Motors shall be checked for proper rotation once permanent power has been established. Should the motor rotate in the wrong direction, it shall be reconnected for proper orientation.

H. Equipment Support and Installation

- a. Electrical equipment shall be anchored to building floors, foundations, concrete housekeeping pads, concrete bases where appropriate by bolts and anchor bolts with studs.
- b. After installation and before energizing electrical equipment, torque each bolted bus and cable connection in accordance to manufacturer recommendations. Calibrated torque wrenches shall be used.
- c. Screw type conductor fasteners and other permanent (i.e. epoxy conductor adhesive) shall be used in junction boxes, pull boxes, terminal cabinets, panels, switchboards, switchgear, motor control centers, variable frequency drives, or other types of enclosures containing electrical devices and/or conductors. Glue-on type conductor fasteners shall not be allowed.
- d. Support channels shall be installed as required for the support of raceways, cable trays, devices, enclosures, and other electrical equipment.
- e. Iron and steel supports shall be separated from aluminum with a minimum 1/4" neoprene or other non-metallic gasket.
- f. When working with galvanized steel product (i.e. channel, conduit, equipment), paint any field cuts and or scratches with a cold galvanizing spray paint. Ensure manufacturer requirements are met.
- g. Seismic bracing shall be provided as required per the Uniform Building Code.
- h. Electrical equipment, materials, and/or luminaires shall be securely supported and mounted independently from building structure to ensure sagging or swaying. Other trade work (for example, mechanical ducting) shall not be used as a support means for electrical.
- i. Support devices shall be sized appropriate to withstand four times the weight of equipment it supports. Bracing shall comply with structural engineering requirements and seismic design category "SDC" C.

END OF SECTION

SECTION 26 0501

SELECTIVE ELECTRICAL DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes: Basic, selective, electrical demolition.
- B. Electrical plans identifying the scope of demolition have been prepared pursuant to limited, visual, field observation and facility as-builts/record drawings.
- C. Principal features of electrical demolition include, but are not limited to, the following:
 - a. Demolition of select distribution equipment, including: service equipment, panelboards, and disconnect switches.
 - b. Demolition of select receptacles and equipment connections.
 - c. Demolition of concealed conduit in floors and walls.
 - d. Demolition of concealed conduit, abandoned in place, with conductors removed.
 - e. Demolition of surface conduit.
 - f. Demolition of select luminaires.
 - g. Demolition of lighting control system and components.

1.2 RELATED SECTIONS

- A. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
- B. Related Sections Under Other Divisions:
 - 1. The General provisions, including supplementary conditions, of this contract apply to this section.
 - 2. Grading, patching, and repairing of existing surfaces damaged pursuant to the scope of demolition, including but not limited to: walls, floors, ceilings, asphalt, concrete, and vegetation, as required by the Architect/Civil Engineer.

1.3 REQUIREMENTS

- A. Electrical demolition work shall be performed in accordance of the latest published requirements of the following codes and standards:
 - 1. National Fire Prevention Association Standard for Electrical Safety Requirements for Employee Workplaces (NFPA 70E).
 - 2. California Code of Regulations, Title 8, Section 290.1 (CAL OSHA).

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein.

PART 3 – EXECUTION

3.1 CONDITIONS

- A. Visit the site prior to bidding and observe the extent of demolition necessary pursuant to the contract documents. Should discrepancies be discovered between field conditions and the construction documents, notify the Architect/Engineer of record prior to bidding for instruction and/or clarification. Allow for proper contingency when bidding in order to account for minor variances as stated in Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL.

3.2 PREPARATION

- A. Contact the serving utility companies to coordinate service outage(s) as necessary. Parties affected by scheduled outages shall be notified in writing a minimum of 72 hours in advance.
- B. De-energize electrical distribution equipment, appliances, conductors, and circuit components prior to removal. Ensure equipment is electrically safe prior to beginning work by disconnecting equipment from its energized source and testing for the absence of voltage and grounding as applicable. Ensure electrical conductors scheduled for removal serve only abandoned equipment and devices.
- C. When work on energized equipment is required, perform work in accordance with applicable codes and standards. Proper personnel protective equipment ("PPE") and Flame Resistant ("FR") clothing shall be worn as required corresponding to the NFPA 70E Hazard Risk appropriate for working conditions. Use barricades and signage to prevent persons on the job site, not qualified or protected with proper PPE/FR clothing, from entering an area where work is being performed on energized equipment.
- D. Provide temporary power, wiring, and connections as required to maintain power to existing loads scheduled to remain operable during construction. Temporary power to such loads shall be removed upon installation of permanent power. Coordinate power outages during cut over with owner 72 hours prior. Temporary power connection(s) may be subject to additional review and inspection by the authority having jurisdiction.
- E. Flexible power cords may be used for temporary power provided they meet the following criteria:
 - 1. Are rated not less than the capacity of the device(s) supplied by the cord.

2. Are free of insulation cracks, splices, damaged conductors, and damaged plug/receptacle.
3. Inspected by the user once every 90 days.
4. Protected from damage and do not pose a trip hazard while in use on the job site.

3.3 DEMOLITION

- A. The removal of electrical infrastructure shall be done with care such to minimize damage of the existing structure or require excessive repair.
- B. Field locate, disconnect, and remove existing electrical systems scheduled for removal. Equipment connections shall be removed to source of supply.
- C. Field locate, disconnect, and remove existing luminaires scheduled for removal. Remove associated branch circuit conductors, conduit system, mounting accessories, etc.
- D. Field locate, disconnect, and remove existing electrical distribution equipment, including feeder connections to source of supply, scheduled for removal.
- E. Field locate, intercept, and relocate existing electrical systems to accommodate new construction. When electrical conduit and conductors are required to be intercepted and extended, do so with compatible materials and methods consistent with the existing installation, unless specified otherwise in the construction documents.
- F. Abandoned wiring shall be removed and de-terminated from source of supply. Wiring that has been removed shall not be re-installed or re-used onsite.
- G. Abandoned conduit shall be removed where exposed and in accessible locations (examples: surface mounted and or conduit mounted in accessible ceiling spaces). It shall be acceptable to abandon conduit in place provided conductors are removed, conduit ends are cut flush and sealed in a manner that will prevent moisture penetration. Where conduit has been cut flush with adjacent surfaces, patch and repair surfaces in a manor acceptable to the Architect/Owner.
- H. Devices, including but not limited to: receptacles, communication devices, and switches shall be removed. Remove associated cover plate(s), junction box(s), wiring, and conduit to source of supply. Where indicated on the construction documents, it shall be acceptable to maintain the existing junction box(s) and conduit system. Provide a blank cover plate at wall surface as appropriate.
- I. The existing electrical installation not scheduled for demolition shall remain accessible.

3.4 COMPLETION

- A. **SYSTEM CUT OVER** – The existing electrical, telephone, cable television, and fire alarm services shall remain installed and active until the new system is installed. The existing systems shall only be disabled and de-energized for the

amount of time required to make the final cut over and obtain acceptance from the owner and authority having jurisdiction. System cut overs shall be prearranged with the owner a minimum of 72 hours in advance. A back-up power source or interim system shall be provided at the direction of the owner. The contractor is responsible for a complete, well planned, and scheduled system cut over.

- B. Existing and new materials and equipment installed shall be clean and free of dirt and debris prior to final owner acceptance.
- C. Existing materials and equipment scheduled to remain shall be free if damage. Make repair where necessary. Ensure electrical connections are tight, replace damaged or missing device cover plates, etc.
- D. Where new branch circuits and feeders are extended from existing load- centers, panelboards, service, and/or distribution panels update the circuit breaker directory. The circuit breaker directory shall be typewritten, identify circuit number and load served, and be installed on the inner face of the panel cover door in a plastic sleeve.
- E. Install existing materials and equipment in their new location as specified in the construction documents.
- F. Allow the facility owner first right to salvaged equipment removed.

END OF SECTION 26 05 01

SECTION 26 0519

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes: Basic wire and cable for feeder and branch circuit conductors.
- B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification.
- C. Principal features of this section include, but are not limited to the following:
 - 1. Wire and cable
 - a. Solid and stranded type
 - b. SE (Service Entrance Cable) type
 - c. MC and HCF type
 - d. SO cord and SOW cable
 - 2. Connectors, Lugs, and Pads
 - 3. Splice Kits
 - 4. Strain Relief Fittings

1.2 RELATED SECTIONS

- 1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
- 2. Section 26 05 33 RACEWAYS & BOXES FOR ELECTRICAL SYSTEMS
- 3. Section 26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEM
- 4. Related Sections Under Other Divisions:
 - a. The General provisions, including supplementary conditions, of this contract apply to this section.
 - b. Control, Signal, and Communications conductors shall be as required per the manufacturer of the equipment or as specified by others.

1.3 REQUIREMENTS

- A. Materials and installation shall be in accordance with the latest published requirements of the following codes and standards:
 - 1. Materials and equipment shall be listed by an independent testing laboratory for the class of service intended (Underwriters Laboratories or equivalent).
 - 2. IEEE Standard 510 – 1992, Recommended Practices for Safety in High Voltage and High Voltage Power Testing.
 - 3. IEEE Standard 400 – 2001, Guide for Field Testing and Evaluation of the Insulation of Shielded Power Cable Systems.
 - 4. National Electrical Code, NFPA 70.

5. National Fire Protection Code 70B, Recommended Practice for Electrical Equipment Maintenance.
6. Federal Specification A-A-59544.
7. UL 83 – Thermoplastic-Insulated Wires and Cables
8. ASTM B1 – Hard-Drawn Copper Wire
9. UL 486 A and UL 486 B – Wire Connections for Copper and Aluminum
10. NECA/AA-104-2012 – National Electrical Contractors Association Recommendation for Installing Aluminum Building Wire and Cable

PART 2 - PRODUCTS

2.1 MANUFACTURERS

1. Wire, cable, SE Cable: Southwire, Okonite, or engineer of record approved equal.
2. MC and HCF cable: Southwire, AFC, or engineer of record approved equal.
3. Connectors, Lugs, and Pads: Thomas & Betts or engineer of record approved equal.
4. Strain Relief Fittings: Hubbell, or equal.

2.2 MATERIALS

- A. Copper Wire and Cable, Solid and stranded type – Suitable for operation at 600 volts in all installations as specified in the National Electrical Code. Type XHHW, THHN, or THWN insulation rated for 90 deg. Celsius in wet and dry locations. Stranded or solid for sizes smaller than and including 8 AWG and stranded for larger than size 8 AWG.
- B. Copper SE (Service Entrance Cable) type – Two or three wire copper conductor with bare ground wire. 90 deg. Celsius rated type XHHW, THHN, or THWN insulation. Copper conductors shall be annealed copper. Weather resistant polyvinyl chloride PVC jacketed. Suitable for operation at 600 volts in all installations as specified in the National Electrical Code.
- C. Aluminum SE (Service Entrance Cable) type – Two or three wire aluminum conductor with bare ground wire. 90 deg. Celsius rated type XHHW, THHN, or THWN insulation. Aluminum conductors shall be fully annealed aluminum, AA-8000, compact stranded conductors. Weather resistant polyvinyl chloride PVC jacketed. Suitable for operation at 600 volts in all installations as specified in the National Electrical Code.
- D. Copper MC and HCF type - Suitable for operation at 600 volts in all installations as specified in the National Electrical Code. Type XHHW, THHN, or THWN insulation rated for 90 deg. Celsius in dry locations, copper grounding conductor. High strength galvanized steel or aluminum interlocking (listed and identified for grounding), flexible armor. Insulated circuit and grounding conductors shall be cabled together and contained under an overall nonmetallic tape covering.
- E. Connectors, Lugs, and Pads – Connectors shall be UL listed and suitable for 600 volts in all installations and a minimum of 75 deg. Celsius rated. Strict adherence to

manufacturer installation means and methods is required. Connections shall be suitable for use with conductors installed (i.e. Copper or Aluminum). Connectors shall be appropriately sized pursuant to the conductors connected (i.e. stranded or solid). Exposed wires, clamps, and connectors shall be completely insulated with vinyl plastic tape. Indenture-compression type connectors shall be used for stranded conductors. Screw-on compression type connectors shall be used for size 8 AWG and smaller.

PART 3 - EXECUTION

3.1 CONDITIONS

- A. Follow manufacturer instructions with respect to installation in low ambient temperatures. Cables installed in cold weather shall be handled with care and pulled slower.
- B. Conductors shall have the proper listing for the environment installed (i.e. wet location, plenum ceiling, high/low ambient temperature). Conductors installed on the exterior, underground, or below floor slab shall require a wet location listing.

3.2 PREPARATION

- A. Inspect cable and reels for damage prior to installation. Ensure cable ends are sealed to prevent entrance of moisture.
- B. Consult cable manufacturer for approval of proper pulling equipment (i.e. wood reels, steel reels, etc.)
- C. Ensure pulling lubricant is approved by the manufacturer and compatible with the cable. Lubricant that is made of flammable product, wax, and/or grease is not approved.

3.3 INSTALLATION

- A. Conductors shall be installed in a permanent raceway or cable tray. Raceways shall be as sized to meet minimum code requirements or as noted on the drawings, whichever provides a larger cross-sectional area. Conduit raceway shall be installed prior to pulling conductors through.
- B. Conductor bend radii shall not exceed manufacturer recommendations during installation.
- C. Do not exceed manufacturer limitations for the amount of pulling tension applied to the conductors. Avoid pulling different conductor sizes, with different tension limitations, at the same time. Pull tension calculations shall be performed prior to pulling conductors to ensure maximum pulling stress allowed by the manufacturer.
- D. Do not exceed manufacturer limitations with respect to maximum side wall pressure.

- E. Dedicated neutral conductors shall be provided for each single phase circuit (i.e. one neutral conductor for each phase conductor) with the exception of multiwire branch circuits where either a common handle tie, two, or three pole circuit breaker is used in accordance with NEC 210.4 (B).
- F. Conductors shall be as specified on the drawings. Conductors smaller than 12 AWG shall not be used for commercial projects and 14 AWG for residential projects.
- G. Copper Wire and Cable, either solid, compact stranded, or stranded type shall be color coded pursuant to voltage and phase configuration. Phase A – Black (208V, 240V), Brown (480V). Phase B – Red (208V), Orange (240V, 480V). Phase C – Blue (208V, 240V), Yellow (480V). Neutral – White (208V, 240V), Gray (480V). Ground – Green (208V, 240V, 480V). Isolated Ground – Green w/ colored strip (208V, 240V, 480V).
- H. MC and HCF type cable shall be allowed with the following restrictions and criteria:
 - 1. For branch circuits in concealed, non-exposed, dry, areas where there are accessible ceiling spaces.
 - 2. MC and HCF cable shall not be used for branch circuit homeruns. Homerun conductors shall be installed in conduit per 26 05 33 RACEWAYS & BOXES FOR ELECTRICAL SYSTEMS.
 - 3. Cable runs shall be secured and supported at intervals not less than six feet unless otherwise permitted per code.
 - 4. Cable runs shall be installed with the radius of the curve of the inner edge of any bend not less than seven times the cable diameter.
 - 5. MC and HCF type cable shall be installed per the cable manufacturers through-penetration firestop system listed by Underwriters Laboratory, or equivalent listing agency.
 - 6. MC and HCF cable shall not be used in exposed, underground, overhead, direct burial, or wet locations.
 - 7. MC and HCF cable shall not be used for emergency or critical branch circuits in healthcare facilities except as permitted in NEC 517.30(C)(3)(3).
- I. Service Entrance Cable, Type SE, shall be used for residential service drops from the distribution or service panel to the load center. In addition, four wire residential equipment connections size 8 AWG and greater.
- J. The use of pulling compounds is allowed. Pulling compounds shall be applied before and/or during the pull.
- K. Cable shall be installed in a neat and workmanlike manor. Cable shall be installed parallel or perpendicular to walls. Diagonal runs shall not be permitted. Cables routed in cable tray shall be organized and tie wrapped.
- L. Cables installed in cabinets and panelboards shall be bundled in a neat and orderly fashion in the wireway. Conductors shall be held clear of sharp edges.
- M. Conductors in panels, cabinets, switchgear, motor control cabinets, pull boxes, etc. shall be labeled indicated branch circuit designation and source of supply.

- N. Conductors shall be installed in an approved raceway. Each raceway shall also contain a grounding conductor size per NEC table 250.122.

3.4 TESTING

- A. Insulation Resistance (IR) testing shall be conducted for branch circuit conductors rated 400 amps and higher in accordance with IEEE Standards . Testing shall be done with a dc potential of 500 to 1,000 volts dc. Avoid testing conditions such as humidity, moisture in conductors, and excess pulling lubricants.
- B. The conductors shall be de-energized prior to resting. Remove grounds from the cable phase that will be tested only.
- C. Test results shall be recorded and provided to the owner. Testing records shall include testing instrument used, feeder specifications, conductor insulation type, voltage applied, conduit specification, length of conductor, and megohm meter reading.

END OF SECTION 26 05 19

SECTION 26 0526

GROUNDING AND BONDING OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes: Basic grounding and bonding of electrical systems.
- B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification for a complete grounded and bonded system.

1.2 DEFINITIONS

- A. Definitions shall be consistent with Article 100 of the National Electrical Code, with California State Amendments.
 - 1. "Bonding Jumper" – A reliable conductor to ensure the required electrical conductivity between metal parts required to be electrically connected.
 - 2. "Bonding Jumper, Equipment" – The connection between two or more portions of the equipment grounding conductor.
 - 3. "Bonding Jumper, Main" – The connection between the grounded circuit conductor and the equipment grounding conductor at the service.
 - 4. "Ground" – The earth.
 - 5. "Grounded" (grounding) – Connected (connecting) to ground or to a conductive body that extends the grounded connection.
 - 6. "Grounded, Solidly" – Connected to ground without inserting any resistive or impedance device.
 - 7. "Grounded Conductor" – A system or circuit conductor that is intentionally grounded.

1.3 RELATED SECTIONS

- 1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
 - 2. Section 26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
 - 3. Section 26 05 46.13 UNDERGROUND ELECTRICAL CONSTRUCTION AND SERVICE
- A. Related Sections Under Other Divisions:
 - 1. The General provisions, including supplementary conditions, of this contract apply to this section.

1.4 REQUIREMENTS

- A. Grounding and bonding of the electrical system shall be performed in accordance to the latest published requirements of the following codes and standards. Note, grounding and bonding of electrical systems shall be specific to electrical equipment and conductive material, establishing an effective ground-fault current path and personal safety.
 - 1. National Electrical Code (NEC), with California State Amendments, Article 250 – Grounding
 - 2. IEEE Standard 81 – Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials for a Grounded System
 - 3. IEEE Standard 142 – Recommended Practice for Grounding of Industrial and Commercial Power Systems
 - 4. ASTM B1 – Hard-Drawn Copper Wire
 - 5. ASTM B8 – Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.
 - 6. UL 83 – Thermoplastic-Insulated Wires and Cables
 - 7. UL 467 – Grounding and Bonding Equipment

1.5 GUARANTEES

- A. Materials and equipment shall be listed by an independent testing laboratory for the class of service intended (Underwriters Laboratories or equivalent).

PART 2 - MATERIALS

2.1 MATERIALS

- A. Ground Rods – Copper-covered steel, minimum ¾” diameter x 10’ long.
- B. Grounding Conductor – Insulated green stranded (No. 8 AWG and larger) and solid (No. 10 AWG and smaller) copper. Insulated green with yellow stripe is acceptable pursuant to NEC.
- C. Bonding Conductors – Shall be bare stranded copper, with the exception of solid bare copper for No. 10 AWG and smaller sizes as required per NEC.
- D. Connectors, Clamps, Splices, Termination Components, & Mechanical Lugs - Industry standard type for connection grounds, bonding, splicing, tapping and similar. Shall be appropriate for the conductor size as permitted by the manufacturer.
- E. Ground Bars – 10” L x ¼” thick copper ground bar with wall mounting kit. Ground bar shall include tapped holes for grounding conductor connections. Extend a #6 AWG copper ground wire from the main electrical service to the ground bar. Attach the ground wire to the ground bar via a cad weld connection.

PART 3 - EXECUTION

3.1 GENERAL CONDITIONS

- A. Grounding shall be performed in accordance to the National Electric Code Article 250 requirements.
- B. Drive ground rods and install grounding conductors prior to construction of concrete slabs, structural equipment pads, and general equipment housekeeping pads.
- C. Grounding conductors shall be sized per the drawings. When a ground conductor size is not identified, the size shall be installed to meet minimum NEC requirements. Refer to NEC Table 250.66 for grounding electrode conductors and NEC Table 250.122 for equipment grounding conductors for grounding raceway and equipment.
- D. Switches for controlling lighting loads shall be grounded in accordance to NEC Article 404. Switches shall not disconnect the grounding conductor unless otherwise indicated specifically on the drawings. The grounding circuit conductor for the lighting circuit shall be provided at the location where switches control lighting loads that are supplied by a grounded general-purpose branch circuit. Note exceptions as outlined specifically in NEC 404.4(C)1-7.
- E. Snap switches, including dimmer and control switches, shall be connected to an equipment grounding conductor as outlined in NEC 404.9. Provide snap switches with an equipment bonding jumper connected to the equipment grounding termination of the snap switch.
- F. Equipment grounding conductors, grounding electrode conductors, and bonding jumpers shall be connected by one or more of the following means as outlined in NEC 250.8: Listed pressure connectors, terminal bars, exothermic welding process, machine screw type fasteners, thread-forming machine screws, and connections part of a listed assembly. Connections made solely of solder shall not be permitted.
- G. Where ground clamps and fittings are subject to physical damage, maintain protective covering by means of metal, wood, or equivalent. Coordinate in field.
- H. Contact surfaces shall be thoroughly cleaned of nonconductive coatings (i.e. paint, lacquer, and enamel) before connections are made to insure good metal contact.
- I. Grounding conductors shall be installed in every raceway, both metallic and non-metallic, unless specifically identified on the drawings or permitted per this specification.
- J. Inaccessible Grounding Connections: Ground connections that are/will be inaccessible upon completion of construction shall be made via exothermic welds or clamp suitable for direct bury.
- K. Ground Connections Requiring Periodic Testing, Not Subject to Physical Damage: Where periodic testing is required for ground connections, the grounding electrode,

where the ground conductor connection is made, shall be exposed and stubbed up above grade (approx.. 3-4”), in an area not subject to physical damage.

- L. Ground Connections Requiring Periodic Testing, Subject to Physical Damage: Where periodic testing is required for ground connections, the grounding electrode, where the ground conductor connection is made, shall be exposed (approx.. 3-4”), integral to a flush in grade pull box.
- M. Grounding at serving electric utility company interface shall be made pursuant to utility company specifications and field inspection requirements.
- N. Obtain inspector of record acceptance as required and prior to below grade and/or inaccessible connections are completed and concealed.
- O. 480Y/277V, solidly grounded “wye” only connected service disconnects, 1000A and larger, must have ground fault protection in addition to conventional overcurrent protection.

3.2 INSTALLATION

- A. Ground Rods: Shall be driven into the earth. The quantity of rods shall be determined per ground resistance testing. Adequate ground rods shall be provided to maintain a minimum ground resistance defined per. Where auxiliary ground rods are required, the installed shall be in accordance to NEC 250.54. Electrodes shall be installed within, and not less than, 6 feet spacing between. Ground rods shall be bonded together, and considered a single grounding electrode system. Bonding connections shall be made by either clamps, suitable for direct burial, via an exothermic weld. The ground rod and connection shall remain accessible.
- B. Install bonding jumpers between sections of loosely jointed metallic raceways (i.e. expansion fittings and telescoping raceways) to ensure electrical continuity.
- C. Where circuit conductors are spliced within a pull box, junction box, or terminated on equipment within or supported by a pull box, junction box, or like, the associated equipment grounding conductor shall be terminated at the box via listed grounding means in accordance to NEC Article 250.
- D. Metal raceways, cable trays, enclosures, frames, fittings, and other metal non- current-carrying parts that are to serve as grounding conductors shall be bonded where necessary to ensure electrical continuity per NEC Article 250.96.
- E. Ground non-current-carrying metallic parts of fixed, portable, and mobile equipment and associated fences, housings, enclosures, floors, and supporting structures.
- F. Bond all conductive components of the conduit system, both interior and exterior to the building grounding electrode system. Bonding connections shall be made as close as practical to the equipment ground bus.
- G. Bond all conductive components of the communications raceways system, including but not limited to: conduit, cable trays, conduit sleeves anticipated for use with low

voltage signaling or data cabling. Bonding connections shall be made via two (2) no. 10 AWG copper conductors. Maintain a minimum of 4" separation. Where exposed to physical damage, install a no. 6 AWG copper conductor in lieu of the references no. 10 AWG copper conductor.

H. System Grounding:

1. The grounding electrode conductor shall be connected from the load side of the electrical service drop or lateral to the main electrical equipment ground terminal or bus at the service disconnecting means. The ground terminal or bus shall be secured via bolts to the equipment enclosure. A main bonding jumper shall be installed between the grounded conductor terminal bar, or bus, to the secondary service neutral bus at the main service equipment.

I. Grounding Electrodes: Grounding electrodes present at each building or structure shall be bonded together to the grounding electrode system, with exceptions as defined per the NEC. Grounding or bonding conductors shall be connected to the grounding electrode by exothermic welding, listed lugs, listed pressure connectors, listed clamps, or other listed means. Electrodes permitted per NEC Article 250, part III for grounding include:

1. Metal underground water pipe in direct contact with the earth for 10 feet and electrically continuous.
2. Metal building frame or structure.
3. Concrete-encased electrodes.
4. Ground Rings.
5. Rod and Pipe Electrodes.
6. Listed Electrodes.
7. Plate Electrodes.
8. Other Local Metal Underground Systems or Structures.

J. Secondary Equipment:

1. Switchgear, Motor Control Centers, Panelboards, and Loadcenters – Ground conductors of feeders and branch circuits shall terminate at the equipment ground bar or bus. Provide ground bushings for metallic conduits connecting to the physical enclosure. Isolated ground conductors shall terminate at a dedicated/isolated ground bar or bus where indicated on the drawings.
2. Metallic structures, enclosures, piping, ductwork, raceways, pull boxes, junction boxes, outlet boxes, etc. associated with or in close proximity to shall be bonded and grounded as part of the electrical system.
3. Fixed Appliances fastened in place or connected by permanent, fixed, wiring methods shall be provided with a ground lug for connection of the branch circuit/feeder equipment grounding conductor.
4. Transformers – The transformer core shall be grounded to the enclosure. Where a transformer supplying the electrical service and is located outside of the building, the transformer neutral shall be grounded at the transformer secondary. Transformer grounding shall be installed per CEC Article 250, with special attention per the following:
 - a. Transformer connection to a grounding electrode and grounding electrode conductor.

- b. Connection of the grounded conductors to the nearest available point of metal water piping systems (s) and the exposed structure frame in the area that is served by the transformer.
 - c. Equipment grounding conductor of the transformer primary circuit.
- 5. Motors and Starters – Terminate grounding conductors at the ground lug integral to the enclosure, terminal box, etc.
- 6. Receptacles – Install an equipment bonding jumper connecting the grounding terminal of the receptacle to a grounded device box/junction box. The box shall be metallic. The equipment bonding conductor shall be terminated at the box by either a listed grounding clip or grounding screw. Size the equipment bonding conductor pursuant to the overcurrent device protecting the branch circuit conductors.
- 7. Floor Boxes – Shall be designed and listed to provide ground continuity between the device and the box.
- 8. Luminaires – Shall be grounded through the associated conduit system. Where the luminaire manufacturer provides a green ground wire, connect it to the branch circuit grounding conductor.

3.3 TESTING

- A. Ground resistance testing shall be conducted per IEEE standards four-point fall –of-potential method to determine the resistance between the ground system and earth.
- B. Ground resistance shall not exceed 25 ohms.
- C. Ground resistance testing shall be performed in the presence of the authority having jurisdiction.
- D. Ground resistance testing report shall be included in O&M documentation and provided to the owner prior to final acceptance.
- E. GFI circuit breakers and GFI convenience receptacles shall be thoroughly tested during installation and at the completion of the project.

END OF SECTION 26 05 26

SECTION 26 0533

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes: Raceways and boxes for electrical systems.
- B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification.
 - 1. Principal features of this installation include:
 - a. Conduit and associated fittings
 - b. Cable sleeves
 - c. Outlet, device, pull, and junction boxes
 - d. Conduit bodies
 - e. Wire Gutters
 - f. Handhole enclosures
 - g. Concrete pull boxes and vaults
 - h. Fiberglass/composite pull boxes and vaults

1.2 RELATED SECTIONS

- 1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
- 2. Section 26 05 46.13 UNDERGROUND ELECTRICAL CONSTRUCTION AND SERVICE
- 3. Section 26 05 53 IDENTIFICATION OF ELECTRICAL SYSTEMS
- 4. Section 26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
- 5. Related Sections Under Other Divisions:
 - a. The General provisions, including supplementary conditions, of this contract apply to this section.
 - b. Painting of exposed raceways and/or boxes as required by the architect.
 - c. Grading, patching, and repairing of existing surfaces, including but not limited to: asphalt, concrete, and vegetation, as required by the Architect/Civil Engineer.

1.3 REQUIREMENTS

- A. Materials and installation shall be in accordance with the latest published requirements of the following codes and standards:
 - 1. Materials and equipment shall be listed by an independent testing laboratory for the class of service intended (Underwriters Laboratories or equivalent).
 - 2. National Electrical Code (NEC) with California State and local amendments.
 - 3. UL 1 – Flexible Metal Conduit

4. UL 5A – Nonmetallic Surface Raceway and Fittings
5. UL 6 – Electrical Rigid Metal Conduit - Steel
6. UL 6A – Electrical Rigid Metal Conduit – Aluminum, Stainless Steel
7. UL 50 – Enclosures for Electrical Equipment, Non-Environmental Considerations.
8. UL 360 – Liquid Tight Flexible Steel Conduit
9. UL 514A – Metallic Outlet Boxes
10. UL 514B – Conduit, Tubing, and Cable Fittings
11. UL 514C – Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers
12. UL 651 – Schedule 40, 80, Type EB, and A Rigid PVC Conduit and Fittings
13. UL 651A – Schedule 40 and 80 High Density Polyethylene (HDPE) Conduit
14. UL 797 – Electrical Metallic Tubing – Steel
15. UL 797A – Electrical Metallic Tubing - Aluminum
16. UL 886 – Outlet Boxes and Fittings for Use in Hazardous (Classified) Locations
17. UL 1660 – Liquid-Tight Flexible Non-metallic Conduit
18. UL 1653 – Electrical Non-Metallic Tubing
19. UL 2225 – Standard for Cables and Cable-Fittings for Use in Hazardous (Classified) Locations
20. American National Standards Institute (ANSI) OS1 and OS2
21. National Electrical Manufacturers Association (NEMA) FB1 and 250

PART 2 - PRODUCTS

2.1 MATERIALS

A. Raceways

1. Raceway product shall be rated for use with 90 degree Celsius power wiring conductors.
2. Rigid Non-Metallic Conduit
 - a. Schedule 40, wall thickness of 0.113 inches, Polyvinyl Chloride (PVC) construction, Bell end feature, manufactured in accordance with NEMA standard TC-2 (conduit) and TC-3 (fittings).
 - b. Schedule 80, wall thickness of 0.154 inches, Polyvinyl Chloride (PVC) construction, Bell end feature, manufactured in accordance with NEMA standard TC-2 (conduit) and TC-3 (fittings).
3. Galvanized Rigid Steel (GRS) Conduit – Hot-dip galvanized, zinc coated rigid steel conduit, manufactured in accordance with ANSI C80.1.
4. Electrical Metallic Tubing (EMT) – Light gauge, steel raceway with zinc galvanized coating manufactured in compliance with ANSI C80.3.
5. Electrical Non-Metallic Tubing (ENT) – Pliable corrugated raceway of circular cross section made of Polyvinyl chloride (PVC) manufactured in compliance with NEMA Standard TC-13.
6. Flexible Metal Steel Conduit (FMC) – Galvanized, corrosion resistant, high strength steel alloy. Metal strip is helically formed into continuously interlocked flexible metal conduit. Manufactured in accordance with Federal Specification WW-C-566c.
7. Liquid Tight Flexible Metallic Conduit (LFMC) – Manufactured with a spiral wound strip of heavy gauge, corrosion-resistant, hot-dipped galvanized steel. For 3/8"

through 1-1/4" trade sizes, a square locked steel strip with an integral copper-bonding strip enclosed within the steel convolutions. For 1-1/2" through 4" trade sizes, the core is constructed with a fully interlocked steel strip. Flexible, rugged, flame retardant, PVC jacket extruded over the steel core. The jacket shall resist oils, mild acids and exposure to sunlight. Rated for temperature range of -30 to +80 degrees Celsius.

8. Liquid Tight Flexible Non-Metallic Conduit - Manufactured with a spiral of rigid PVC reinforcement imbedded within a flexible PVC wall, resistant to oils, mild acids and exposure to sunlight. Rated for a temperature range of -30 to +80 degrees Celsius.
9. Conduit Supports – Unistrut, Caddy or engineer approved equal. Conduit supports shall consist of; clamps, straps, brackets, clips, j-hooks trapeze hangers, "C" channel strut etc.
10. Conduit Fittings – Thomas & Betts, O-Z Gedney, or engineer approved equal. Fittings shall be appropriate for use with the conduit system installed. Fittings shall consist of connectors, rigid and flexible, adaptors, bushings, liquid tight (as required), locknuts, etc.

B. Boxes

1. Manufacturers
 - a. Outlet Boxes – Bowers, Steel City, Raco, or engineer approved equal.
 - b. Weatherproof outlet boxes – Bell, Red Dot, or engineer approved equal.
 - c. Weatherproof outlet box "While-in-use" locking cover – Red Dot "CK" series or engineer approved equal.
 - d. Masonry Boxes - Bowers, Steel City, Raco, or engineer approved equal.
 - e. Pull boxes, Junction Boxes, and Gutters – Hoffman, Circle AW, or engineer approved equal.
 - f. Vaults (non-utility company use), Handhole enclosures – Christy, Oldcastle Enclosure Solutions, Brooks Products, or engineer approved equal.

C. Accessories

1. Manufacturers
 - a. Box Extension Adaptor – Bell, Red Dot, or engineer approved equal.
 - b. Putty Pads – 3M, Hilti, or engineer approved equal.

PART 3 - EXECUTION

3.1 General

- A. Raceway systems shall be installed in accordance to uses permitted per code.
- B. Raceways and boxes penetrating a listed fire rated assemblies (i.e. walls, floors, and ceilings) shall be installed with use of an UL approved classified through-penetration fire stop systems. Fire Stop System installation must meet requirements of ASTM E 814, UL 1479 or UL 2079 tested assemblies that provide a fire rating equal to that of construction being penetrated.

- C. Trenching and backfilling for underground raceway systems is the responsibility of the contractor. Refer to trench requirements detailed on the drawings and Section 26 05 46.13 UNDERGROUND ELECTRICAL CONSTRUCTION AND SERVICE requirements. The contractor is required to implement traffic control and provide barriers as required to protect excavated areas.
- D. Seismic Support shall consist of approved channel (either in combination or pierced), heavy/standard duty concrete inserts, hangers, nuts, hardware, general support fittings (i.e. Angle supports, beam clamps, pivot fittings, retrofit fittings, brace-anchor fittings, and hinge fittings). Electrical equipment shall be anchored and braced to meet the horizontal and vertical forces identified in the California Building Code.

3.2 CONDUIT SYSTEM

- A. Minimum conduit size shall be $\frac{1}{2}$ ", with the following exceptions:
 - 1. When a larger size is required to meet Code.
 - 2. Underground and/or under slab conduit shall be a minimum $\frac{3}{4}$ ".
- B. Systems (i.e. power, control, communications, etc.) shall be installed in dedicated raceways. Systems shall not be combined within a raceway unless specifically identified in the construction documents.
- C. Install conduit runs in accordance to the schematic representation as indicated on the drawings and as specified. Modify conduit runs to suite field conditions as accepted by the engineer of record.
- D. Install conduit runs for branch circuits and or feeders where only circuit numbers are identified on the plans, without schematic conduit routing shown.
- E. Install conduit runs in straight lines, parallel to planes of walls and/or ceilings, with uniform and symmetric elbows, offsets, and bends. Conduit shall not be run diagonally.
- F. Be conscious of the elevation by which underground conduits are installed. The open conduit end at the building and/or where it transitions into distribution equipment shall be at a higher elevation such to prevent the infiltration of water through the conduit raceway.
- G. Conduit shall be installed such that it does not interfere or block equipment, ingress/egress, or access hatches.
- H. Conduit shall be securely fastened by means of clamps and/or straps as required per the NEC. Type 316 stainless steel straps and/or clamps shall be used with exposed PVC-coated rigid steel conduit. Provide appropriate conduit hangers, supports, fasteners, and seismic restraints.
- I. Liquid-tight, flexible conduit shall be used in short lengths as required for final motor connections and/or vibrating equipment.

- J. Conduit bends shall be made such that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. Form or field bend conduit with appropriate tools. Conduit shall be routed such that it does not exceed a cumulative angular sum of 360 degrees in bends between junction boxes, pull boxes, conduit bodies, handholes, and vaults
- K. When re-using existing raceway(s) and/or installing new raceways, verify raceway(s) are free of internal debris and are not crushed or creased prior to installing conductors or cables. The use of a mandrel may be required. The contractor shall replace conduit sections that are determined to be damaged and/or obstructed.
- L. Spare and empty conduits shall be properly plugged with the appropriate cap and/or insert. The use of tape, "duct" tape or like, will not be acceptable. Spare conduit identified on the drawings shall be retained as spare and shall not be used during construction unless prior authorization is given from the engineer of record.
- M. Special attention shall be paid to atmospheric conditions (i.e. Corrosion, sunlight, chemicals, abrasion, moisture) and occupancies pursuant to the NEC. Raceway systems shall be suitable for the environment in which they are installed.
- N. Use of dissimilar metals shall not be allowed. Boxes, fittings, enclosures, and conduit supports shall be of the same metal, with or without coatings, as the conduit type.
- O. Galvanized Rigid Steel (GRS) risers shall be used where conduit runs are installed equal or in excess of 150 LF. GRS elbows shall be used where the top of the elbow is installed less than 18 in. below finished grade, with conduit rising up from below grade to terminate at an equipment enclosure, disconnect switch, device, machinery, etc. above grade. GRS risers and elbows shall either be PVC coated, as identified in this specification, or tape wrapped to a minimum of 3" above finished grade or the top of the equipment pad or slab, whichever is applicable to the installation condition.

3.3 RACEWAYS

- A. Rigid Non-Metallic Conduit – Rigid Polyvinyl Chloride (PVC) schedule 40 and/or 80. Utilize below grade, in/under slab or foundation, not where subject to physical damage or at operating temperatures outside of product listing. Cut ends shall be trimmed inside and outside to remove rough edges.
- B. Galvanized Rigid Steel (GRS) Conduit - Utilize where exposed between +18" below grade and +8' above finished grade where exposed to physical damage. Cut ends shall be reamed or otherwise finished to remove rough edges. Tape wrap where located below grade.
- C. Electrical Metallic Tubing (EMT) – Utilize exposed or concealed, where not subject to physical damage, underground, and in/under slab. Couplings and connectors used with shall be made up tight and of die cast, insulated/non-insulated, set screw type. Stainless steel fittings shall be used in high corrosive areas. Compression type, weatherproof fittings shall be used in damp and wet locations.

- D. Electrical Non-Metallic Tubing (ENT) – Shall be used in concealed, dry locations within walls, floors, and ceilings. Special attention shall be paid to buildings exceeding three floors above grade. Do not use where subject to physical damage, in direct bury applications, in hazardous (classified) locations, in theaters, where exposed to direct sunlight, or at operating temperatures outside of product listing. Fittings, outlet boxes, and cement shall be designed and listed for use with ENT. ENT shall be color coated as follows: BLUE for branch circuiting, YELLOW for communications, and RED for fire alarm and emergency systems. Where nails and/or screws are likely to penetrate installed ENT, a steel sleeve, plate or clip not less than 1.6mm in thickness shall be used to protect the tubing.
- E. Flexible Metallic Tubing (FMT) - May be used in interior exposed/concealed locations. Do not use in wet locations, hoistways, hazardous (classified) locations, underground or embedded in concrete/aggregate, and where subject to physical damage. All cut ends shall be trimmed or otherwise finished to remove rough edges, except where fittings that thread into the convolutions are used. Flexible metal conduit shall not be used in cumulative lengths exceeding 30 linear feet. Liquid Tight Flexible Conduit shall be installed in damp and wet locations. Fittings shall be set screw, squeeze type, use for appropriate damp, wet, or dry location. Fittings shall be of grounding type.

3.4 CONDUIT SUPPORTS

- A. Provide a conduit supports system consisting of; clamps, straps, brackets, clips, j-hooks trapeze hangers, "C" channel strut etc. The use of J-hook style supports shall be restricted to not exceeding 1" conduit and wood frame construction. Ensure support is provided with isolation material or cushion as required for shock absorption, sound and vibration isolation, protection from corrosion and abrasion, and allowance for expansion and contraction. Conduit supports shall be selected for use given the conduit size and weight. Follow manufacturer recommendations for pipe spacing when supported, bolt torque. Conduit supports are subject to the approval of the AHJ. Corrections required to obtain approval shall be the sole responsibility of the contractor.

3.5 CONDUIT FITTINGS

- A. Fittings shall be appropriate for use with the conduit system installed. Fittings shall consist of connectors, rigid and flexible, adaptors, bushings, liquid tight (as required), locknuts, etc. Connection devices and or fittings that depend solely on solder shall not be used for grounding and bonding. Protect fittings from physical damage. Fittings shall be tight using suitable tools. Fittings shall be insulated when used with raceways that contain 4 AWG or larger conductors per NEC 300.4.

3.6 BOXES

- A. Junction boxes, pull boxes, and conduit bodies shall be sized a minimum per NEC Article 314. Adhere to volume and fill calculations as identified in the code.
- B. Metallic boxes shall be bonded and grounded in accordance to NEC Article 250.

- C. Listed weatherproof boxes, conduit bodies, and fittings are required for use in damp and wet locations.
- D. Terminal blocks shall be installed in junction/terminal boxes as required.
- E. Pursuant to NEC Article 314, boxes installed in walls or ceilings with a surface of concrete, tile, gypsum, plaster, or other noncombustible material, using a flush-type cover or faceplate shall be installed so that the front edge of the box, plaster ring, extension ring, or listed extender will not be set back of the finished surface more than a ¼ in. In walls and ceilings constructed of wood or other combustible surface material, boxes, plaster rings, extension rings, or listed extenders shall be flush with the finished surface or project therefrom. In addition, there shall be no gaps around a flush-type cover or faceplate greater than 3/8 in. at the edge of the box.
- F. Junction and pull boxes shall be installed such that access is not restricted by obstructions such as, but not limited to: piping, ladders, and equipment.
- G. Outlet boxes and junction boxes installed in fire rated construction shall be installed Metallic and nonmetallic boxes that are classified for fire resistance by Underwriters Laboratories (UL) Inc. The spacing between boxes cannot be less than 24 inches, however closer spacing shall be permitted where wall opening protective materials are installed according to the requirements of their classification. These materials shall be found under CLIV in the Fire Resistance Directory published by UL. Boxes shall be installed so that the surface area of individual boxes does not exceed 16 square inches, and the aggregate surface area of the boxes does not exceed 100 square inches per 100 square feet of surface area.
- H. Outlet Boxes
 - 1. Non-metallic outlet boxes are permitted for residential applications only where used with type NM-B "Romex" cable.
 - 2. Galvanized Steel outlet boxes shall be used throughout unless otherwise noted in this specification. Metallic boxes shall be grounded and bonded in accordance to NEC requirements.
 - 3. Luminaire boxes and lampholders shall be listed for such purpose and shall have threaded entries or hubs. Outlet boxes supporting luminaires shall be rated for 50 lbs. or less. Luminaires weighing over 50 lbs. shall not be supported from the outlet box and shall be supported independently from the building structure.
 - 4. Paddle Fan outlet boxes shall be metallic and listed to support fans up to 70 lbs. Paddle fans weighing over 70lbs. shall be supported independently from the building structure. Utilize bracing/bar hangers between ceiling framing.
- I. Weatherproof outlet boxes and covers shall be die-cast metal, powder-coated silver finish, corrosion resistant, provided with threaded conduit ends, and NEMA 3R rating.
- J. Outlet boxes for receptacles installed outdoors in a damp and/or wet locations shall have an enclosure for the receptacle that is weatherproof when the receptacle is in use (i.e. "While-in-use" over). "While-in-use" covers shall be metallic and the appropriate gang construction (i.e. Single, double) as required for the device indicated on the drawings.

- K. Masonry Boxes shall be suitable for use imbedded in concrete or masonry and shall be protected from corrosion.

3.7 ACCESSORIES

- A. Box Extension Adaptors shall be provided with either die cast aluminum or cast iron, with gasket construction appropriate for use with the outlet box intended. Extensions and adaptors shall be of appropriate gang construction (i.e. Single, double) as required and shall be either round, square, or flanged as required.
- B. Putty Pads shall be moldable and listed for the appropriate use (i.e. Fire stop or sound). Prior to application excess water, dirt, oil, or debris shall be removed. Ensure the pad size is selected appropriately to ensure the entire surface of the box is covered with a smooth and even thickness. Trim excess putty pad material to allow for the application of conduit fittings. Conduits shall be sealed as they enter/leave the box. Follow manufacturer application instructions.
- C. Provide outlet box mounting brackets, hangars, extension, plaster rings, studs, clamps, and straps as required.

END OF SECTION 26 05 33

SECTION 26 0546.13

UNDERGROUND ELECTRICAL CONSTRUCTION AND SERVICE

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes: Complete underground electrical raceway system.
- B. Furnish labor, materials, equipment, components, and necessary services to support design requirements as show on the drawings and specified herein in this specification.
 - 1. Principal features of acceptance include:
 - a. Trenching
 - b. Pull boxes
 - c. Conduit
 - d. Ducts

1.2 RELATED SECTIONS

- 1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
 - 2. Section 26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES.
 - 3. Section 26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
 - 4. Section 26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
 - 5. Section 26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEMS
- A. Related Sections Under Other Divisions:
 - 1. The General provisions, including supplementary conditions, of this contract apply to this section.
 - 2. Grading, patching/repair of existing surfaces (asphalt, concrete, vegetation, etc.).
 - 3. Concrete work including but not limited to: equipment pads, luminaire bases, as required by the Architect / Civil / Structural Engineer.

1.3 QUALITY ASSURANCE

- A. Electrical work shall be performed in accordance of the latest published requirements of the following codes and standards:
 - 1. National Electrical Code (NEC) with California State Adoptions and Amendments.
- B. Electrical work for site power / communication utilities shall adhere to the respective utility company design drawings (i.e. "handout package") and standard specifications. Work done prior or in advance of shall be done at risk.

PART 2 - EXECUTION

2.1 CONDUIT

- A. Direct buried cable shall not be allowed.
- B. Conduit installed underground shall maintain minimum cover requirements as defined in the NEC / CEC Table 300.5, "Minimum Cover Requirements, 0 to 600Volts, Nominal". Consistent with the NEC / CEC cover shall be defined as the shortest distance measured between a point on the top surface of any direct buried conduit or other raceway and the top surface of finished grade, concrete, asphalt, or other surface. Lower cover shall only be allowed where specified with concrete encasement.
- C. Where subject to physical damage conduit shall be rigid metal conduit or schedule 80 PVC.

2.2 TRENCHING

- A. Backfill material shall not contain large rocks, paving material, cinders, large sharp angular materials / substances, or corrosive materials and like.
- B. Actual trench depth shall be adequate to maintain required cover as indicated per NEC / CEC Table 300.5, "Minimum Cover Requirements, 0 to 600Volts, Nominal".
- C. "Joint Trenching" by means of combining different dry utilities in a common trench shall be utilized where practical, within utility company allowances / restrictions.
- D. Electric and / or communication conduit systems shall not share a common trench with wet utility systems (i.e. water, sewer, sanitary drains, propane, storm drain, or the like). Adequate separation clearance shall be maintained between wet and dry conduit systems defined by the civil engineer. Warning ribbon or tape shall be installed in conduit trenches as identified on the drawings.
- E. Warning ribbon or tape shall be installed in trenches at not more than 12" above the underground installation, for direct buried conduit installed 18" below grade.
- F. Conform to inspection requirements set forth by the AHJ and / or Utility Company. If applicable, ensure trenches are inspected prior to backfill.
- G. Coordinate trench routing with actual field conditions. Every effort shall be made to reduce / eliminate the need for sharp turns / bends.

2.3 PULL BOXES

- A. Pull boxes shall be adequately protected / suitable for the environment in which they are installed. For example, traffic rated covers / acceptable installation practice as defined per the manufacturer shall be utilized where pull boxes are installed in a location subject to vehicular traffic (non-incidental).

- B. Excavate approximately 6" deeper than the overall height and 4-6" wider (all four sides) than the pull box enclosure. Pull boxes shall be installed on a 3-6" bed of compacted material (i.e. sand or gravel is acceptable). The compacted material shall be level such that the pull box is installed flush with the adjacent finished grade.
- C. In the event a pull box is installed in concrete / pavement where subject to occasional, non-deliberate vehicular traffic, an 8" wide section of concrete shall be installed on all four sides of the pull box, extending from grade to 8" below grade.

2.4 TEMPORARY CONSTRUCTION POWER

- A. As required, the contractor shall be responsible for coordinating with the local utility company for the installation of temporary construction power. Costs associated with temporary construction power installation, including associated utility company fees, shall be included in the contractor's bid.

2.5 UTILITY COORDINATION FOR NEW SERVICE

- A. Utility service requirements as shown on the drawings are provided for reference only and are subject to the approval of the Utility Company and final issuance of the Utility Company design drawing, or "hand out" package. The contractor shall be fully responsible to coordinate with the Utility Company and install utility systems as directed by the Utility company.

END OF SECTION 26 05 46.13

SECTION 26 0553

IDENTIFICATION OF ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes: Identification of electrical systems.
- B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification.
 - 1. Principal features of this installation include identification of electrical systems by means of:
 - a. Warning Signs
 - b. Warning ribbon
 - c. Arc Flash Signage
 - d. Name Plates
 - e. Device Labels and tags

1.2 RELATED SECTIONS

- 1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
 - 2. Section 26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
 - 3. Section 26 24 16 PANELBOARDS AND LOAD CENTERS
 - 4. Section 26 27 26 WIRING DEVICES
- A. Related Sections Under Other Divisions:
 - 1. The General provisions, including supplementary conditions, of this contract apply to this section.

1.3 REQUIREMENTS

- A. Identification of electrical systems shall be performed and installed in accordance to the latest publication of the following codes and standards:
 - 1. National Electrical Code (NEC) with California State Amendments.
 - 2. ANSI Z535.4 Guidelines – Product Safety Signs and Labels
 - 3. National Fire Prevention Association Standard for Electrical Safety Requirements for Employee Workplaces (NFPA 70E).

1.4 PERFORMANCE

- A. Labels shall be suitable for the environment where they are installed with consideration given to exposure to chemicals, sunlight, and abrasion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Nameplates
 - 1. Normal Power: Black lamicoid with white letters fastened with round head, stainless steel screws.
 - 2. Emergency Power: Red lamicoid with white letters fastened with round head, stainless steel screws.
- B. Warning Ribbon – Min. 6” wide made of polyethylene film or detectable laminated aluminum designed for direct burial. Warning ribbon shall not be made of materials that will biodegrade.
- C. Warning Signs – Printed adhesive polyester protected by clear polyester laminate for general use. Provide rigid polyethylene signage where abrasion is of concern or where adhesive signage is not appropriate.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Warning Signs
 - 1. Rooms and other guarded locations that contain exposed, live parts shall have conspicuous warning signs posted at the entrance forbidding unqualified persons to enter.
 - 2. Rooms where the operating voltage exceeds 600V, nominal, shall be kept locked and shall be provided with a conspicuous warning sign that reads the following: “DANGER – HIGH VOLTAGE – KEEP OUT”.
 - 3. Are required where electric energy is provided to equipment from more than one source.
 - 4. Warning signs shall be provided on utilization equipment that has 120VAC control voltage source used for interlocking. The panel, circuit number, and conductor tag of the control voltage source disconnect shall be identified.
- B. Warning Ribbon
 - 1. Warning ribbon or tape shall be installed in conduit trenches as identified on the drawings. Pursuant to the NEC, warning tape shall be required for conductors that are not concrete encased and buried 18” below grade or more.
 - 2. Warning ribbon or tape shall be installed in trenches at not more than 12” above the underground installation.
- C. Arc Flash Signage
 - 1. Electrical equipment, such as switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers, that are in other than dwelling occupancies, and are likely to require examination, adjustment, servicing, or maintenance while energized shall be field marked to warn qualified

persons of potential electric are flash hazards. The marking shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment pursuant to NEC 110.16.

2. Arc Flash labels shall meet the requirements of NFPA 70E and contain the following information:
 - a. At least *one* of the following:
 - 1) Calculated available incident energy and corresponding working distance
 - 2) Minimum arc rating of clothing
 - 3) Required PPE (Personal Protective Equipment)
 - 4) Highest Risk Category (HRC) for the equipment
 - b. Nominal system voltage
 - c. Arc flash boundary

D. Name Plates

1. Nameplates shall be provided for electrical equipment enclosures such as, but not limited to: service and/or distribution switchgear, motor controls, transformers, panels, load centers, lighting control panels, fire alarm control panels, cabinets, motors, generators, inverters, uninterruptible power supplies (UPS), and transfer switches.
2. Nameplates shall be provided for separately enclosed devices such as, but not limited to: circuit breakers, disconnect switches, contactors, time clocks, and relays.
3. The following, minimum, information shall be included on equipment and enclosed device identification:
 - a. Voltage Rating
 - b. Source
 - c. Load Served
 - d. Circuit/Feeder designation
 - e. Primary and secondary voltages and load served (transformers only).

E. Available Fault Current

1. Service equipment, excluding dwelling units shall be marked with the available fault current and date of calculation / equipment installation in accordance to CEC 110.24(A).

F. Device Labels

1. Isolated ground receptacles in patient care areas shall be identified with a permanent sign or label that reads: "Caution-Not for Patient Equipment Use" per NEC 517.16.
2. Switches not within sight from the load controlled.
3. Junction boxes shall be labeled with the branch circuit and/or feeder conductors passing through the box. Hand-written labeling via permanent marker is acceptable provided it is in a visible location and is legible.

G. Raceway Identification (Tags)

1. Identify conductors at each termination. Tag conductors with sleeve type labels.
2. The following, minimum, information shall be included on wire and cable identification:

- d. Circuit number or load identification tag number,
 - b. Origin from source.
 - c. Destination to load.
- H. Grounding Conductors larger than 6 AWG
 - 1. Grounding conductors larger than 6AWG shall have the insulation or covering marked with green tape or green adhesive labels at the termination pursuant to NEC 250.119.

END OF SECTION 26 05 53

SECTION 26 2213

LOW VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes: Basic low voltage transformers, dry-type, general purpose, rated for application 1500kva (and below) at 600 volts (and below)
- B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification.
 - 1. Principal features of this installation include:
 - a. Single-phase and three-phase general purpose, individually mounted, dry-type transformers of the two-windings type, self-cooled as specified herein, and as shown on the contract drawings.

1.2 RELATED SECTIONS

- 1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
 - 2. Section 26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
 - 3. Section 26 05 33, RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
 - 4. Section 26 05 26, GROUNDING AND BONDING OF ELECTRICAL SYSTEMS
 - 5. Section 26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEM
- A. Related Sections Under Other Divisions:
 - 1. The General provisions, including supplementary conditions, of this contract apply to this section.
 - 2. National Fire Protection Association (NEPA): 70-2007 California Electrical Code (CEC)
 - 3. National Electrical Manufacturers Association (NEMA): ST 20-1992 Dry-Type Transformers for General Applications
 - 4. National Electrical Manufacturers Association (NEMA): TP-1-1996 Energy Efficient Transformers

1.3 SYSTEM DESCRIPTION

- A. SUBMITTALS AND SHOP DRAWINGS
 - 1. Outline dimensions and weights.
 - 2. Transformer ratings including: kVA, primary and secondary voltage, taps, basic impulse level (BIL) for equipment over 600 volts, design impedance, insulation class and temperature rise, and sound level.
 - 3. The following information shall be submitted for record purposes.

- d. Final as-built drawings and information, incorporating all changes made during the manufacturing process.
- b. Connection diagrams.
- c. Installation information.
- d. Seismic certification and equipment anchorage details as specified.
- e. Product data sheets.

1.4 QUALIFICATIONS

- A. For the equipment specified herein, the manufacturer shall be ISO 9001 or 9002 certified.
- B. The manufacturer shall be a participant in the UL Data Acceptance Program (DAP) under the Client Test Data Program (CTDP) certification to ensure UL test methodologies and record traceability complies with the requirements of ISO 17025.
- C. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years.
- D. DELIVERY, STORAGE AND HANDLING
 - 1. Equipment shall be handled and stored in accordance with manufacturer's instructions. One (1) copy of these instructions shall be included with the equipment at time of shipment.
- E. OPERATION AND MAINTENANCE MANUALS
 - 1. Equipment operation and maintenance manuals shall be provided with each assembly shipped, and shall include instruction leaflets and instruction bulletins for the complete assembly and each major component.

1.5 GUARANTES

- A. Independent testing laboratory listing is required. Note Underwriters Laboratories, "UL", is referenced throughout this specification. However, equivalent listing agencies will be accepted.

1.6 PERFORMANCE

- A. Transformers shall meet the requirements of the most current version of federal law CFR Title 10 Part 431 "Energy Efficiency Program for Certain Commercial and Industrial Equipment".

PART 2 - PRODUCTS

2.1 MATERIALS

- A. The listing of specific manufacturers below does not imply acceptance of their products that do not meet the specified ratings, features and functions. Manufacturers listed above are not relieved from meeting these specifications in their entirety. Products in compliance with the specification and manufactured by others not named will be considered only if pre-approved by the Engineer of record ten (10) days prior to bid date.
1. Eaton Cutler Hammer
 2. Square-D
 3. ACME

2.2 DRY TYPE TRANSFORMERS

A. CONSTRUCTION AND RATINGS

1. Self-cooled by natural convection, isolating windings, indoor, dry type.
2. The kVA and voltage ratings shall be as indicated on the drawings. Ratings shown on the drawings are for continuous-duty without the use of cooling fans.
3. Transformer sound levels shall not exceed ANSI and NEMA levels for self-cooled ratings.
4. Insulation systems:
 - a. Transformer insulation system shall be as follows: Less than 15 kVA: 180 degrees C insulation system with 115 degree C rise, encapsulated design; 15 kVA and above: minimum of 200 degree C insulation system with 115 degree C rise, ventilated design.
5. Required performance shall be obtained without exceeding the above indicated temperature rise in a 40 degrees C maximum ambient, and a 24-hour average ambient of 30 degrees C.
6. All insulation materials shall be flame-retardant and shall not support combustion as defined in ASTM Standard Test Method D635.

B. CORE AND COIL ASSEMBLIES

1. Transformer core shall be constructed with high-grade, non-aging, silicon steel with high magnetic permeability, and low hysteresis and eddy current losses. Maximum magnetic flux densities shall be substantially below the saturation point. The transformer core volume shall allow efficient transformer operation at 10% above the nominal tap voltage. The core laminations shall be tightly clamped and compressed. Coils shall be wound of electrical grade copper with continuous wound construction.
2. On three-phase units rated 30 kVA and below and single-phase units rated 15 kVA and below the core and coil assembly shall be completely encapsulated in a proportioned mixture of epoxy or resin and aggregate to provide a moisture proof, shock-resistant seal. The core and coil encapsulation system shall minimize the sound level.

3. On three-phase units rated 45 kVA and above and single-phase units rated 25 kVA and above the coils assembly shall be impregnated with non-hydroscopic, thermosetting varnish and cured to reduce hot spots and seal out moisture; the core shall be coated with HAPs (Hazardous Air Pollutants) free water reducible electrical varnish to give good corrosion resistance. The assembly shall be installed on vibration-absorbing pads
4. Terminals shall be welded to the leads of the coils for better conductivity, less maintenance, and lower risk of hot spots. Terminals shall not be spot welded or bolted to the coil leads.

C. TAPS

1. Three-phase transformers rated 15 through 225 kVA shall be provided with six 2-1/2% taps, two above and four below rated primary voltage. Three-phase transformers rated greater than 225 kVA shall be provided with manufacturer's standard taps for that rating.
2. All single-phase transformers, and three-phase transformers rated below 15 kVA and above 500 kVA, shall be provided with the manufacturer's standard tap configuration.

D. ELECTROSTATIC SHIELDING

1. Where shown on the drawings, provide shielded isolation transformers with an electrostatic shield consisting of a single turn of aluminum placed between the primary and secondary winding and grounded to the housing of the transformer.
2. Electrostatic shield shall provide primary to secondary winding capacitance between 24 and 18 picofarads over the range of 100 Hz to 20 kHz.
3. Electrostatic shielding shall provide the following minimum attenuation when tested per MIL-Std-220A, Method of Insertion Loss Measurement, with matched impedance no load technique: Common mode noise attenuation: Minus 80 dBA minimum at 0.1 kHz to 1.5 kHz; minus 55 dBA minimum at 1.51 kHz to 100 kHz. Normal mode (Transverse mode) noise attenuation: Minus 35dBA minimum at 1.5 kHz to 10 kHz.

E. WIRING / TERMINATIONS

1. Recommended external cable shall be rated 90 degrees C (sized at 75 degrees C ampacity) for encapsulated and 75 degrees C for ventilated designs. Connectors should be selected on the basis of the type and cable size used to wire the specific transformer.

2.3 ENCLOSURES

- A. The enclosure shall be made of heavy-gauge steel. All transformers shall be equipped with a wiring compartment suitable for conduit entry and large enough to allow convenient wiring. The maximum temperature of the enclosure shall not exceed 90 degrees C per UL requirement. The core of the transformer shall be grounded to the enclosure.

- B. On three-phase units rated 30 kVA and below and single-phase units rated 25 kVA and below the enclosure construction shall be encapsulated, totally enclosed, non-ventilated, NEMA 3R, with lifting provisions.
- C. On three-phase units rated 112.5 kVA and above and single-phase units rated 50 kVA and above the enclosure construction shall be ventilated, NEMA 2, drip-proof, with lifting provisions. All ventilation openings shall be protected against falling dirt. On outdoor units, provide weathershields over ventilated openings.
- D. Ventilated type transformers that meet 10 CFR Part 431 efficiency requirements, with a core size of 150 kVA or less, shall be suitable for installation with 2-inch clearance from a wall or other obstruction behind the transformer enclosure.

2.4 FINISH

- A. Steel enclosures shall be finished with ANSI 61 color, weather-resistant enamel. Stainless steel enclosures shall not be painted

PART 3 - EXECUTION

3.1 INSTALLATION

- A. The Contractors shall install all equipment per the manufacturer's recommendations and the contract drawings.
- B. Install the transformers with adequate clearance at a minimum 6 inches or more from wall and adjacent equipment for air circulation to remove the heat produced by transformers and as recommended by the manufacturer to achieve U.L. listing.
- C. Install transformers on vibration pads designed to suppress transformer noise and vibrations.
- D. Use flexible metal sealtight conduit to contain the conductors from the transformer to the raceway system.

3.2 FIELD ADJUSTMENTS

- A. Adjust taps to deliver appropriate secondary voltage.

3.3 FIELD TESTING

- A. Measure primary and secondary voltages for proper tap settings.

END OF SECTION 26 22 13

SECTION 26 2416

PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes: Panelboards.
- B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification. Panelboards shall be furnished and installed with the quantity, rating, and type of circuit breakers as shown on the contract documents.

1.2 RELATED SECTIONS

- 1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
 - 2. Section 26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEM
 - 3. Section 26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
 - 4. Section 26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
 - 5. Section 26 05 26 GROUNDING FOR ELECTRICAL SYSTEMS
- A. Related Sections Under Other Divisions:
 - 1. The General provisions, including supplementary conditions, of this contract apply to this section.
 - 2. Painting of panelboards as required.

1.3 SYSTEM DESCRIPTION

A. SUBMITTALS AND SHOP DRAWINGS

- 1. In addition to Section 26 05 00 COMMON RESULTS FOR ELECTRICAL requirements, the following shall be submitted to the Engineer of Record prior to procurement:
 - a. Dimensioned outline drawing.
 - b. Component list.
 - c. Knockout configurations.
 - d. Cable terminal sizes, including maximum conductor rating that can be terminated.
 - e. Enclosure and door assembly.
 - f. Panelboard ratings, including:
 - 1) Continuous Current (i.e. "Ampacity")
 - 2) Voltage and phase
 - 3) Short Circuit Rating in "kAIC".

- g. Circuit Breaker ratings, including:
 - 1) Breaker type (i.e. plug-in, bolt on)
 - 2) Continuous Current (i.e. "Ampacity")
 - 3) Voltage and phase
 - 4) Interrupting Rating in "kAIC".
- 2. The following shall be included in the O&M manual and provided to the facility owner prior to final acceptance:
 - a. Final as-built conditions documenting changes made during construction.
 - b. Wiring Diagrams
 - c. Certified production test reports
 - d. Installation information, including equipment anchorage provisions.
 - e. Seismic certification as specified.

1.4 GUARANTEES

- A. Independent testing laboratory listing is required. Note Underwriters Laboratories, "UL", is referenced throughout this specification. However, equivalent listing agencies will be accepted.
- B. Independent testing shall be conducted for all GFI circuit breakers installed in main panelboards. Results shall be included in O&M documentation and provided to the owner prior to final acceptance.
- C. The manufacturer of the assembly shall be the manufacturer of the major components within the assembly.
- D. For the equipment specified herein, the manufacturer shall be ISO 9001 or 9002 certified.
- E. The manufacturer of this equipment shall have produced similar electrical equipment for a minimum period of five (5) years. When requested by the Engineer, an acceptable list of installations with similar equipment shall be provided demonstrating compliance with this requirement.

1.5 REQUIREMENTS

- 1. Panelboards associated components and circuit breakers shall be manufactured, tested, and installed in accordance to the latest published requirements of the following codes and standards:
 - 1. National Electrical Code (NEC) with California State and local jurisdiction amendments.
 - 2. UL 67 – Standards for Panelboards
 - 3. UL 50 – Standards for Cabinets and Boxes
 - 4. UL 489 – Standards for Molded Case Circuit Breakers
 - 5. UL 1699 – Arc-Fault Circuit Interrupters
 - 6. UL 869 – Standards for Service Equipment
 - 7. UL 486B - Requirements for Wire Connectors and Soldering Lugs

8. Federal Specification W-C 375 A and B – Circuit Breakers
9. Federal Specification W-P-115c – Panel, Power Distribution
10. NEMA Standard PB1 – Panelboards
11. NEMA Standard AB3 – Molded Case Circuit Breakers

PART 2 - PRODUCTS

2.1 MATERIALS

- A. The listing of specific manufacturers below does not imply acceptance of their products that do not meet the specified ratings, features and functions. Manufacturers listed above are not relieved from meeting these specifications in their entirety. Products in compliance with the specification and manufactured by others not named will be considered only if pre-approved by the Engineer of record ten (10) days prior to bid date.
1. Eaton Cutler Hammer / Eaton Corporation
 2. Square-D
 3. Siemens

2.2 PANELBOARDS

A. RATINGS

1. Panelboards shall be rated for AC voltage and short-circuit as indicated on the drawings. The short-circuit rating shall not be less than 10,000 amperes rms symmetrical.
2. Panelboards shall be labeled with the UL short-circuit rating from the manufacturer.

B. CONSTRUCTION

1. Dead-front construction shall be utilized.
2. Interiors, with the exception of the branch circuit breakers, shall be completely factory assembled with a main breaker, main lugs only, or double lugs as specified on the drawings.
3. Where double lugs are not permitted by the authority having jurisdiction, provide a pull box or gutter, sized per NEC code as required for connections. The pull box or gutter shall be located adjacent to the panelboard enclosure.
4. Interiors shall be designed so that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors. In addition, interiors shall be designed so that circuits may be changed without machining, drilling or tapping.
5. Physical means must be provided to prevent the installation of more over-current devices than that number for which the enclosure was designed. Full size breakers are required.
6. Dust filters shall be installed for vented openings.

C. BUS

1. Bus bars for the main and cross connectors shall be of copper construction in accordance with UL (or equivalent) standards. Busing shall be braced throughout to conform to industry standard practice governing short-circuit stresses. All connection points shall be tin-plated copper. Bus bars shall be mounted to a rigid metal back pan.
2. Neutral bus shall have a suitable lug for each outgoing feeder requiring a neutral connection that is the same of same ampacity as the branch circuit.

D. WIRING/TERMINATION

1. Wire, connectors, and terminals shall be of the anti-turn solderless type and suitable for copper or aluminum wire of the sizes indicated in the construction documents. Connectors shall meet UL 486B.

E. CIRCUIT BREAKERS

1. Molded case type circuit breakers shall be 3/4-inch wide per pole. Multi-pole circuit breakers shall be of a stack pole design to provide electrical phase isolation and have an internal common trip.
2. Circuit breaker operating handles shall indicate "ON" and "OFF" breaker positions.
3. Each pole of the circuit breaker will have inverse time delay overload and instantaneous short-circuit protection by means of both thermal and magnetic sensors.
4. The circuit breaker calibration shall not be affected by environmental changes in relative humidity. Breakers shall be calibrated after assembly.
5. Circuit breakers shall be operated by a toggle-type handle and multi-pole circuit breakers shall have an internal common trip mechanism. The circuit breakers shall incorporate trip mechanisms that are mechanically trip-free from the handle. The handle position shall provide good visual trip indication.
6. Contacts shall be of non-welding silver alloy.
7. Each pole shall contain phase barriers and arc quenching.
8. Circuit breakers shall be molded case thermal-magnetic quick-make/quick-break, over toggle type suitable for use in systems having a short-circuit capacity as indicated on the drawings.
9. Instantaneous, thermal magnetic, long-time delay trip elements shall be provided per each pole.
10. Panelboard branch circuit breakers shall be full-size, with a minimum rating of 20 amperes.
11. Ground fault breakers for personnel (5 ma) and equipment (30 ma) protection shall be available through 60 amperes.
12. All terminals shall be listed for use with copper or aluminum conductors. Terminals shall be of the box lug design. The terminals shall meet UL 486B requirements and shall be suitable for use with either 60 degree or 75 degree Celsius wire, unless otherwise specified.
13. Where indicated on drawings, supply arc fault circuit interrupters (AFCI) or arc fault circuit interrupters with ground fault circuit interruption (AFCI w/GFCI). The breaker shall provide parallel arc detection and protection in addition to overload and short-circuit protection.
14. Main Circuit Breakers greater than 125 amperes shall be a molded case design. Main breakers utilizing 4-pole bundled mains are not permitted. Single-phase

main breakers 200 amperes and less shall have a side-to-side toggle mechanism allowing for top or bottom mounting.

F. ENCLOSURES

1. Enclosures shall be mounted, either surface or flush, and have the appropriate NEMA listing (1, 3R, or 4X) as indicated on the drawings.
2. Boxes shall be made from cold rolled code gauge sheet steel having multiple knockouts, except where noted. Rain tight boxes shall use galvanized steel or an approved coating system which meets or exceeds NEMA standards for outdoor type 3R enclosures. Boxes shall be of sufficient size to provide at least a minimum code gutter space on all sides.
3. The cover shall have an easy adjustment feature for flush applications.
4. Covers shall be provided with a lock, and keyed to operate from one key.
5. Boxes shall be factory assembled into a single rigid structure.

G. FINISH

1. Boxes and trims shall be finished with a high scratch resistant aesthetically pleasing finish. The finish paint shall be of a type to which field applied paint will adhere.

PART 3 - EXECUTION

3.1 CONDITIONS

- A. Panelboards shall be installed in locations indicated on the drawings.
- B. Provisions shall be made for future conduit/branch circuit installations. In flush mount panels, install one $\frac{3}{4}$ " conduit from the enclosure to an accessible ceiling space location for every four spare circuit breakers or spaces.
- C. Maximum circuit breaker height installation shall not exceed +6'7" above finished floor or platform pursuant to the requirements of NEC 404.8(A).
- D. The depth of structure shall be adequate to accommodate flush mounted enclosures.

3.2 FINISHING

- A. Protect panelboards pursuant to Section 26 05 00, COMMON WORK RESULTS FOR ELECTRICAL until final acceptance by owner.
- B. Provide circuit breaker marking labels and directories. Directories shall be typewritten and included in a plastic sleeve. Mount directories on the interior face of the equipment cover. Marking labels and directories shall reflect as-built conditions and final room names.

- C. The key to the panelboard shall be left inside the plastic circuit breaker directory sleeve or provided to the owner upon final acceptance.

3.3 COMPLETION

- A. Demonstrate operation of equipment to owner prior to acceptance.

END OF SECTION 26 24 16

SECTION 26 2726

WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes: Basic wiring devices
- B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification.
 - 1. Principal features of this installation include:
 - a. Receptacles
 - b. Switches
 - c. Dimmers

1.2 RELATED SECTIONS

- 1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
 - 2. Section 26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
 - 3. Section 26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
 - 4. Section 26 05 33 RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS
 - 5. Section 26 05 53 IDENTIFICATION OF ELECTRICAL SYSTEMS
 - 6. Section 26 24 16 PANELBOARDS
- A. Related Sections Under Other Divisions:
 - 1. The General provisions, including supplementary conditions, of this contract apply to this section.

1.3 GUARANTEES

- A. Materials and equipment shall be listed by an independent testing laboratory for the class of service intended (Underwriters Laboratories or equivalent).

1.4 REQUIREMENTS

- A. Wiring devices and associated components shall be manufactured, tested, and installed in accordance to the latest published requirements of the following codes and standards:
 - 1. National Electrical Code (NEC) with California State and local amendments.
 - 2. Department of Justice ADA Standards for Accessible Design
 - 3. UL 20 – General-Use Snap Switches
 - 4. UL 231 – Power Outlets
 - 5. UL 498 – Attachment Plug and Receptacles
 - 6. UL 514D – Cover Plates for Flush-Mounted Wiring Devices

7. UL 943 – Ground Fault Circuit-Interrupters
8. UL V0 – Flame Rating for Flat Panel Connection Enclosure Trim Ring
9. National Electrical Contractors Association NECA 130 Standard for Installing and Maintaining Wiring Devices
10. NEMA WD1 – General Color Requirements for Wiring Devices

PART 2 - PRODUCTS

2.1 MATERIALS

A. Receptacles

1. General
 - a. 120V volts, 20 ampere minimum rating for commercial projects and 15 ampere minimum for residential projects. Refer to plans for specific ratings of higher ampacity.
 - b. 240V receptacles, ampacity as indicated per plans, shall be provided with appropriate cord and plug.
2. Single, Duplex, and/or Double Duplex as indicated per the drawings.
3. Full or half switched as shown on the drawings. Half switched double duplex receptacles shall have the top receptacle switched and the bottom receptacle un-switched.
4. Ground Fault Circuit Interrupter (GFCI) – Shall be used for the protection of personnel, in accordance to UL 943 and located as defined in NEC Article 210.8.
5. Isolated Ground shall be provided per the drawings. Receptacles shall feature full size ground contacts with a minimum 3/16" thick minimum nylon isolation insulator.
6. Arc-Fault Circuit Interrupter (AFCI) type receptacles shall be provided for receptacles connected to 120V, 1-phase, 15 and 20 ampere branch circuits supplying outlets installed in dwelling units, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms. AFCI type receptacles shall be protected by a listed arc-fault circuit interrupter, combination-type, installed to provide protection for the branch circuit.
7. Listed tamper-resistant type receptacles shall be installed in dwelling unit areas as defined per NEC Article 210.52 as well as pediatric patient care areas in healthcare facilities per NEC Article 517, for receptacles 15 and 20 ampere rated.
8. Damp Locations – Receptacles shall have an enclosure for the receptacle that is weatherproof when the receptacle is covered (attachment plug cap not inserted and receptacle covers closed). Receptacles 15 and 20 ampere, 120 and 240V non-locking receptacles shall be listed weather-resistant type.
9. Wet locations - Receptacles 15 and 20 ampere, 120 and 240V, installed in a wet location shall have an enclosure that is weatherproof whether or not the attachment plug cap is inserted. Receptacles 15 and 20 ampere, 120 and 240V, non-locking, shall be listed weather-resistant type. All other receptacles installed in a wet location shall be in accordance to the NEC.
10. Flat Panel (television) Connection Enclosure – 2-gang in-wall enclosure, 18 ga. Cold rolled steel base, white powder coat finish, high impact ABS trim ring with power, surge protector, A/V, communication, HDMI devices as indicated per plans.
 - a. Manufacturer: Hubbell Wiring System "Net Select" or engineer approved equal.

- B. Switches
 - 1. 120V volts, 20 ampere minimum rating. Refer to plans for specific ratings of higher ampacity.
 - 2. Shall be Decora Rocker/Toggle, Pilot, and/or key locking type.
 - 3. Commercial specification grade, self-grounding, 30-degree max. temperature rise, 1HP max rating, steel strap, thermoplastic actuator and body, and side wired.

2.2 ACCESSORIES

- A. Wall plates - Shall be approx. 1/8" larger than the rough-in box opening and have curved corners. Captive screws shall be utilized. Finish shall be smooth and easy to clean.
 - 1. Standard or ganged together where appropriate or as shown per plans.
 - 2. Material Type:
 - a. Non-conductive, high-impact nylon.
 - 3. Waterproof faceplate assemblies shall provide a watertight connection between the plate and finished surface.

2.3 FINISHES

- A. Devices
 - 1. Other Receptacles
 - a. Device finishes shall be Almond, black, brown, gray, ivory, light almond, red, or white.
 - b. Device finish shall be as specified by the Architect. Verify with architect prior to procurement.
- B. Wall Plates
 - 1. Wall plate finish shall match device color.
 - 2. Metallic wall plates shall have natural metal finishes.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prior to installation, outlet boxes shall be free of debris.
- B. Extension rings shall be used to bring outlet boxes flush with the finished surface as required.

3.2 INSTALLATION

- A. Wiring devices shall be installed per the NECA "Standard for Installing and Maintaining Wiring Devices".
- B. Outlet boxes shall be installed flush in building construction unless specifically identified as surface mounted per the plans.

- C. Switches shall be installed with the "OFF" position orientated down.
- D. When ganging dimmers together, consult manufacturer requirements and allow for proper derating.
- E. Junction boxes less a wiring device (i.e. provision made for future) shall have a blank wall plate installed. In finished areas, blank plates shall match material and finish type of adjacent receptacles and switches.
- F. Install cast iron plates on surface mounted outlet boxes and junction boxes in unfinished areas.
- G. Wiring devices shall be installed at as defined per the drawings and in compliance with ADA standards.
- H. Coordinate device mounting heights prior to rough in. In no instance shall a device be roughed in mid-span between finish types. For example, if wainscot is installed along the walls, switches shall be installed completely in or completely above wainscot material.
- I. Switches shall be installed on the "strike" side of door frames unless specifically noted otherwise on the drawing due to architectural conflicts (i.e. full height windows). Verify door swings with architectural plans prior to rough in.
- J. A bonding jumper shall be installed between the receptacle ground terminal and outlet box, in addition connected to the equipment grounding conductor. The bonding jumper shall be sized per NEC requirements.
- K. Feed-thru wiring is not acceptable.
- L. Receptacles shall be tested to ensure proper polarity. If polarity is reversed, corrections shall be made at no cost to the building owner or appropriate party.

3.3 FINISHING

- A. Adjust wall plates to be flush and level with surface. Devices and plates shall be installed square and plumb with building lines.
- B. Clean exposed surfaces and remove construction debris.

END OF SECTION 26 27 26

SECTION 26 2816

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

- A. This section includes: Enclosed switches and circuit breakers.
- B. Furnish labor, materials, equipment, components, and necessary services to support the electrical work show on the drawings and specified herein in this specification.
 - 1. Principal features of this installation include:
 - a. Molded case circuit breakers
 - b. General duty disconnect switches
 - c. Heavy duty disconnect switches

1.2 RELATED SECTIONS

- 1. Section 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL
- 2. Section 26 05 53 IDENTIFICATION OF ELECTRICAL SYSTEMS
- 3. Section 26 24 16 PANELBOARDS
- A. Related Sections Under Other Divisions:
 - 1. The General provisions, including supplementary conditions, of this contract apply to this section.

1.3 REQUIREMENTS

- A. Materials and installation shall be in accordance with the latest published requirements of the following codes and standards:
 - 1. Materials and equipment shall be listed by an independent testing laboratory for the class of service intended (Underwriters Laboratories or equivalent).
 - 2. National Electrical Code (NEC) with California State and local amendments.
 - 3. ASTM E 329 - Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction.
 - 4. Federal Specification FS W-C-375 - Circuit Breakers, Molded Case, Branch Circuit and Service.
 - 5. NEMA KS 1 - Enclosed Switches
 - 6. NEMA 250 - Enclosures for Electrical Equipment
 - 7. UL 98 - Enclosed and Dead Front Switches
 - 8. UL 489 - Standard for Molded-Case Circuit Breakers and Circuit-Breaker Enclosures.
 - 9. UL 508 - Standard for Industrial Control Equipment.
 - 10. UL 1053 - Standard for Ground Fault Sensing and Relaying Equipment.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Square D, Eaton-Cutler Hammer, Siemens or engineer approved equal.

2.2 MOLDED CASE CIRCUIT BREAKERS

- A. Where circuit breakers are installed in existing panelboards, load centers, service, and/or distribution switchgear they shall match existing devices or be compatible with the distribution equipment. Adhere to manufacturer requirements.
- B. Circuit breakers shall be constructed using glass reinforced insulating material. Current carrying components shall be completely isolated from the handle, and the accessory mounting area.
- C. Circuit breakers shall have an over center, trip free, toggle operating mechanism which shall provide quick-make, quick-break contact action. The circuit breaker shall have common tripping of all poles.
- D. The circuit breaker handle shall reside in a tripped position between on and off to provide local trip indication. Circuit breaker escutcheon shall be clearly marked on and off in addition to providing international I/O markings.
- E. The maximum ampere rating and UL, or other certification standards with applicable voltage systems and corresponding interrupting ratings shall be clearly marked on face of circuit breaker.
- F. Each circuit breaker shall be equipped with a push-to-trip button, located on the face of the circuit breaker to mechanically operate the circuit breaker tripping mechanism for maintenance and testing purposes.
- G. Circuit breakers shall be factory-sealed with a hologram quality mark and shall have date code on face of circuit breaker.
- H. Series rated combinations shall not be allowed.
- I. Lugs shall be suitable for 167 °F (75 °C) rated wire and/or 194 °F (90 °C) rated wire, sized according to the 167 °F (75 °C) temperature rating in the NEC. Refer to the copper feeder schedule on the drawings.
- J. Circuit breakers shall be capable of accepting bus connections.
- K. Circuit breakers with ratings up to 400 amperes shall be equipped with thermal magnetic trip units. Thermal trip elements shall be factory preset and sealed. Circuit breakers shall be true RMS sensing and thermally responsive to protect circuit conductor(s) in a 104 °F (40 °C) ambient temperature. Circuit breaker frame sizes above

150 amperes shall have a single magnetic trip adjustment located on the front of the circuit breaker

- L. Circuit breakers with ratings over 400 amperes shall be equipped with electronic trip units.
- M. Circuit breakers with permanent trip units shall be UL-listed for reverse connection without restrictive line and load markings and be suitable for mounting in any position.
- N. The trip units shall not augment overall circuit breaker volume.

2.3 DISCONNECT SWITCHES

A. GENERAL

- 1. Switches identified for use as service equipment shall be labeled for this application pursuant to NEC requirements.
- 2. Disconnect switches shall be fused or non-fused as indicated on the drawings.
- 3. NEMA type 1 enclosures shall be utilized indoors and NEMA Type 3R utilized outdoor unless otherwise noted on the drawings.
- 4. Lugs shall be listed for a minimum of 75 degrees Celsius.
- 5. Verify fuse sizes with the manufacturer of the equipment served.

B. ENCLOSURES

- 1. Enclosure shall be finished with gray baked enamel paint which is electrodeposited on cleaned, phosphate pre-treated steel for NEMA Type 1 and 3R. For NEMA Type 4 and 4X the enclosure shall have a brush finish on type 304 stainless steel finish.
- 2. Enclosures shall have ON and OFF markings stamped into the cover.
- 3. Operating handles shall be provided with a dual colored, red/black position indication.
- 4. Switches shall have provisions to accept up to three 3/8 in hasp padlocks to lock the operating handle in the OFF position.
- 5. Tangential knockouts shall be provided to facilitate ease of conduit entry (NEMA Types 1 and 3R) for switches rated 30-200A.
- 6. NEMA Type 4 and 4X shall have a stainless steel enclosure and shall contain no knockouts. Supply watertight hubs as required for conduit entry/exit.
- 7. NEMA Type 4X polyester enclosures shall be provided with polyester conduit hubs for field installation.
- 8. Enclosures for Type 3R switches through 200 ampere shall have provisions for interchangeable bolt-on hubs in the top endwall.
- 9. Type 4 and 4X stainless steel enclosures shall be dual rated as Type 3R to facilitate their use in outdoor applications.
- 10. Cover viewing window shall be incorporated on 30-200A NEMA 4 and 4X, stainless steel, two or three pole switches.

C. SWITCH RATINGS

- 1. Switches shall be horsepower rated for the AC voltage as indicated on the plans.

2. The UL Listed short circuit current rating of the switches shall be:
 - a. 10,000 rms symmetrical amperes when used with or protected by Class H or K fuses (30-600 ampere).
 - b. 200,000 rms symmetrical amperes when used with or protected by Class R or Class J fuses (30-600 ampere switches employing appropriate fuse rejection schemes).
 - c. 200,000 rms symmetrical amperes when used with or protected by Class L fuses (800-1200 ampere).
- D. GENERAL DUTY DISCONNECT SWITCHES
 1. Applicable to disconnect switches 240 volt and below.
- E. HEAVY DUTY DISCONNECT SWITCHES
 1. Applicable to disconnect switches 277/480 volt.
- F. DISCONNECT SWITCH INTERIOR
 1. Switches shall have switch blades which are visible when the switch is OFF and the cover is open.
 2. Lugs shall be front removable
 3. Switches required for Type 4 and 4X stainless steel applications shall have all copper current carrying parts.
 4. All current carrying parts shall be plated to resist corrosion.
 5. Switches shall have removable arc suppressors to facilitate easy access to line side lugs.
 6. Switches shall have provisions for a field installable electrical interlock.
- G. DISCONNECT SWITCH MECHANISM
 1. Switch operating mechanism shall be quick-make, quick-break such that, during normal operation of the switch, the operation of the contacts shall not be capable of being restrained by the operating handle after the closing or opening action of the contacts has started.
 2. The operating handle shall be an integral part of the box, not the cover.
 3. Provisions for padlocking the switch in the OFF position with at least three padlocks shall be provided.
 4. The handle position shall travel at least 90° between OFF and ON positions to clearly distinguish and indicate handle position.
 5. Switches shall have a dual cover interlock mechanism to prevent unintentional opening of the switch cover when the switch is ON and prevent turning the switch ON when the cover is open. The cover interlock mechanism shall have an externally operated override but the override shall not permanently disable the interlock mechanism. The tool used to override the cover interlock mechanism shall not be required to enter the enclosure in order to override the interlock.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Preparation and installation shall be in accordance with reviewed product data, final shop drawings, manufacturer's written recommendations, and as indicated on the Drawings.
- B. Disconnect switches shall be installed where identified on the drawings. Switches shall be secured to building structure or supported via "C" channel strut as required. Field coordinate and adhere to manufacturer requirements.

3.2 ADJUSTING

- A. Mold case circuit breaker pickup level and time delay settings shall be adjusted to values indicated on the Drawings or schedule, and as instructed by the Engineer.

END OF SECTION 26 28 16

SECTION 31 0000

EARTHWORK

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavation (cut)
 - 2. Embankment (fill)
 - 3. Clearing and Grubbing
 - 4. Subgrade Preparation
- B. Excavation includes excavating all materials, of whatever character and subsurface conditions, as required for the construction of the project, including but not limited to the following:
 - 1. Excavation for roadways and walkways.
 - 2. Excavation for the construction of pavement and hardscape areas.
 - 3. Excavation for structure foundations.
 - 4. Excavation for mass grading.
 - 5. Excavation for landscape areas.
 - 6. Excavation for finish grading.
 - 7. Overexcavation of areas to be recompacted.
- C. Embankment (fill) includes the construction of embankments and placing of material, including the following:
 - 1. Embankment for roadways and walkways.
 - 2. Embankment for the construction of pavement, and hardscape areas.
 - 3. Backfilling of structures.
 - 4. Embankment for mass grading
 - 5. Embankment for finish grading
 - 6. The placement of native, select and other backfills.
- D. Clearing and grubbing includes the removal of all objectionable materials with the area to be graded. Earthwork shall include all clearing and grubbing.
- E. Whenever the term finished grade or finished surface is used, it shall mean the finished surface of the completed facility.

1.2 SUBMITTALS

- A. Delivery certifications (load slips) for all aggregate base supplied.
- B. Delivery certifications (load slips) for all imported fill and backfill.
- C. Furnish, without additional cost to the Owner, such quantities of import or native materials as may be required by the Engineer for test purposes.

PART 2 PRODUCTS

2.1 MATERIALS

- A. No materials shall be delivered to the site that are not in conformance with these specifications, or unless accepted by the Engineer in writing.
- B. Select Backfill: Backfill designated as “select”, or “sand” shall conform to Caltrans Standard Specifications, Section 19-3.02 Materials.
- C. Native Material: The Project Geotechnical Engineering Report identifies the on-site soil materials. Native materials excavated from site area may be used as general fill. Such native soils shall not be used for pipe bedding or pipe zone backfill.
- D. Imported Nonexpansive Material: Imported nonexpansive material shall adhere to the requirements outlined in the Project Geotechnical Engineering Report. Nonexpansive materials proposed for import shall be approved by the Engineer prior to being transported to the site and shall be subject to further sampling and/or review during construction.
- E. Crushed Gravel: Crushed gravel shall be free draining crushed rock conforming to ASTM C33 #67 stone. Float Rock or river run gravel is not acceptable.
- F. Class 2 Base: $\frac{3}{4}$ ” maximum, per Caltrans Standard Specifications, Section 26

2.2 DEFINITIONS

- A. Compaction: Maximum dry density as defined by ASTM D 1557-07.
- B. Field density: ASTM D 2922-01
- C. Subgrade: The grading plan below an aggregate base or sand layer.

PART 3 EXECUTION

3.1 EARTHWORK MAINTENANCE

- A. The Contractor shall be responsible for all maintenance related to the earthwork operations, both on and offsite. The contractor shall maintain all areas clean of dust, mud and debris, and shall control erosion during the earthwork operations.
- B. Street Cleaning: The Contractor shall exercise care in the use of public and private roads and shall repair at his own expense any damage thereto caused by his or her operations. Such repair shall be to the satisfaction of the owner or agency having jurisdiction over the road. The Contractor shall take whatever means are necessary to prevent tracking mud onto existing roads and shall keep roads free of debris. The Contractor shall utilize street cleaning machines as necessary to maintain the streets and parking lot free of dirt and debris from its operations at all times.

- C. Dust Control: Take proper and efficient steps to control dust. Contractor to supply water for dust control. If available, recycled or non-potable water shall be used for dust control.
- D. Storage of Materials: Neatly place excavated materials far enough from the excavation to prevent stability problems. Keep the materials shaped to avoid interference with drainage paths. Provide erosion control measures as required to prevent loss of material or damage to property. The cost of maintaining and protecting stockpiled materials shall be included in the price paid for excavating, filling, or furnishing the materials, and there will be no separate payment allowed, therefore.
- E. Existing Facilities: Maintain access to existing facilities to permit continued operation as required by the Owner.
- F. Finished Condition: Grades shall be maintained in a finished condition and true to grade until acceptance of the contract as complete.

3.2 Clearing and Grubbing

- A. Unless shown otherwise on the drawings, the entire area to be graded shall be cleared and grubbed.
- B. The natural ground surface shall be cleared of all vegetation including trees, logs, upturned roots, roots of down trees, brush, grass, weeds, and other objectionable material including concrete and masonry unless noted otherwise in plans.
- C. Within the limits of clearing, the areas below the natural ground surface shall be grubbed to a depth necessary to remove all stumps, roots, buried logs, and all other objectionable material.
- D. Voids created by the above removals shall be filled and recompactd with suitable material and to the requirements for the intended use of the area.
- E. Properly and legally dispose of all removed objectionable material.

3.3 EXCAVATION

- A. The Contractor shall perform all construction excavation, including hand digging, shoring, de-watering, concrete removal, and grading necessary or required for the construction of the Work as covered by these Specifications and indicated on the Drawings. The excavation shall include, without classification, the removal and disposal of all materials of whatever nature encountered, including water and all other obstructions that would interfere with the proper construction and completion of the required work.
- B. The Contractor shall over-excavate for foundations as required in the Project Geotechnical Engineering Report.

- C. Temporary Excavation Slopes: Temporary exaction slopes shall comply with OSHA requirements for the soil types and conditions encountered.
- D. Sawcutting Pavement: Where trenching or excavation occurs in paved areas to remain, the pavement shall be saw-cut in a neat straight line and broken ahead of the trenching or excavation operation. The extent of paving removed shall be limited to the minimum necessary for the excavation. However, the sawcut limits shall be extended for the following reasons:
 - 1. To form neat, straight and square lines.
 - 2. To include areas of pavement damaged by the Contractor.
- E. Finished cut slopes shall not exceed the steepness shown on the plans. If no steepness is designated, the maximum slope shall be 2 horizontal to 1 vertical.

3.4 EMBANKMENT (FILL)

- A. The Contractor shall perform all construction embankment and fill placement including shoring, de-watering, backfilling, structural fill, non-structural fill, sand and aggregate bases, compaction and grading necessary or required for the construction of the Work as covered by these Specifications, as indicated on the Drawings, and as outlined in Geotechnical Engineering Report. Embankment (fill), shall include, without classification, the preparation, placement, compaction and finishing of all earth materials to the lines and grades as shown in the Contract Documents.
- B. General fill and backfill soils shall be placed in level lifts not exceeding 8 inches in loose thickness, moisture conditioned, and compacted. All materials used as fill shall be cleaned free of all debris and any rocks larger than 3 inches in diameter. When fill material contains rocks, the rocks shall be placed in a sufficient soils matrix to ensure that voids caused by nesting of the rocks will not occur and that the fill can be properly compacted.
- C. Moisture Content: At the time of compaction, the moisture content of fill materials shall be such that the specified relative compaction will be obtained, and the fill will be in a firm and stable condition. Fill material which contains excessive moisture shall not be compacted until the material is dry enough to obtain the required compaction. Full compensation for any additional work involved in drying fill material to the required moisture content shall be considered included in the contract price paid for that item of work and no additional compensation will be allowed, therefore.
- D. Compaction: Fill shall be placed and compacted as indicated in the Project Geotechnical Engineering Report. If no compaction level is specified, the following shall be used as the minimum relative compaction.

1. Upper 36 inches of subgrade	92%
2. All aggregate Bases	95%
3. Other fill areas:	92%
4. Trench Backfill: Per Section 31 23 33 Trenching and backfill	
5. Select Backfill	92%
6. Un-paved dirt areas, upper 12 inches of native material	85%

- E. 2:1 Slopes: Finished fill slopes shall not exceed the steepness shown on the plans. If no steepness is designated, the maximum slope shall be 2 horizontal to 1 vertical.

3.5 PAVEMENT SUBGRADE PREPARATION

- A. Subgrade soil shall be moisture conditioned and compacted to a relative compaction of not less than 95% to a depth of 12 inches.
- B. Tolerances: The Subgrade elevation shall not vary more than 0.05 feet above or below the plan specified, except that if the subgrade elevation is more than 0.05 feet below the specified grading plane, the Contractor may place and compact Class 2 aggregate base to raise the surface to within tolerances. There shall be no additional payment for such Class 2 aggregate base.
- C. Proof rolling: Proof roll the subgrade with rubber-tired construction equipment in the presence of the Engineer. The subgrade shall be firm and unyielding when proof-rolled.

3.6 Unsuitable soil

- A. Unsuitable soil is soil that due to its nature, cannot be properly compacted to or is yielding and cannot provide support for the overlying surface material or structural section.
- B. Soil exceeding optimum moisture content to a degree that causes yielding or prevents proper compaction shall not be cause to consider soil as unsuitable.
- C. The Contractor shall identify potentially unsuitable soils and promptly notify the Engineer. The Engineer shall determine whether soils are unsuitable. If the soil is determined to be unsuitable, the Engineer may direct the Contractor to follow an alternative method of construction to provide additional support. Such alternative measures will be paid for as extra work.

3.7 Wet soil

- A. If wet soils are encountered, the Contractor shall take any measures as required to dry the soil to a degree that it can be compacted to form a firm and unyielding surface. These measures shall be included in the bid items requiring such compaction and there shall be no separate payment, therefore.

3.8 TESTING

- A. Material Quality: When requested by the Engineer, the Contractor shall provide samples of earthwork materials furnished or excavated in sufficient quantities for materials testing. There shall be no additional payments made for providing such samples. Should any materials fail to meet the Contract requirements, the Contractor shall remove all such nonconforming material, and replace it with conforming material at no cost to the Owner.
- B. Field Testing and Observation:

1. The Contractor shall coordinate his or her activities to allow for the following inspections by the Owner:
 - a. Review and testing of materials proposed for use.
 - b. Observation of excavations prior to backfilling or pouring concrete.
 - c. Observation of fill placement and compaction testing.
 2. The Contractor shall excavate holes for in-place soil sampling. The Owner will pay for initial testing. If initial tests fail inspection, the failed portions shall be removed, re-compacted, and re-tested. The Contractor shall be responsible for the costs of additional inspection and re-testing resulting from non-compliance.
- C. Testing Methods:
1. Relative Compaction: In-place density divided by the maximum dry density laboratory compaction expressed as percentage.
 2. Durability Index: Manual of Test, State of California, Department of Transportation
 - a. R Value Testing: California Test 301
 - b. Specific Gravity: ASTM D854.
 - c. Laboratory Compaction: ASTM D1557, Method A or C
 - d. In-place Density: ASTM D1556 or ASTM D2922
 - e. Particle Size Analysis of Soils: ASTM D422
 - f. Plastic Limit and Plasticity Index: ASTM D4318
 - g. Soil Classification: ASTM D2487
 - h. In-place Moisture Content: ASTM D3017

3.9 CONTROL OF WATER

- A. General: The Contractor shall be responsible for the control of surface drainage and subsurface water throughout the construction project.
- B. Surface Water: The Contractor shall be responsible for furnishing temporary drainage facilities to convey and dispose of surface water falling on or passing over the site.
- C. Subsurface Water: The Contractor is responsible for the control of groundwater during general and trench excavations in accordance with State and local laws. Methods that may be required during construction include over-excavation, pumping, drying soil, and shoring. The Contractor shall include the cost of such measures in the bid items requiring such excavation.
- D. Disposal of water: Dispose of water in such a manner as to cause no injury or nuisance to public or private property and in accordance with State and local laws. De-watering devices must be adequately filtered to prevent the removal of fines from the soil.
- E. Maintain soil moisture content throughout construction. Do not allow desiccation cracks to occur within the project area. If desiccation cracks occur, the soils shall be removed, moisture conditioned, and recompacted at the Contractors' expense.

3.10 EXCESS MATERIAL

- A. Excavated material shall not be used as trench pipe zone or select backfill unless it is designated as such in these Specifications or if approved in writing by the Engineer. Excavated material may be used as subsequent backfill provided requirements of Paragraph 2.01E of this Section are met. Also refer to Section 31 23 33, Trenching and Backfilling.
- B. Excavated soil may be used as onsite fill or “spread” across designated areas, subject to the restrictions in these specifications and the Project Geotechnical Engineering Report.
- C. Where excavated material will not be reused onsite, the Contractor shall haul the material away. The Contractor is responsible for determining the nature of the material to be exported, for the proper location to deliver the material to, for obtaining all permits and processing, and for the proper handling and disposal of the material at the offsite location in accordance with State and local laws.

END OF SECTION

SECTION 31 1316

TREE PROTECTION AND TRIMMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the protection and trimming of trees that interfere with, or are affected by, execution of the Work, whether temporary or new construction.
- B. Related Sections include the following:
 - 1. Division 1 Section "Summary of Work" for limits placed on Contractor's use of the site.
 - 2. Division 2 Section "Demolition" for removal limits of trees, shrubs, and other plantings affected by new construction.
 - 3. Division 2 Section "Earthwork" for building and utility trench excavation, backfilling, compacting and grading requirements, and soil materials.

1.3 SUBMITTALS

- A. Certification: From a qualified arborist that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
- B. Imported Topsoil: Submit agricultural suitability soil test from an accredited soils testing laboratory.

1.4 QUALITY ASSURANCE

- A. Arborist Qualifications: An arborist certified by the International Society of Arboriculture or licensed in the jurisdiction where Project is located.
- B. Tree Pruning Standards: Comply with ANSI A300, "Trees, Shrubs, and Other Woody Plant Maintenance--Standard Practices," unless more stringent requirements are indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch sieve and not more than 10 percent passing a 3/4-inch sieve.
- B. Topsoil: Fertile, friable, surface soil, containing natural loam and complying with ASTM D 5268. Provide topsoil that is free of stones larger than 1 inch in any dimension and free of other extraneous or toxic matter harmful to plant growth. Obtain topsoil only from well-drained sites where soil occurs in depth of 4 inches or more; do not obtain from bogs or marshes.
- C. Orange Safety Fence: Heavy duty rigid HDPE plastic fence, 0.2 inch product thickness; 48 inches high, minimum; horizontal oval openings, mesh size 3.8 in x 1.1 in, use wooden, plastic or metal posts, 2.0 inches in diameter, no more than 8'o.c. spacing; terminal and corner posts, 2 inches in diameter; zip or wire tires, and other accessories for a complete fence system.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Temporary Fencing: Install temporary fencing located as indicated or outside the drip line of trees to protect remaining vegetation from construction damage.
 - 1. Install orange safety fence according to ASTM F 567 and manufacturer's written instructions.
- B. Protect tree root systems from damage due to noxious materials caused by run-off or spillage while mixing, placing, or storing construction materials. Protect root systems from flooding, eroding, or excessive wetting caused by dewatering operations.
- C. Do not store construction materials, debris, or excavated material within the drip line of remaining trees. Do not permit vehicles or foot traffic within the drip line; prevent soil compaction over root systems.
- D. Do not allow fires under or adjacent to remaining trees or other plants or anywhere on the construction site.

3.2 EXCAVATION

- A. Install shoring or other protective support systems to minimize sloping or benching of excavations.
- B. Do not excavate within drip line of trees, unless otherwise indicated.
- C. Where excavation for new construction is required within drip line of valuable trees (determined by the Owner's representative), hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots.

1. Contractor must consult Owner's Representative prior to cutting any roots.
 2. Relocate roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and relocate them without breaking. If encountered immediately adjacent to location of new construction and relocation is not practical, cut roots approximately 3 inches back from new construction.
 3. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.
- D. Where utility trenches are required within drip line of trees, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.
1. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments; do not break or chop.

3.3 REGRADING

- A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade away from trees as recommended by qualified arborist, unless otherwise indicated.
1. Root Pruning: Prune tree roots exposed during grade lowering. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots with sharp pruning instruments; do not break or chop.
- B. Minor Fill: Where existing grade is 6 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.
- C. Moderate Fill: Where existing grade is more than 6 inches, but less than 12 inches, below elevation of finish grade, place drainage fill, and topsoil on existing grade as follows:
1. Carefully place drainage fill against tree trunk approximately 2 inches above elevation of finish grade and extend not less than 18 inches from tree trunk on all sides. For balance of area within drip-line perimeter, place drainage fill up to 6 inches below elevation of grade.
 2. Place fill layer of topsoil to finish grade. Do not compact drainage fill or topsoil. Hand grade to required finish elevations.

3.4 TREE PRUNING

- A. Prune remaining trees affected by temporary and new construction.

- B. Prune remaining trees to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by qualified arborist.
- C. Pruning Standards: Prune trees according to ANSI A300 as follows:
 - 1. Type of Pruning: Crown cleaning.
 - 2. Type of Pruning: Crown thinning.
 - 3. Type of Pruning: Crown raising.
 - 4. Type of Pruning: Crown reduction.
 - 5. Type of Pruning: Vista pruning.
 - 6. Type of Pruning: Crown restoration.
- D. Cut branches with sharp pruning instruments; do not break or chop. Clean pruning instruments after completing pruning of each tree, prior to moving on to next tree. Clean tools with Isopropyl Alcohol.
- E. Chip branches removed from trees. Spread chips where indicated or as directed by Architect.

3.5 TREE REPAIR AND REPLACEMENT

- A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to written instructions of the qualified arborist.
- B. Remove and replace dead and damaged trees that the qualified arborist determines to be incapable of restoring to a normal growth pattern.
 - 1. Provide new trees of 6-inch caliper size and of a species selected by Architect when trees more than 6 inches in caliper size, measured 12 inches above grade, are required to be replaced.
- C. Aerate surface soil, compacted during construction, 10 feet beyond drip line and no closer than 36 inches to tree trunk. Drill 2-inch- diameter holes a minimum of 12 inches deep at 24 inches o.c. Backfill holes with an equal mix of augered soil and approved compost humus material.

3.6 DISPOSAL OF WASTE MATERIALS

- A. Burning is not permitted.

END OF SECTION

SECTION 31 2319

DEWATERING

PART 1 GENERAL

1.01 DESCRIPTION

Provide dewatering for trench and structure excavations, if required, in accordance with the Contract Documents. Secure all necessary permits for such Work. The Work also includes managing the collected groundwater for discharge into the Hart Park Lake.

1.02 QUALITY ASSURANCE

- A. Dewatering operations are the sole responsibility of the Contractor to ensure protection of property, life safety, and proper installation of Work.
- B. Material Standards. Furnish lumber for shores, wales, and sheeting of grading required by the American Lumber Standards for the particular application.
- C. Control rate of dewatering in such a manner to minimize potential for settlement, and avoid objectionable levels of subsidence.
- D. Design dewatering facilities with filters such that removal of sands and fine grained materials is kept to a minimum during the soil dewatering process.
- E. Settlement monitoring surveys where required, shall be conducted by a licensed California Land Surveyor.
- F. Provide adequate size Baker Tank or equivalent storage vessel, to store collected groundwater prior to approval to discharge to Hart Park Lake.

1.03 SUBMITTALS

- A. Submit Dewatering Plan, prepared by qualified professional, including description of materials, equipment and personnel required to employ dewatering, and describe wells, well points, sump pumps, drain rock or gravel placement, and other equipment and means of accomplishing the Work. Include details of standby pumping equipment, standby generators, standby personnel or automated monitoring alarm systems, to be provided. The Dewatering Plan shall describe in detail, any treatment train proposed.

1.04 JOB CONDITIONS

- A. Federal, state and local requirements for safety of job personnel and public apply to work under this Section.
- B. Geotechnical investigations have been performed for these Project sites, refer to City Special Provision Section 01011, Summary of Work.

1.05 PERMIT REQUIREMENTS

- A. Discharge collected groundwater to Hart Park Lake, subject to the requirements contained herein.

PART 2 PRODUCTS

2.01 DEWATERING EQUIPMENT

- A. Dewatering equipment may consist of wells, well points, sump pumps, drain rock or gravel placement, and other equipment and means of accomplishing the Work. Such equipment shall be described in Para. 1.03A of this Section.
- B. Standby pumping equipment, standby generators, standby personnel or automated monitoring alarm systems, shall be provided at all times during working and non-working hours.

2.02 TREATMENT EQUIPMENT

- A. Treatment equipment, where used, shall be used as necessary to treat extracted groundwater prior to discharge, such that the discharge meets the objectives outlined in Paragraph 1.05 above.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Provide all equipment, materials, manpower necessary for adequate site dewatering.
- B. Maintain all dewatering and treatment equipment in good operating condition, and provide necessary standby equipment and personnel to ensure groundwater dewatering operations can be adequately maintained during power outages.
- C. Site water generated as a result of dewatering shall be adequately contained and adequately treated, prior to discharge directly to any water courses or storm drains.
- D. Provide dewatering at all times to adequately protect and preserve soil bearing capacity, and prevent quick sand, soft soils, and other undesirable conditions that could impact the integrity of construction Work.
- E. Maintain groundwater level a minimum of one foot below bottom of excavation in all work areas where groundwater occurs.
- F. Prevent flotation of pipe by maintaining continuous removal of water from trench.

- G. Properly and adequately discharge and dispose of all constructing dewatering water, as described in Part 1 of this Specification. All water shall be adequately settled, filtered or otherwise de-silted prior to discharge.
- H. The release of groundwater to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill land prevent flotation or movement of structures, pipelines, and sewers.

END OF SECTION

SECTION 31 2333

TRENCHING AND BACKFILLING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Trench excavation.
 - 2. Trench backfill.
 - 3. Control of surface waters and groundwater.
 - 4. Temporary and permanent resurfacing.
 - 5. OSHA Compliance, Sheet piling, Shoring and Bracing
- B. SUBMITTALS
 - 1. Delivery certifications (load slips) for all aggregate base and backfill.
 - 2. Delivery certifications (load slips) for concrete slurry backfill.
 - 3. Material samples as may be required by the Engineer for test purposes.

PART 2 PRODUCTS

- 2.1 Select Backfill: Conforming to Caltrans section 19-3.02
- 2.2 Native Material as Trench Backfill: only above pipe zone, refer to project geotechnical engineering report for requirements
- 2.3 Bedding: sand or other conforming to Caltrans section 19-3.02f
- 2.4 Pipe Zone Material: select backfill per 2.1 above

PART 3 EXECUTION

3.1 GENERAL

- A. Contractor shall install pipeline to the alignment and grades indicated on the Plans, except for minor adjustments to avoid architectural and structural features and conflicts. Make minor adjustments in horizontal and vertical alignment and deflection to tie-in to existing pipelines and to meet general intent of pipeline layout. Minor adjustments to pipeline layout, which may require fittings, couplings, joint deflection, or other minor adjustment, are considered Contractor means and methods and are not shown on the Plans. Contractor shall make such minor adjustments as necessary, at no additional cost to the County.

3.2 TRENCH EXCAVATION

- A. Trenches shall be constructed in accordance with the details shown on the Plans, and the following:
- B. Excavation limits: Excavate trenches to the minimum and maximum trench widths shown on the Plans.
- C. Open Trench Construction: Trench construction shall be by open trench excavation unless shown otherwise on the Plans.
- D. Utility Crossings: Protect all existing facilities to be crossed. Hand digging of trenches may be necessary.
- E. Trench Excavation in Existing Paved Areas to be Restored to Pre-Construction Condition: In paved areas, the trench excavation limits shall be neatly sawcut. The sawcut lines shall be straight and neat in appearance and shall be parallel or perpendicular to the trench construction, unless otherwise allowed by the Engineer. The sawcut limits shall be extended as necessary to include the entire excavation, and any edges damaged during construction.
- F. Trench Excavation in Areas of New Pavement: The trench excavation limits need not be sawcut in areas where new pavement will be installed. All trench excavation and backfilling operations shall be completed prior to final paving.
- G. Over-Excavation: If the trench is over excavated below the limits necessary, backfill and compact to 92 % relative compaction with select backfill. There shall be no additional payment to the Contractor for over-excavations not directed by the Engineer.
- H. Unsuitable Material: Unsuitable soil is soil that due to its nature cannot be properly compacted to or is yielding and cannot provide support for the overlying structural section. Excessive moisture content shall not be cause for a material to be considered unsuitable. The Geotechnical Engineer shall determine whether soil shall be considered unsuitable. If the soil is determined to be unsuitable, the Geotechnical Engineer may direct the Contractor to remove the material and replace it with select backfill or other material as directed by the Engineer. Such alternative measures will be paid for as extra work.
- I. Wet soil: A condition of soil moisture exceeding optimum moisture content to a degree that causes yielding or prevents proper compaction shall not be cause to consider soil as unsuitable. If wet soils are encountered, the Contractor shall take such measures as are required to dry the soil to a degree that it can be compacted and form a firm and unyielding surface. These measures, which may include gravel bedding in lieu of sand bedding, wrapped in filter fabric as directed by the Geotechnical Engineer, shall be included in the bid items requiring trench construction. There shall be no separate payment, therefore.
- J. Trenches in Fill Areas: For trenches to be excavated through fill, including previously placed trench backfill (such as at manholes or for building connections), the structural

backfill shall be first compacted at a level at least 3 feet from the top of the piping or conduit elevation and then retrenched to pipe grade.

- K. Disposal: Disposal of excavated material shall be as specified in Section 31 00 00 - Earthwork.

3.3 BEDDING AND PIPE ZONE

- A. Unless shown otherwise on the Plans, the pipe zone shall be defined as that material 6" below the pipe, supporting, surrounding, and extending 12" above the top of pipe.
- B. Unless shown otherwise on the Plans or specifications, trench bedding and pipe zone material shall be poorly, or well graded granular sandy material (SW or SP) compacted to 92% and meeting a sand equivalent of 30 or greater. Such material shall be free of organics, corrosives, clay, recycled materials, and other deleterious substances.
- C. Bedding Placement: Bedding shall be placed to provide uniform support for the pipe or conduit prior to lowering the pipe or conduit in place. Holes shall be shaped for pipe bells, and the bedding shall be rounded to the shape of the pipe barrel. If the bedding exceeds 6 inches below the bottom of the pipe, it shall be compacted to a relative compaction of 92% prior to placing the pipe. Bedding shall be completed and compacted prior to placing any pipe zone backfill.
- D. Cement Slurry Bedding Placement: Prior to placing cement slurry bedding, the Contractor shall employ a method to prevent the pipe from floating or shifting position. If the pipe or conduit does float or shift position, the contractor shall be responsible for removing and reinstalling the pipe or conduit. Plugs and/or barriers shall be used to prevent the cement slurry from flowing to unwanted areas of the trench or into the pipe.
- E. After placing cement slurry bedding, subsequent backfill may not be placed for 8 hours unless the subsequent backfill is also cement slurry, except that if concrete sand is used for the aggregate and the in-place material is free draining, backfilling may commence as soon as the surface water is gone.

3.4 TRENCH BACKFILL

- A. Inspection Prior to Backfill: Backfill material shall not be placed over the pipe or conduit until after the joints have been completed and inspected by the Geotechnical Engineer and/or County Inspector.
- B. Protect pipes from flotation during backfill and compaction.
- C. Backfill in existing paved areas where the depth of cover will be 2 feet or less shall be cement slurry. For HDPE pipe, cement slurry backfill shall be used in existing streets, if the depth of cover is less than 3 feet.

- D. Placement of Trench Backfill: Trench Backfill shall be placed in level lifts not exceeding 8 inches in loose thickness, moisture conditioned, and mechanically compacted.
- E. The minimum compaction (% of maximum dry density) shall be:
 - 1. 92% for general trench compaction in pipe bedding, pipe zone and subsequent backfill.
 - 2. In paved areas, 95% in the top 12-inches below subgrade.
 - 3. In non-paved areas, 85% in the top 12 inches below finished surface, with the upper 12 inches being native soils.
- F. Compaction of backfill by jetting or flooding shall not be allowed.
- G. No Trenches Left Open: All trenches shall be backfilled to the surface as soon as possible after the installation of the facilities. Prior to stopping work each day, all open trenches shall be backfilled to the surface or protected with non-skid traffic-rated steel plates.
- H. If steel plates are used, they shall comply with the Caltrans Construction Manual.

3.5 TRENCH RESURFACING

- A. Surface Restoration: Unless another surface is shown on the plans or specifications, the surface shall be restored to the materials that existed prior to trenching.
- B. Temporary Paving: Prior to final paving, trenches in paved areas shall be surfaced with cold mix. Cold mix shall be a minimum of 3 inches thick. The Contractor shall maintain the cold mix in a smooth condition, flush with the adjacent pavement throughout the time that it is in place.
- C. Steel Traffic Plates: When approved by the Engineer, steel traffic plates may be used in lieu of backfilling and temporary paving. Steel plates shall be skid-resistant and placed in accordance with Caltrans Standards. Cold mix shall be used to provide smooth transition around the traffic plates. The Contractor shall monitor the condition of the traffic plates and maintain their placement to provide a safe driving condition.

3.6 TESTING

- A. Compaction Testing: The County will hire an independent testing company to perform compaction testing. The Contractor shall make the trench available to the tester, at the depths and locations required by the Engineer. When testing requires personnel to enter into a deep trench, the Contractor shall provide all shoring or other methods necessary for a safe working condition in compliance with the approved trench safety plan. The cost of providing safe access to the trench backfill for testing purposes shall be included in the bid items requiring such trench backfill, and there will be no separate payment, therefore.
- B. Failed Compaction Tests: The County will pay for the initial cost of compaction tests. Should any initial or subsequent test indicate that the material fails to meet the required level of compaction, the Contractor shall be responsible for all such

measures necessary to bring the material into compliance, at no additional cost to the County. The backfill shall then be retested. The Contractor is responsible for the cost of such retesting following a failed test, and the County may deduct the cost of such from the amounts owed under the Contract.

3.7 OSHA COMPLIANCE

- A. Excavation Safety: The Contractor's attention is directed to the provisions in Sections 6705, and 6707 of the State Labor Code, California Civil Code Section 832, the United States Department of Labor Rules 29 CFR, Part 1926, the Cal-OSHA Construction Safety Orders, Section 5.47, Safety and Trenching of these Specifications.
- B. Trench Safety Plan: Prior to performing excavation for any trench over five feet in depth, the Contractor shall submit for approval by the Engineer, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of trenches. If such plan complies with the Construction Safety Orders, it shall be submitted at least 5 working days prior to the start of trench excavation. If such plan varies from the Cal-OSHA Construction Safety Orders, the plan shall be prepared and signed by a registered Civil Engineer and shall be submitted at least 4 weeks prior to any trench excavation. No trenching shall begin until such plan has been approved by the City.
- C. Permit: The Contractor shall have a Cal-OSHA permit as required by California Labor Code Section 6500. Prior to beginning any excavation, the Contractor shall submit a copy of the Cal-OSHA permit and shall identify in writing the Competent Person designated to be in charge of trench safety for this project.
- D. Submittals: The Contractor shall provide the following submittals:
 - 1. Cal-OSHA compliance: Nothing in this section shall be deemed to allow the use of a shoring, sloping, or protective system less effective than that required by the construction safety orders. Failure to comply with any of the Cal-OSHA rules, orders, and regulations shall be sufficient cause for the Engineer to immediately suspend all work. No compensation for costs incurred by such emergency suspension will be allowed.
 - 2. Designation of the Competent Person for trench safety as defined by OSHA.
- E. Adjacent Improvements: Provide support for excavations adjacent to existing improvements and structures to prevent damage or settlement. Attention is directed to the Project Geotechnical Report and to Section 832 of the Civil Code of the State of California relating to lateral and subjacent supports.
- F. Removal of trench supports: The support for excavation shall remain in place until the pipeline or structure has been completed. During the backfilling of the pipeline or structure, the shoring, sheeting, and bracing shall be carefully removed so there shall be no voids created and no caving, lateral movement, or flowing of the subsoil.

END OF SECTION

SECTION 31 4000

SHORING AND UNDERPINNING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. General. Provide protective installation consisting of shores, wales, braces, posts, piling, sheeting, anchorages and fastenings, both temporary and permanent, for accomplishment and protection of work. All shoring and underpinning support systems shall be the responsibility of the Contractor, and shall comply with all applicable Federal and California OSHA safety regulations.
- B. Work Included.
 - 1. Shoring and sheeting for structure excavation.
 - 2. Temporary sheeting and bracing for piping work.
 - 3. Materials for permanent sheeting and bracing.

1.02 QUALITY ASSURANCE

- A. Material Standards. Furnish lumber for shores, wales, and sheeting of grading required by the American Lumber Standards for the particular application.

1.03 SUBMITTALS

- A. Submit for record purposes only, not for review or approval, calculations of the shoring system including sheeting size, wales, rakers, anchor system, struts, earth anchors, anchor piles, tie rods or any other components pertinent to the design prior to the start of any work involving sheeting and bracing. All designs submitted shall be signed by an engineer duly registered in the State of California.
- B. Cal-OSHA compliance: Nothing in this section shall be deemed to allow the use of a shoring, sloping, or protective system less effective than that required by the construction safety orders. Failure to comply with any of the Cal-OSHA rules, orders, and regulations shall be sufficient cause for the Engineer to immediately suspend all work. No compensation for costs incurred by such emergency suspension will be allowed.
- C. Designation of the Competent Person for trench safety as defined by Cal-OSHA.
- D. Trench Safety Plan: Prior to performing excavation for any trench over five feet in depth, the Contractor shall submit for approval by the Engineer, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of trenches. If such plan complies with the Construction Safety Orders, it shall be submitted at least 5 working days prior to the start of trench excavation. If such plan varies from the Cal-OSHA Construction Safety Orders, the plan shall be prepared and signed by a registered Civil Engineer and shall be submitted at

least 4 weeks prior to any trench excavation. No trenching shall begin until such plan has been approved by the City.

1.04 JOB CONDITIONS

- A. The description of job conditions under Section 31 00 00 Earthwork and Section 31 23 33 Trenching and Backfilling, forms a part of this subsection. Federal, state and local requirements for safety of job personnel and public apply to work under this Section.

1.05 CAL-OSHA COMPLIANCE

- A. Excavation Safety: The Contractor's attention is directed to the provisions in Sections 6705, and 6707 of the State Labor Code, California Civil Code Section 832, the United States Department of Labor Rules 29 CFR, Part 1926, the Cal-OSHA Construction Safety Orders, Section 5.47, Safety and Trenching of these Specifications.
- B. Permit: The Contractor shall have a Cal-OSHA permit as required by California Labor Code Section 6500. Prior to beginning any excavation, the Contractor shall submit a copy of the Cal-OSHA permit and shall identify in writing the Competent Person designated to be in charge of trench safety for this project.
- C. Adjacent Improvements: Provide support for excavations adjacent to existing improvements and structures to prevent damage or settlement. Attention is directed to the Soils Engineering Report and to Section 832 of the Civil Code of the State of California relating to lateral and subjacent supports.
- D. Removal of trench supports: The support for excavation shall remain in place until the pipeline or structure has been completed. During the backfilling of the pipeline or structure, the shoring, sheeting, and bracing shall be carefully removed so there shall be no voids created and no caving, lateral movement, or flowing of the subsoil.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Lumber.
 - 1. Temporary Shores, Wales and Sheeting. Furnish structural grade planks, beams, and posts as defined and specified for stress-grade lumber in the American Lumber Standards. Lumber may be rough, untreated, in random lengths, and shall be of standard dimensions.
 - 2. Permanent Sheeting. When permanent sheeting is called for on the Drawings, provide and install planks, beams, posts and timbers of unseasoned, rough, new southern yellow pine or Douglas Fir meeting the requirements of ASTM Standard D25, Class "C". In lieu of the above, lumber dressed to standard dimensions, dried, and treated in accordance with Standard T-3 of the American Wood Preservers' Association may be utilized.

- B. Fastenings. Provide fastenings for permanent sheeting as recommended in the National Design Specification for stress-grade lumber and its fastening.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Install sheeting and bracing for trench and structure excavation progressively as the removal of excavated material requires. Butt planks to exclude groundwater and fines, preventing the erosion of voids outside sheeting. In soft, wet ground drive sheeting to a lower level as excavation progresses so that sheeting is embedded in undisturbed earth. Bracing of sheet piling may be permitted to penetrate the structural concrete only as approved by the Engineer. Install wales and struts at close intervals so as to prevent displacement of the surrounding earth and to maintain safe conditions in the work area. Any damage proven to result from improper installations shall be the responsibility of the Contractor. Withdraw individual planks alternately as the backfill is raised, maintaining sufficient sheeting and bracing to protect the Work and workmen. Remove bracing completely. Where unstable conditions occur in the underlying strata from any cause, and withdrawal of sheeting will endanger the Work, a portion of the sheeting, including bracing, may be left in place with approval of the Engineer. Remove all wood within the zone extending below a depth of four (4) feet from finished grade. Leaving such material in place shall not be cause for an increase in Contract Price.

END OF SECTION

SECTION 32 0190

LANDSCAPE MAINTENANCE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes maintaining exterior site landscape areas for a period of 1-year for the following:
 - 1. Maintenance of plantings and lawns.
 - 2. Maintenance of landscaped grounds.
 - 3. Disposal of green and trash waste.
 - 4. Labor and equipment for work in this Section.
 - 5. Replacement and replanting of failed plantings.
 - 6. Preparation of year-round maintenance manual.

1.2 RELATED SECTIONS:

- A. Section 32 80 00 Irrigation Systems
- B. Section 32 90 00 Planting

1.3 SUBMITTALS

- A. Product Data: Submit list of products used for maintenance in this Section, including manufacturer's data and analysis. Products include:
 - 1. Fertilizers: Data for each type planned for use for landscape plants and lawns.
 - 2. Sand, organic amendments and soil mixes.
 - 3. Pesticides, Fungicides and Herbicides: When needed for pest and disease control, submit data sheet for each type before application.
- B. Maintenance Staff: Names of Supervisor and Foreman assigned to the job and proof of education or credential, and description of experience, meeting the requirements of Para. 1.4.B, Quality Assurance.
- C. Pest Control Personnel: Submit names and a copy of the licenses of California Licensed Pest Control Advisor and Qualified Applicator assigned to do the work in this Section.
- D. Maintenance Program: Submit for approval 2 copies of the proposed Maintenance

Program for the work during the 90-Day Maintenance Period.

- E. Maintenance Manual: Submit 2 copies of a maintenance manual for the on-going, year-round landscape maintenance activities after the 90-Day Maintenance Period, to guide future maintenance.

1.4 QUALITY ASSURANCE

A. References

1. For Maintenance Program and Maintenance Manual: Based on recommended practices in the book, Arboriculture, 4th edition, by Harris, Clark & Matheny, 2004.
2. University of California Cooperative Extension publications on ornamental landscape and lawn maintenance practices, including fertilization, pruning, pest control, integrated pest management and other applicable maintenance requirements.

B. Maintenance Staff:

1. Foreman: Experienced and trained in the standard maintenance practices for the types of plants under this Section. Able to implement the approved Maintenance Program. Be on the job site to lead and direct the work of landscape crews whenever maintenance work is scheduled.
2. Supervisor: Credentialed in ornamental horticulture from an accredited program, with a minimum of 4 years in landscape maintenance of projects of similar size and type and experienced with supervision of landscape crews in implementing a maintenance program.

C. Pest Control Personnel:

1. Qualified Applicator: Licensed by the State of California, experienced in the safe handling and application of pesticides, fungicides and herbicides as prescribed by a California licensed Pest Control Advisor, strictly in accordance with applicable local, State and Federal codes, regulations, and laws.
2. Pest Control Advisor: Licensed by the State of California, experienced in Integrated Pest Management practices, analyzing ornamental landscape weed and pest problems, and prescribing appropriate pest control practices, including the legal application of appropriate types of pesticides, fungicides, and herbicides.

D. Landscape Maintenance Company:

1. Engaging a separate landscape maintenance company for the work in this Section will be subject to County approval.
2. Landscape Maintenance Company: 5-years minimum experience with similar size and type of project and meeting the qualifications and requirements of

this Section and other Related Sections of this Contract.

1.5 MAINTENANCE PERIOD

- A. Commencement: Date of Acceptance of landscape installation work. Refer to Section 32 90 00 Planting for planting work.
- B. Duration: 90-days from date of commencement or longer as required for plant establishment specified herein.
- C. Maintenance Review: Provide 5-working days advance notice to the County's Representative when scheduling a field review of maintenance work.
 - 1. Intermediate Review: At the end of 45-days
 - 2. Final Acceptance Inspection: At the end of 90-days

1.6 MAINTENANCE OBJECTIVES

- A. Design Intent: To encourage healthy natural growth among plants to achieve the intended appearance of the design through best possible plant maintenance practices.
- B. Water Conservation: To achieve high efficiency in irrigation water use and minimal waste of water.
- C. Maximizing Environmental Sustainability:
 - 1. To minimize use of chemical pest control by utilizing integrated pest management practices (IPM) to the maximum.
 - 2. To recycle green waste appropriately.
 - 3. To promote environmental amelioration through landscaping.

1.7 WARRANTY

- A. Unacceptable Plants: Replace dead plants and plants not showing evidence of active growth at end of Maintenance Period.
- B. Replacement Plants: Provide same kind and size as originally planted. Maintain replacement plants for a new maintenance period, length same of original.
- C. Warranty Period:
 - 1. Shrubs: 90-days.
 - 2. Trees: One year.
 - 3. Lawns: One year unless specifically noted otherwise.

4. Warranty period shall commence upon written acceptance of the landscaping by the County.

PART 2 - PRODUCTS

2.1 REPLACEMENT PLANTS

- A. Plant Materials: Nursery-grown stock requirements as specified in Section 32 90 00 Planting.
- B. Landscape Plants:
 1. Match species, size, form, and quality, subject to approval.
 2. Source: Same nursery that supplied the original plants, unless otherwise approved.
- C. Planting Accessories: As specified in Section 32 90 00 Planting.
- D. Fertilizers
 1. Lawn: Commercial complete fertilizer with a N-P-K nutrient ratio of 1-2-1 as approved.
 2. Plantings and Hydroseed Plants: Commercial complete fertilize with a N-P-K nutrient ratio of 3-1-1 as approved.
- E. Equipment
 1. Quality of Equipment and Tools: Use well-maintained and clean tools suited for the plant types and type of maintenance activity in conformance with standard practice.
 2. Replace plants that have unacceptable damage caused by incorrect and inappropriate use of equipment and tools at Contractor's expense.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. Verify condition of landscape areas and the irrigation system's operation during handover of project at commencement of Maintenance Period.
 1. Document general conditions of plantings, including trees, shrubs, lawns and hydroseed areas.
 2. Record plant materials that are damaged, in poor condition or dying that are subject to replacement as part of the original installation work.
 3. Document general condition of existing irrigation system and any work that do not meet specified requirements and are subject to corrective work.

- B. Review approved Maintenance Program for the Maintenance Period and clarify questions with the County's Representative.
- C. Staffing and Scheduling:
 - 1. Obtain approval on maintenance staffing and work schedule.
 - 2. Approved staffing and work schedule shall not relieve Contractor from providing additional staff and time necessary to meet the requirements of this Section.

3.2 PROTECTION

- A. Protect planting areas from damage of all kinds from beginning of work until Final Acceptance.
- B. Public Protection: Provide temporary barriers, fences, and signs as necessary to protect the Public from potential hazards from any work under this Section.
- C. Worker Protection: Ensure all work under this Section complies with local, State and Federal laws, codes, and regulations.

3.3 GENERAL MAINTENANCE WORK

- A. Irrigation Systems: Maintain the irrigation systems for the planting areas in full operational condition.
 - 1. Adjust controller program once a week or as frequently as needed, to provide sufficient water to plantings according to evapotranspiration (ET) rates and weather conditions.
 - 2. Inspect all portions of the irrigation system once a week for repair needs to prevent damage to plantings and to prevent water loss.
 - 3. Visually check for distressed plants as sign of potential irrigation problems and inspect for leaks and any other damages and malfunctions in the system, including all control components.
 - 4. Check spray heads and sprinklers during operation immediately after mowing lawns. Check for water coverage and damage from mowing equipment. Adjust sprinklers to ensure uniform and adequate application of water to entire lawn areas.
 - 5. Restore, repair, or replace components promptly as required by trained, experienced personnel.
 - 6. In the event of failure of the automatic irrigation systems for longer than 3 days, manually water plantings until automatic system is restored to full operation.
- B. Irrigation Scheduling: Maintain the irrigation systems for the planting areas in full

operational condition.

1. Irrigation System Audit: An irrigation audit shall be performed upon completion of the project and once every five years thereafter or when the actual water consumption exceeds the estimated water requirement.
2. Annual Irrigation System Maintenance:
 - a. Annual backflow device certification tests for all devices shall be completed.
3. Monthly Irrigation System Maintenance:
 - a. Clean irrigation drip heads and filters once every six months or more frequently as needed.
 - b. Replace broken and worn bubbler nozzles with appropriate parts to maintain proper operation.
 - c. Check on-grade drip lines for breaks, leaks, plugged emitters, or other malfunctions. Repair all malfunctions found within seven calendar days.
 - d. After monthly evaluation of system, move, add, or remove irrigation devices to make a more uniform application of water.
4. Weekly Irrigation System Maintenance:
 - a. Water Supply — Check to see if all valves are opening and the system has proper pressure.
 - b. Controller and Controller Programming — Check the controller to make sure it is operating and programmed properly.
 - c. Field Wiring — Check to see if the automatic valves are receiving the proper voltage and current, check for shorts in the wiring.
 - d. Valves — Use the controller to manually operate the valves through a cycle to make sure they are operating properly. Adjust the flow control stems on the valves if needed.
 - e. Irrigation Heads and Emitters — Check for plugged, blocked or broken heads / emitters. Make sure the irrigation heads / emitters operate properly.
 - f. Pipe and Fittings — Check for broken or plugged pipes and leaks.
- C. Fertilization: In accordance with approved Maintenance Program.
- D. Weeding:
 1. Keep all plantings and hardscape areas free of weeds.

2. Apply integrated pest management practices as much as practicable. Where practicable, weed by hand or mechanical equipment to reduce use of herbicides.
 3. Where infestation is extensive, apply appropriate preemergent and selective herbicides by a Pest Control Applicator, as recommended by Pest Control Advisor in strict accordance with manufacturer's instructions and local codes and regulations.
- E. Pest and Disease Control: Apply integrated pest management practices as much as is practicable.
1. Inspections: Vigilantly check for diseases and pests during routine maintenance activities, in addition to regularly scheduled inspections by Pest Control Advisor to prevent spread of infestation.
 2. Control diseases and vertebrate and invertebrate pests promptly to prevent spreading of problems.
 3. Chemical treatment: When recommended by the Pest Control Advisor, apply in strict accordance with manufacturer's instructions and local codes and regulations.
- F. Grounds Maintenance:
1. Remove from Project and dispose legally, all debris created from maintenance operations at the end of each workday. Recycle green waste in an appropriate manner.
 2. Remove and dispose legally, all trash and litter that collect in planted and hardscape areas.
 3. Clear gutters, drain inlets, catch basins and drainage swales of debris and other obstructions to allow drainage of excess irrigation water and precipitation and to prevent ponding and flooding.

3.4 TREES

- A. Watering Basins:
1. Maintain watering basins around trees so that enough water can be applied to establish moisture throughout the major root zones.
 2. Maintain originally indicated depth of mulch to reduce evaporation and frequency of watering.
- B. Training and Pruning: Consult a certified arborist as needed.
1. Train young trees under five (5) years using thinning cuts to develop a properly callipered and tapered trunk and permanent scaffold branches. Stripping of lower branches (raising up) of young trees will not be permitted.

Retain lower branches in a tipped-back or pinched condition.

2. Prune trees to maintain a natural appearance, balancing crown with roots. Do not make heading cuts or stub back to trunk or primary branches.
3. Prune trees to eliminate diseased and damaged growth, and narrow V shaped branch forks that lack strength.
4. Pruning Individual Species: Schedule pruning for the time of year recommended by published horticultural standard. Avoid pruning when there is increased risk of insect attack or disease infestation for the species.

C. Staking of Trees:

1. Inspect tree stakes at least once a month to prevent damage to trees. Adjust, reposition and restake as needed in accordance with Section 32 90 00.
2. Remove stakes as soon as tree can stand unsupported during normal wind conditions, in most cases within two growing seasons following original installation.

D. Fertilization: Fertilize trees with a high nitrogen fertilizer once in the dormant season in late winter or early spring at rates below. Do not fertilize native trees. For trees growing in ground cover and shrub areas and in lawns, the fertilization shall be in addition to that applied to these other plants:

1. Trees less than 6-inches in trunk diameter: 0.15-lb to 0.37-lb N per inch of trunk diameter.
2. Trees greater than 6-inches mm in trunk diameter: 0.37-lb to 0.75-lb N per inch of trunk diameter.
3. Distribute fertilizer uniformly around the root zone within the drip line and water thoroughly into the root zone.

3.5 SHRUBS, GROUND COVERS, AND PERENNIALS

A. Pruning:

1. Ground cover areas with trees: Maintain a vegetation-free area 3-feet in diameter around trunk except when this would create a cleared area greater than the ground cover area.
2. Shrubs in large ground cover areas: Maintain a vegetation-free area 12-inches in diameter around base of shrub.
3. An approved herbicide may be used to clear plants around trunks. Remove all cleared plant material from Project.
4. Edge as required to maintain their area boundaries in a neat and trim fashion and to keep growth off hardscape, fencing, other structures, shrubs, and trees,

using hand or power tools where mowing, hedging, or line trimming is appropriate.

5. Pruning of Shrubs: Prune to preserve the natural shape and form of each species.
 6. Pruning of Ornamental Grasses: Only prune at beginning of growing season when approximately 2-3" of new growth has emerged from the base. Only cut flat across the top to remove old growth. No domes, orbs, or rocket shapes.
 - a. Warm Season grasses – Prune in February-March
 - b. Cool Season grasses – Prune October - November
 7. Pruning Methods and Timing: In accordance with published standards approved for the Project, using accepted standard methods and practices appropriate for the types of shrubs, perennials, vines, espaliers, and ground covers.
- B. Fertilization: Fertilize ground cover and shrub areas at a rate of 1-lb of nitrogen (N) per 1000 square feet at three-month intervals.

3.6 LAWNS

- A. Mowing:
1. Frequency: Mow once every 7-calendar days from May through October and when needed from November through April to maintain the turf in a neat and clipped appearance.
 2. Clippings: Remove and dispose of all turf clippings, or with County approval, allow clippings to decompose into lawns.
 3. Mow Height: Between 2-inches and 3-inches for tall fescue hybrids during hot season and between 1-1/2-inch and 2-inches during cool season.
- B. Edging: Edge all turf areas mechanically.
1. Alternate edging the hardscape borders with edges bordering structures every other mowing cycle.
 2. Maintain vegetation-free circular areas around trees as specified in this Section.
- C. Tree Protection: For trees in turf areas, protect trunks under 6-inches diameter with plastic arbor guards at grade level.
- D. Aerification: Aerify all lawn areas once a year in late winter by the end of March, timing operation to occur before crabgrass preemergence application.
1. Aerification: Not allowed within 60-days of overseeding operation for warm

season grass.

2. Cores: Approximately 3-inches long and 5/8-inches diameter distributed 3-inches on center.
 3. Leave cores on the surface to allow irrigation water to wash soil into turf. Remove and dispose any remains within 10-days of aerification.
- E. Thatching: Thatch as needed to reduce build-up to ½-inch or less.
1. Coordinate thatching with annual overseeding when appropriate.
 2. Make thatching passes in perpendicular directions.
 3. Set blades approximately 1-inch on center and deep enough to cut into but not below the thatch layer.
 4. Remove all debris from thatching work.
- F. Weed Control:
1. Preemergent Herbicide: Make 2 applications of preemergent herbicide to prevent germination of summer grassy weeds, the first application prior to weed germination in the spring and the second in accordance with the manufacturer's recommendations.
 2. Coordinate preemergent herbicide applications with aerification, thatching and overseeding operations.
 3. In the case of crabgrass control, time the spring application for daytime air temperature range between 65-deg to 70-deg F for at least four consecutive days or when soil temperature exceeds 50-deg F for three or more days.
 4. Selective Herbicide: Control grassy perennial weeds and broadleaf annual and perennial weeds with recommended selective herbicide when necessary.
 5. Herbicide handling and application: As specified in this Section.
- G. Pest Control: As specified in this Section.

3.7 REPAIR, REPLACEMENT AND REPLANTING

- A. Damages to property, including but not limited to all structures, utilities, and other finished work due to Contractor's neglect or performance of the Work shall be reported to County Representative. Restore, repair, replace, or rebuild damaged property at Contractor's expense.
- B. Plants damaged, injured, or killed due to neglect or in the course of performing the work in this Section shall be replaced with healthy, well developed plant material to match those originally installed. Replant within 10-days of notice of damage and in accordance with original Drawings and Specifications.

3.8 FINAL ACCEPTANCE

A. Acceptance:

1. Upon satisfactory completion of all work required for the Maintenance Period, but exclusive of replacement materials under Warranty Period.
2. Coordinate a review for final acceptance with County at least 5-working days prior to anticipated final review date at the end of Maintenance Period.

B. Corrective Work:

1. Complete work requiring corrective action or replacement within 10-days of review notice and perform in accordance with original requirements.
2. After corrective work is completed, request a final review for final acceptance as specified above.
3. Continue maintenance of landscaped areas until corrective measures have been completed and accepted.

C. Conditions for Final Acceptance of Work at End of Maintenance Period:

1. Each plant shall be alive and thriving, showing signs of growth and no signs of stress, disease, and other weaknesses.
2. Plants not meeting these conditions shall be replaced and a 90-day Warranty Period will commence for such plants on Date of Final Acceptance.

D. Final Acceptance Date: Date on which the Architect issues a Notice of Final Acceptance when the Owner will assume responsibility for maintenance of the work.

3.9 MAINTENANCE MANUAL

A. Purpose: A manual to guide the year-round, ongoing maintenance required for the landscaping areas, with the same maintenance objectives as indicated herein.

B. Content Subjects:

1. General Maintenance
2. Irrigation System Maintenance
3. Irrigation Scheduling and Water Management for Conservation
4. Pruning and Training Plants
5. Fertilization
6. Vertebrate and Invertebrate Pest Control

7. Weed Control
 8. Disease Control
 9. Lawn Maintenance
 10. Special Maintenance Requirements for Specific Plant Species
 11. Waste and Litter Removal
 12. Year-Round Maintenance Schedule
- C. References: Base content of manual on References in this Section and landscape maintenance requirements in this Section.
- D. Format: All manual information shall be organized with subject sections.
1. Provide instructions and descriptions of maintenance activities and requirements in clear, type-written English on 8.5-inch by 11-inch letter size format, digital pdf file.
 2. Provide illustrations to supplement text material as necessary for clearer communication. Graphics may be on 11-inch by 17-inch size format as necessary.
 3. Provide charts, schedules, and catalog cuts as appropriate.

END OF SECTION

SECTION 32 1000
AGGREGATE BASE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Class 2 Aggregate Base
- B. In accordance with Caltrans 2022 Standard Specifications, except as noted herein.

1.2 SUBMITTALS

- A. Material certifications
- B. Load certification and weight tickets for material placed

PART 2 - PRODUCTS

2.1 GENERAL

- A. No materials shall be delivered to the site that are not in conformance with these specifications, or unless accepted by the engineer in writing.
- B. Caltrans Section 26.

2.2 MATERIALS

- A. Class 2 Aggregate Base: $\frac{3}{4}$ " maximum, per Caltrans Standard Specifications, Section 26

PART 3 - EXECUTION

3.1 GENERAL

- A. In accordance with Caltrans Section 26.

END OF SECTION

SECTION 32 1200

HOT MIX ASPHALT (HMA)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Hot Mix Asphalt (HMA).
 - 2. Asphaltic concrete (AC) paving.
 - 3. Surface sealer.
 - 4. Aggregate subbase course.

1.2 REFERENCES

- A. Caltrans Standard Specifications dated 2022 as published by the California Department of Transportation.

1.3 SUBMITTALS

- A. Product Data:
 - 1. HMA Design, conforming to Caltrans Section 39-2 and Job Mix Formula (JMF) requirements of Caltrans Section 39-2.01.
 - 2. AC Mix Design.
 - 3. Delivery certifications (load slips) indicating the specification and tonnage for all HMA delivered to the site.
- B. Material Samples:
 - 1. HMA Samples for testing.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Conform to the requirements of the California Air Resources Board (CARB) and the local Air Pollution Control District.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. HMA: Section 39, "Hot Mix Asphalt", of the Caltrans Standard Specifications and the following:
 - 1. HMA for roads, parking areas and driveways:
 - a. Type A, 1/2" maximum
 - b. The viscosity grade of the paving asphalt shall be PG 64-10 for all HMA unless otherwise stated. HMA binder to be mixed with the mineral aggregate as determined by California Test No. 367 performed at the Contractor's expense.

2. Lime shall not be added to the HMA or aggregate, unless permitted by the Engineer.
- B. The minimum stabilometer value for aggregate mixed with asphalt shall be 30.
- C. Tack Coats shall conform to Section 39, "Hot Mix Asphalt", and Section 94, "Asphaltic Emulsions", of the Caltrans Standard Specifications and the following:
 1. Asphaltic emulsion shall be Type SS-1h.
- D. Cold Mix: No. 4 maximum, in accordance with Section 39 of the Caltrans Standard Specifications. The aggregate shall be blended with 5-8 percent SC-800 liquid asphalt.
- E. If the paving asphalt percentages are not within the limits specified, and/or the viscosity is not the grade specified, the asphalt concrete shall be removed unless the Engineer determines that said asphalt concrete is structurally adequate and may remain in place.

PART 3 - EXECUTION

3.1 CALTRANS SPECIFICATION

- A. All execution shall be per Caltrans Section 39, except as herein specified.
- B. A pre-paving conference is not required. Include methods of performing production and pavement work in HMA Submittal for review by Engineer.

3.2 PLACING HMA

- A. Place HMA at the lines and grades shown on the plans, and to facilitate positive sheet flow. The new pavement shall properly drain as shown on the drawings.
- B. All HMA shall be set flush with vaults, manhole lids, valve lids, and other surface features, as shown on the drawings.
- C. Existing manhole rims, valve lids, vaults and all other structures within the area to be paved shall be adjusted as required to fit the new HMA, and new concrete collars shall be provided.
- D. All sewer manholes, sewer cleanouts, water valves, centerline monuments and similar structures requiring a grade adjustment as a result of the new pavement construction shall be provided with new cast iron frames and lids in accordance with the County Standard Drawings. Existing Materials shall be salvaged to the County.
- E. Where pavement reconstruction is to occur, permanent trench resurfacing shall not be performed as a separate effort. Permanent trench resurfacing shall be performed as a part of the overall pavement reconstruction effort so that the structural section and appearance is uniform.

- F. The top course of HMA shall not be placed until all underground facilities have been placed, tested, and are in operation.

3.3 TOLERANCES

- A. Pavement surface quality and tolerances shall be in accordance with Caltrans Standard Specifications, except in the case of conforming to existing curbs, gutters or pavement. Place all HMA such that it will drain without puddling.
- B. If the finished surface of the HMA on the street pavement does not meet the specified surface quality or tolerances, it shall be brought within tolerance by either (1) abrasive grinding, (2) removal and replacement, or (3) placing an overlay of HMA, including grinding at the gutter to accommodate the overlay. The method will be selected by and will be the option of the Engineer. The corrective work shall be at the Contractor's expense.
- C. If abrasive grinding, or removal and replacement, is used to bring the finished surface to specified surface tolerances, additional grinding or removal shall be performed as necessary to extend the area ground in each lateral direction so that the lateral limits of grinding are at the nearest traffic lane line or pavement edge, and in each longitudinal direction so that the grinding or removal begins and ends at lines perpendicular to the traffic lane line, within any ground area. All ground areas shall be neat rectangular areas of uniform surface appearance.

3.4 PAVEMENT MARKERS AND STRIPING

- A. The Contractor shall replace all pavement markings and markers that are removed, damaged, disturbed by construction activities. Pavement markings and markers shall be in accordance with Caltrans Section 84 and shall be replaced in kind. Refer to Section 32 17 23, Traffic Stripes and Pavement Markings.

END OF SECTION

SECTION 32 1400
CONCRETE WHEEL STOP

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Concrete Wheel Stop

1.2 SUBMITTALS

- A. Material cut sheet
- B. Manufacturer's certifications

PART 2 - PRODUCTS

2.1 GENERAL

- A. 4' long x 6" tall prefabricated concrete wheel stop
- B. Standard application for parking lots

2.02 MATERIALS

- A. Concrete strength shall be minimum 2500 psi
- B. Steel stakes per manufacturer's recommendations

PART 3 - EXECUTION

3.1 GENERAL

- A. Placement in accordance with the plans
- B. Secure with stakes per manufacturer's recommendations
- C. Drill into pavement where appropriate and protect integrity of paved surfaces

END OF SECTION

SECTION 32 1723

TRAFFIC STRIPES AND PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Traffic Stripes and Pavement markings.
- B. In accordance with Caltrans 2022 Standard Specifications Section 84-2, except as noted herein.

1.2 SUBMITTALS

- A. Paint and thermoplastic material per Caltrans Section 84-2.01C.

PART 2 PRODUCTS

2.1 GENERAL

- A. No materials shall be delivered to the site that are not in conformance with these specifications, or unless accepted by the engineer in writing.
- B. Traffic Stripes and Pavement markings, paint.

PART 3 EXECUTION

3.1 GENERAL

- A. In accordance with Caltrans Section 84-2.03.
- B. Use County approved stencils for pavement markings, where appropriate.
- C. For paint: two coats

END OF SECTION

SECTION 32 1800

ROADSIDE SIGNS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Roadside warning signs
 - 2. ADA/accessible parking signs

1.2 SUBMITTALS

- A. Material cut sheet
- B. Manufacturer's certifications

PART 2 - PRODUCTS

2.1 GENERAL

- A. In accordance with Caltrans Standard Specifications Section 82, Signs and Markers

2.02 MATERIALS

- A. Signs- retroreflective sheeting in accordance with Caltrans Section 82-2 and CA MUTCD requirements
- B. Posts- 2" galvanized steel posts per Caltrans 82-3.02
- C. Footings- minor concrete in accordance with Caltrans Section 90-2

PART 3 - EXECUTION

3.1 GENERAL

- A. Placement/location in accordance with the Plans and CA MUTCD requirements
- B. Minimum 12" diameter x 36" deep concrete footing

END OF SECTION

SECTION 32 1816

SYNTHETIC RESILIENT SURFACING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Owner's general requirements for Contract Specifications apply to work in this Section.
- B. Coordinate the work of this Section with related trades.
- C. Verify applicable extents of work and dimensions at the jobsite.
- D. Materials, labor, tools, equipment, and services necessary to furnish, deliver, and install the Resilient Surfacing to include, but not be limited to layout; excavation; backfill; furnishing and installing of base material; furnishing and installing of poured-in-place surfacing; and all other incidental work to provide a complete resilient surfacing system.

1.2 QUALITY ASSURANCE

- A. Playground surfacing shall comply with the following:
 - 1. U.S. Consumer Product Safety Commission (CPSC) "Handbook for Public Playground Safety"
 - 2. Area Safety: Poured in place within playground use zones shall meet or exceed the performance requirements of the CPSC, ADA and Fall Height Test ASTM F1292-17a. The surface must yield both a peak deceleration of no more than 200 G-max and a Head Injury Criteria (HIC) value of no more than 1,000 for a head-first fall from the highest accessible portion of play equipment being installed as shown on drawings. IPEMA certification is required. (ASTM F1292-17a section 4.3.3: The laboratory test used to determine critical fall height shall have been conducted on surfacing material samples identical in design, materials, components, and thickness and manufactured as the installed playground surface).
 - 3. The requirements of the Americans with Disabilities Act. Accessibility Guidelines (ADAAG) 28 CFR Part 36 that provide equal or greater accessibility than the requirements of UFAS must also be met in children's outdoor play areas.
 - 4. Poured in place surfaces intended to serve as accessible paths of travel for persons with disabilities shall be firm, stable and slip resistant, and shall meet the requirements of ASTM F 1951-14 and ASTM F1292-17a.
- B. Playground Surfacing Installer: Installer shall be certified by the athletic and recreational surface manufacturer and have at minimum 5 years experience in the installation of the specified surfacing system.

1.3 SUBMITTALS

- A. The Contractor shall submit, five (5) complete sets of the material submittals, including manufacturer's name and address, specific trade names, catalog and model numbers, illustrations and descriptive material, and samples of the proposed materials for this project clearly marked as to proposed items for approval by the Owner's representative.
- B. Products submitted as equal must include hard copies of manufactures written specifications and warranty.
- C. Manufacturer's descriptive data and installation instructions.
- D. Manufacturer's details showing depths of Wear Course and sub-base materials, anchoring systems and edge details.
- E. Product Warranty: Submit to Owner's Representative upon substantial completion of the work all product and supplier's warranties.
- F. Upon request, a listing of at least five installations where products similar to these proposed for use have been installed and have been in service for a minimum period of 3 years. The list shall include owner or purchaser, address of installation, date of installation, contact person, and phone number.
- G. A signed statement from the manufacturer of the poured in place surfacing attesting that all materials under this section shall be installed only by the Manufacturer's Trained Installers.
- H. Certificate of Insurance shall be provided by manufacturer for poured in place surfacing for use as playground safety surfacing, covering general and product liability, of not less than \$1,000,000 for each occurrence, \$2,000,000 general aggregate, with an excess/umbrella liability of \$25,000,000. The issuing underwrite shall be AA rated.
- I. Installation should be in accordance with ASTM F1292-09 for Impact Attenuation of surface system under and around playground equipment. The poured in place system to be installed in compliance with the Critical Fall Height as determined by the Playground Equipment.
- J. IPEMA Certification specific to poured in place safety surfacing.
- K. IPEMA certification specific to ½" layer of TPV over cushion layer with a grout sealer, rendering it non porous.
- L. Manufacturer should provide written instructions for recommended maintenance practices.
- M. Manufacturer should submit color samples for customer verification.
- N. Performance Requirements: Provide products that have been manufactured, fabricated and installed to meet or exceed the criteria and methodology identified in PARTS 2 and 3.

O. Quality Assurance:

1. Test reports: upon request, provide the test reports from recognized, qualified, independent third party testing laboratories. Self-testing of products is not acceptable. Testing reports for porous poured in place safety surfaces shall not be acceptable.
2. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.

1.4 DELIVERY, STORAGE AND PRODUCT HANDLING

- A. Deliver material and products in unopened original packaging in accordance with the manufacturer's recommendations.
- B. Handle and store products and material in a manner that prevents damage, per manufacturer's instructions.

1.5 SITE CONDITIONS

- A. Environmental Requirements: Comply with weather, temperature, and other environmental conditions according to the manufacturer's specifications and requirements. Poured in Place surfacing must be installed on a dry sub-surface, with no prospect of rain within the initial drying period, and within the recommend temperature range of the manufacturer. Installation in weather condition of extreme heat, cold (less than 55 degrees F), and/or high humidity may affect cure time, and the structural integrity of the final product. Immediate surrounding sites must be reasonably free of dust conditions, or this could affect the final surface look.

1.6 SCHEDULING AND COORDINATION OF WORK

- A. Coordinate work in this section with other related work and installations. Poured in Place surfacing shall be installed after all playground equipment, signs, and any other items that will be within the surfacing area. Coordinate with General Contractor
- B. Schedule and sequence the work in the section to avoid construction delays.

1.7 GUARANTEES AND WARRANTIES

- A. Warranty: The poured in place surfacing manufacturer should provide a warranty to the owner that covers defects in materials and workmanship of: 1. the rubber for a period of Two (2) years from the date of Substantial Completion and 2. the colorseal for a period of One (1) years.
- B. The manufacturer's warranty should include general wear and tear. The warranty should specifically exclude vandalism, high heel punctures, hard water stains, acts of war or acts of nature beyond the control of the owner or the manufacturer.

- C. The bidder should provide a warranty to the owner that covers defects in the installation workmanship, and further warrants the installation was done in accordance with the manufacturer's recommendations.
- D. All poured in place warranties should be limited to repair or replacement of the affected areas and should include all necessary materials, labor, transportation costs, etc. to complete said repairs. All warranties are contingent on the full payment by the owner of all pertinent invoices and adherence to any required maintenance procedures.
- E. Provide all warranties to Owner at time of Final Acceptance.

PART 2 - PRODUCTS

2.1 MANUFACTURED SURFACING MATERIAL

- A. Poured in Place Surface: The poured in place surface shall consist of 100 percent recycled granulated and or shredded tire material mixed with a polyurethane binder, then capped with either an EPDM, TPV (an aliphatic binder), or aromatic binder.
- B. It shall consist of a uniform material manufactured in such a way that the top portion meets the requirements specified herein for wear surface.
- C. The type of safety surfacing shall be a poured-in-place system and shall be indicated on the drawings.

2.2 CUSHION LAYER SECTION

- A. Impact Attenuating Cushion Layer: Cushion Layer consists of non-tire derived styrene butadiene rubber (SBR) & EPDM chunk rubber mixed with the appropriate amount of urethane so that the binder is evenly dispersed into the rubber base.
- B. Strands of SBR may vary from 0.5 mm – 2.0 mm in thickness by 3.0 mm – 20 mm in length.
- C. SBR Crumb Rubber (5-9 Mesh) using sieve analysis ASTM D5644 with a fiber content of .1% or less mixed in.
- D. Foam or standard rubber granules are not to be permitted in Cushion Layer.
- E. Binder shall be between 10-14 percent of the total weight of the material and shall provide 100 percent coating of the particles.
- F. The Cushion Layer shall be compatible with the Wear Course and must meet requirements herein for impact attenuation.

2.3 WEAR COURSE

- A. Wear Course shall consist of Ethylene Propylene Diene Monomer (EPDM) or Thermal Plastic Vulcanized (TPV) granules with urethane binder to produce an even, uniform, seamless surface. Installation of surfacing shall be seamless (unless otherwise agreed upon by Owner) and completely bonded to concrete or asphalt subsurface. Material shall cover all foundations and fill around all elements penetrating the surface.
- B. EPDM shall be peroxide cured with an EPDM content of 26 percent and shall include a processing aid to prevent hardness with 26% poly content to maintain dynamic testing characteristics, weatherization, and UV stability.
- C. ASTM D2240 (Shore A) hardness of 55-65, not less than 26 percent rubber hydrocarbons.
- D. Size of EPDM granules shall be 1-4 mm across. Binder shall be not less than 20 percent of total weight of rubber used in the wear surface and shall provide 100 percent coating of the particles.
- E. TPV shall be angular granules with a (Shore A) hardness of 65°A \pm 5 and particle size between 1-4mm. Binder shall be not less than 20 percent of total weight of rubber used in the wear surface and shall provide 100 percent coating of the particles.
- F. The wear course layer mix should be spread and troweled to a depth of a half inch ($\frac{1}{2}$ " (12.7 mm). The finished texture shall be slip resistant, smooth and even.
- G. The Wear Course shall be porous.
- H. Where seams are required due to color change, a step configuration with a 4" overlap will be constructed to maintain wear surface integrity.

2.4 BINDER

- A. No Toluene Diphenyl Isocyanate (TDI) shall be used.
- B. No filler materials shall be used in urethane such as plasticizers and the catalyzing agent shall contain no heavy metals.
- C. Weight of polyurethane shall be no less than 8.5 lbs. /gal (1.02 Kg/1) and no more than 9.5 lbs. /gal (1.14 Kg/1).
- D. Manufacturer is permitted to modify the type of urethane required to match extreme weather conditions. Substitutions must be equal to or exceed original quality.

2.5 (TPV) INSERTS

- A. TPV Insert – Thermal Plastic Vulcanized (TPV) angular granules with a (Shore A) hardness of 65° A \pm 5 and particle size between .5-1.5 mm shall be used.
- B. Thickness of the TPV Insert shall be $\frac{1}{2}$ " – 5/8" inch.
- C. TPV Insert shall be porous.

- D. Aromatic or Aliphatic urethane to be used as a binder.
- E. Location – TPV Insert to be installed under swings, swing bays, slide exits. Customer to approve location of wear mat inserts.
- F. Standard Color TPV .5-1.5mm to be used. Colors include four standard colors: Terra Cotta Red, Blue, Green, and Beige.
- G. Size: Swing bay use locations shall have TPV Inserts inclusive of all outside bay structure poles. Singular swings and slide exits shall be 4'x4'x1/2" in thickness.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examination: Examine conditions of work in place before proceeding with installation of surfacing. Report defects to Owner's Representative and seek directions.
- B. Measurements: Take field measurements; report variance between plan and field dimensions.
- C. Coordination: Coordinate the work in this section with related work, including site utilities, play equipment installations, planting and turf installations, irrigation system installation, and paving work.
- D. Finished Grade/Slope: Verify that finished elevations or adjacent areas are as indicated on the architectural or site plans, that the appropriate sub-grade elevation has been established for the particular safety surface to be installed, and that the subsurface has been installed per architectural, site or equipment plans while meeting accessibility and use zones requirements.
- E. Aggregate Subbase: Tolerance of aggregate subbase shall be with 3/8" inch (10mm) in 10' ft. (3050 mm). Verify that aggregate subbase has been fully compacted. Per ADA Guidelines: compacted Aggregate subbase – 4" inches of 3/4" inch minus irregular stone with fines compacted to 95% percent in 2" inch watered lifts

3.2 INSTALLATION OF SURFACES

- A. General: Install in conformance with referenced standards, manufacturer's written directions, as shown, and as specified.
- B. Poured in Place Surfacing:
 - 1. Components of the poured in place surfacing shall be mixed on site in a rotating tumbler to ensure components are thoroughly mixed and are in accordance with manufactures recommendations. Installation of surfacing shall be seamless up to 2,000 square feet per day and completely bonded to concrete or subbase. Material shall cover all foundations and fill around all elements penetrating the surface.

2. Cushion Layer: Whenever practical, cushion layer of surfacing material shall be installed in one continuous pour on the same day of up to 2,000 square feet. When a second pour is required, step the seam (see detail) and fully coat the step of the previous work with polyurethane binder to ensure 100 percent bond with new work. Apply adhesive in small quantities so that new cushion layer can be placed before the adhesive dries.
3. Wear Course: Wear Course must be either quality peroxide cured EPDM, TPV or Treated SBR granules. Wear surface shall be bonded to Cushion Layer. If necessary, additional primer will be used between the cushion layer and Wear Course. Apply adhesive to Cushion Layer in small quantities allowing the Wear Course to be applied before adhesive dries. Surface shall be hand troweled to a smooth, even finish. Except continuous and seamless up to 2,000 square feet per day (contact sales representative for seamless in excess of 2,000 square feet). Where seams are required due to color change, size or adverse weather, a step configuration will be constructed to maintain Wear Course integrity. The edge of initial pour shall be coated with adhesive and wearing surface mixture shall be immediately applied. Pads with multiple seams are encouraged to include a topcoat of urethane before being placed into use. Butt joint seams are not acceptable except for repairs. Under special conditions and with owners written approval seams may be permitted in same color pad. Consult with manufacturer for specific applications.
4. Perimeter: Primer adhesive must be applied to all sides of the void. When connecting to a concrete curb or border, the inside vertical edge shall be primed with adhesive and the final 2" inches of the cushion layer shall be tapered to allow the wear surface material to be 1.5" – 2" thick where it joins the concrete.
5. Thickness: Construction methods such as the use of measured screeds or guides shall be employed to ensure that the full depth of specified surfacing material is installed. Surfacing system thickness throughout the playground equipment use zone shall be as required to meet the impact attenuation requirements specified herein
6. Clean Up: Manufacturer installers shall work to minimize excessive adhesive on adjacent surfaces or play equipment. Spills of excess adhesive shall be promptly cleaned.
7. Protection: The safety surface shall be allowed to fully cure in accordance with Manufacturer's instructions. The surface shall be protected by the owner from all traffic during the curing period of 48 hours or as instructed by the Manufacturer.

C. CLEAN UP

1. General: Keep site free of accumulation of waste and rubbish; remove surplus materials, rubbish, and debris daily and at the completion of the work.

END OF SECTION 321800

SECTION 32 1816.13

SPLASH PAD RESILIENT SURFACING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Owner's general requirements for Contract Specifications apply to work in this Section.
- B. Coordinate the work of this Section with related trades.
- C. Verify applicable extents of work and dimensions at the jobsite.
- D. Materials, labor, tools, equipment, and services necessary to furnish, deliver, and install the Resilient Surfacing to include, but not be limited to layout; excavation; backfill; furnishing and installing of base material; furnishing and installing of poured-in-place surfacing; and all other incidental work to provide a complete resilient surfacing system.

1.2 QUALITY ASSURANCE

- A. Playground surfacing shall comply with the following:
 - 1. U.S. Consumer Product Safety Commission (CPSC) "Handbook for Public Playground Safety"
 - 2. Area Safety: Poured in place within playground use zones shall meet or exceed the performance requirements of the CPSC, ADA and Fall Height Test ASTM F1292-17a. The surface must yield both a peak deceleration of no more than 200 G-max and a Head Injury Criteria (HIC) value of no more than 1,000 for a head-first fall from the highest accessible portion of play equipment being installed as shown on drawings. IPEMA certification is required. (ASTM F1292-17a section 4.3.3: The laboratory test used to determine critical fall height shall have been conducted on surfacing material samples identical in design, materials, components, and thickness and manufactured as the installed playground surface).
 - 3. The requirements of the Americans with Disabilities Act. Accessibility Guidelines (ADAAG) 28 CFR Part 36 that provide equal or greater accessibility than the requirements of UFAS must also be met in children's outdoor play areas.
 - 4. Poured in place surfaces intended to serve as accessible paths of travel for persons with disabilities shall be firm, stable and slip resistant, and shall meet the requirements of ASTM F 1951-14 and ASTM F1292-17a.
- B. Playground Surfacing Installer: Installer shall be certified by the athletic and recreational surface manufacturer and have at minimum 5 years experience in the installation of the specified surfacing system.

1.3 SUBMITTALS

- C. The Contractor shall submit, five (5) complete sets of the material submittals, including manufacturer's name and address, specific trade names, catalog and model numbers, illustrations and descriptive material, and samples of the proposed materials for this project clearly marked as to proposed items for approval by the Owner's representative.
- D. Products submitted as equal must include hard copies of manufactures written specifications and warranty.
- E. Manufacturer's descriptive data and installation instructions.
- F. Manufacturer's details showing depths of Wear Course and sub-base materials, anchoring systems and edge details.
- G. Product Warranty: Submit to Owner's Representative upon substantial completion of the work all product and supplier's warranties.
- H. Upon request, a listing of at least five installations where products similar to these proposed for use have been installed and have been in service for a minimum period of 3 years. The list shall include owner or purchaser, address of installation, date of installation, contact person, and phone number.
- I. A signed statement from the manufacturer of the poured in place surfacing attesting that all materials under this section shall be installed only by the Manufacturer's Trained Installers.
- J. Certificate of Insurance shall be provided by manufacturer for poured in place surfacing for use as splashpad safety surfacing, covering general and product liability, of not less than \$1,000,000 for each occurrence, \$2,000,000 general aggregate, with an excess/umbrella liability of \$25,000,000. The issuing underwrite shall be AA rated.
- K. Installation should be in accordance with ASTM F1292-09 for Impact Attenuation of surface system under and around splashpad equipment.
- L. IPEMA Certification specific to poured in place safety surfacing.
- M. IPEMA certification specific to ½" layer of TPV over cushion layer with a grout sealer, rendering it non porous.
- N. Manufacturer should provide written instructions for recommended maintenance practices.
- O. Manufacturer should submit color samples for customer verification.
- P. Performance Requirements: Provide products that have been manufactured, fabricated and installed to meet or exceed the criteria and methodology identified in PARTS 2 and 3.
- Q. Quality Assurance:

1. Test reports: upon request, provide the test reports from recognized, qualified, independent third party testing laboratories. Self-testing of products is not acceptable. Testing reports for porous poured in place safety surfaces shall not be acceptable.
2. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.

1.4 DELIVERY, STORAGE AND PRODUCT HANDLING

- A. Deliver material and products in unopened original packaging in accordance with the manufacturer's recommendations.
- B. Handle and store products and material in a manner that prevents damage, per manufacturer's instructions.

1.5 SITE CONDITIONS

- A. Environmental Requirements: Comply with weather, temperature, and other environmental conditions according to the manufacturer's specifications and requirements. Poured in Place surfacing must be installed on a dry sub-surface, with no prospect of rain within the initial drying period, and within the recommend temperature range of the manufacturer. Installation in weather condition of extreme heat, cold (less than 55 degrees F), and/or high humidity may affect cure time, and the structural integrity of the final product. Immediate surrounding sites must be reasonably free of dust conditions, or this could affect the final surface look.

1.6 SCHEDULING AND COORDINATION OF WORK

- A. Coordinate work in this section with other related work and installations. Poured in Place surfacing shall be installed after all playground equipment, signs, and any other items that will be within the surfacing area. Coordinate with General Contractor
- B. Schedule and sequence the work in the section to avoid construction delays.

1.7 GUARANTEES AND WARRANTIES

- A. Warranty: The poured in place surfacing manufacturer should provide a warranty to the owner that covers defects in materials and workmanship of: 1. the rubber for a period of Two (2) years from the date of Substantial Completion and 2. the colorseal for a period of One (1) years.
- B. The manufacturer's warranty should include general wear and tear. The warranty should specifically exclude vandalism, high heel punctures, hard water stains, acts of war or acts of nature beyond the control of the owner or the manufacturer.
- C. The bidder should provide a warranty to the owner that covers defects in the installation workmanship, and further warrants the installation was done in accordance with the manufacturer's recommendations.

- D. All poured in place warranties should be limited to repair or replacement of the affected areas and should include all necessary materials, labor, transportation costs, etc. to complete said repairs. All warranties are contingent on the full payment by the owner of all pertinent invoices and adherence to any required maintenance procedures.
- E. Provide all warranties to Owner at time of Final Acceptance.

PART 2 - PRODUCTS

2.1 MANUFACTURED SURFACING MATERIAL

- A. Splash Pad Surfacing shall consist of both recycled and synthetic materials meeting the requirements of this specification. The type of safety surfacing shall be Splash Tread by Robertson Recreational Surfaces or approved equal or it's Certified Installers. Telephone 800-858-0519.
- B. It shall consist of a uniform material manufactured in such a way that the top portion meets the requirements specified herein for wear surface.

2.2 CUSHION LAYER SECTION

- A. Impact Attenuating Cushion Layer: Cushion Layer consists of non-tire derived styrene butadiene rubber (SBR) & EPDM chunk rubber mixed with the appropriate amount of urethane so that the binder is evenly dispersed into the rubber base.
- B. The cushion layer, if required, should be a mixture of black recycled SBR rubber buffings mixed with a 100% solids moisture cured MDI Polyurethane binder (100 pounds of SBR rubber buffings to 12 pounds of binder) installed at the appropriate thickness. As an upgrade, a 5/8" chunk rubber derived only from high quality pre-consumer recycled rubber containing EPDM is available. The cushion layer should be porous.

2.3 WEAR COURSE

- A. Wear Course shall consist of Ethylene Propylene Diene Monomer (EPDM) or Thermal Plastic Vulcanized (TPV) granules with urethane binder to produce an even, uniform, seamless surface. Installation of surfacing shall be seamless (unless otherwise agreed upon by Owner) and completely bonded to concrete or asphalt subsurface. Material shall cover all foundations and fill around all elements penetrating the surface.
- B. Size of EPDM granules shall be 1-4 mm across. Binder shall be not less than 20 percent of total weight of rubber used in the wear surface and shall provide 100 percent coating of the particles.
- C. The wear course layer mix should be spread and troweled to a depth of a half inch (½") (12.7 mm). The finished texture shall be slip resistant, smooth and even.

- D. Where seams are required due to color change, a step configuration with a 4" overlap will be constructed to maintain wear surface integrity.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examination: Examine conditions of work in place before proceeding with installation of surfacing. Report defects to Owner's Representative and seek directions.
- B. Measurements: Take field measurements; report variance between plan and field dimensions.
- C. Coordination: Coordinate the work in this section with related work, including site utilities, play equipment installations, planting and turf installations, irrigation system installation, and paving work.
- D. Finished Grade/Slope: Verify that finished elevations or adjacent areas are as indicated on the architectural or site plans, that the appropriate sub-grade elevation has been established for the particular safety surface to be installed, and that the subsurface has been installed per architectural, site or equipment plans while meeting accessibility and use zones requirements.
- E. Aggregate Subbase: Tolerance of aggregate subbase shall be with 3/8" inch (10mm) in 10' ft. (3050 mm). Verify that aggregate subbase has been fully compacted. Per ADA Guidelines: compacted Aggregate subbase – 4" inches of 3/4" inch minus irregular stone with fines compacted to 95% percent in 2" inch watered lifts

3.2 INSTALLATION OF SURFACES

- A. General: The poured in place safety surfacing installer should strictly adhere to the installation procedures outlined under these sections. Any variance from these requirements should be accepted in writing by the manufacturer's onsite representative and submitted to the architect/owner, verifying that the changes do not in any way affect the warranty.
- B. Site Preparation and Base:
 - 1. Subbase should be concrete. See site concrete specifications for additional information.
 - 2. Ensure that concrete base has proper drainage prior to installation of surfacing.
 - 3. Slope of concrete base should comply with local health department regulations. See plans for grading.
 - 4. New concrete surfacing should be allowed to cure for 28 days prior to surfacing installation.

5. Hard Base Construction: Concrete surfaces should be shot blast, acid etch or power scarify as required to obtain optimum bond of the cushion layer to the concrete. Remove sufficient material to provide a sound surface, free of glaze, efflorescence, or form release agents. Remove grease, oil, and other penetrating contaminants.
6. For concrete surface that is not enclosed (i.e. a curb to curb pour), the concrete shall have keyway cuts 1.5" wide by 1.5" deep so that the system can be bull nosed down into the notch area.

C. Primer:

1. A urethane primer should be applied to concrete, asphalt or wood surfaces at a rate of 200-250 square feet per gallon. The entire area does not need to be primed at once, instead, prime about 700 square feet at a time in immediate advance of rubber installation. This procedure should be continued until all areas are complete.
2. The urethane primer should be applied to any playground equipment that will be surrounded by the poured in place safety surfacing system.

D. Cushion Layer:

1. The components of the poured in place safety surfacing should be mixed on site in a mixer to ensure a comprehensive mix according to manufacturer's instructions.
2. The cushion layer comprised of SBR buffings shall be mixed with the aromatic or aliphatic moisture cure polyurethane binder at a rate of 12% of the total weight of the material thoroughly so that the binder is evenly dispersed into the rubber base.
3. The cushion layer comprised of non-tire derived coated SBR & EPDM Chunk Rubber shall be mixed with the appropriate amount of urethane so that the binder is evenly dispersed into the rubber base.
4. The cushion layer mix should then be spread and troweled to the desired depth and allow to cure for 24 hours.

E. Wear Course Layer:

1. The wear course layer should be mixed with 1-4mm TPV granules or EPDM and urethane binder at a rate of 20% of the total weight of the materials so the granules are covered thoroughly and evenly.
2. The wear course layer mix should be spread and troweled to a depth of a half inch ($\frac{1}{2}$ ").
3. Where seams are required due to color change, a step configuration with a 4" overlap will be constructed to maintain wear surface integrity.

4. The finished texture shall be slip resistant, smooth and even.
5. The poured in place surface should be allowed to cure for 24-72 hours or until dry to the touch.

F. Grout Sealer:

1. The wear course layer should be sealed with a thermoplastic composite grout. FLEXGROUT should be spread with a trowel at a rate of 1 gallon per 30 square feet. Pressure should be applied to the trowel with enough force to push the grout into the wear course layer, rendering it impermeable. The finished texture should be slip resistant and even.
2. The poured in place surface should be allowed to cure for 24-72 hours or until dry to the touch.

G. Color Seal:

1. The color seal should consist of a water based composite liquid. Color seal should be rolled (or can be sprayed) to completely cover entire surface. The color seal should be allowed to cure for 24-72 hours or until dry to touch.
2. Approved product: Grout and Color Seal by FlexGround or approved equivalent. Contact: Bill Stafford, bill@flexground.com

C. CLEAN UP

1. General: Keep site free of accumulation of waste and rubbish; remove surplus materials, rubbish, and debris daily and at the completion of the work.

END OF SECTION 321800.13

SECTION 32 3113
CHAIN LINK FENCES

PART 1 - GENERAL

1.1 DESCRIPTION:

A. Work included:

1. Construction of new four-foot-high chain link fence.
2. Construction of new pedestrian gate.
3. Construction of new six-foot-high chain link fence.

1.2 SUBMITTALS:

A. Submit for approval no less than seven (7) calendar days before installation.

B. Manufacturer's Data:

1. Framework (rail and post).
2. Mesh.
3. Support arms.

PART 2 – PRODUCTS

2.1 MATERIALS:

- A. The fencing fabric shall be woven from No. 9 gauge wire conforming to Sections 3, 4, 7, and 8 of ASTM A 116, with Class III zinc coating. The fencing fabric shall be a chain link type fabric as defined in Section 3 of ASTM Designation: A 392.

2.2 CONCRETE MIX:

- A. Concrete: Conform to the requirements of ASTM C94, normal Portland cement, 2000 psi @ 28 days, 2-inch to 3-inch slump.

2.3 COMPONENTS:

- A. Cap: Post cap shall be hot dip galvanized steel, sized to post dimension, set screw retained.
- B. Fittings: Sleeves, bands, clips, rail ends, tension bars, fasteners, and fittings shall be galvanized steel.
- C. Top rail framework: 1.625" O.D. pipe.
- D. Posts frameworks: Line posts shall be 2" O.D. pipe. Terminal, corner and pull posts shall be 2.5" O.D. pipe.
- E. Tension bar straps: galvanized steel tension bar and galvanized steel tension

bands with carriage bolts.

- F. Gate hinges and latches: Malleable steel gate latch drop fork assembly and chain link fence gravity self-closing gate hinge - one way swing.
- G. Miscellaneous wire: Miscellaneous wire shall conform to FS-RR-F-191 series and shall be zinc-coated steel. Reinforcing wire shall have minimum tensile strength of 75,000 psi, zinc-coated for use with zinc-coated fabric. Tie wire shall be aluminum alloy of 0.144-inch diameter for attaching fabric to zinc-coated posts. Steel wire may be used for attaching fabric to intermediate posts. Hog rings shall be aluminum wire of 0.110-inch diameter for attaching fabric to reinforcing wires.

PART 3 – EXECUTION

3.1 STANDARD INSTALLATION:

- A. Chain link fences and gates shall be constructed where shown on the plan. The line of the fence shall be cleared of all obstructions and surface irregularities and the bottom of the fence shall be to uniform grade, as may be established by the Inspector.
- B. Unless otherwise set forth in the Plans or these Special Provisions, all fences shall be constructed with a top rail, and a bottom tension wire.
- C. The posts shall be spaced not more than ten feet (10') apart and at points specifically shown by the Plans. Terminal posts and line posts shall be set twenty inches (20") in concrete bases.
- D. Set post to within 4 inches from bottom of concrete footing. Set top of footing 6 inches below finished grade to account for concrete curb.
- E. Concrete base posts shall be allowed to cure for not less than seven (7) days before wire fabric is placed.
- F. Fabric is to be fastened to line posts with fabric bands spaced approximately fourteen inches (14") apart and to top rail and bottom tension wire with 9-gauge galvanized tie wires spaced approximately twenty-four inches (24") apart.
- G. Stretcher bar and truss bands shall be spread and slipped on end, corner, pull, and brace posts before installation of top rails. Extension joints shall be provided from rails at intervals of one hundred feet (100'). Bottom tension wire shall be seven (7) gauge galvanized coil spring steel.
- H. Pass top rail through line post tops to form continuous bracing. Install 7-inch-long couplings midspan at pipe ends.
- I. Brace each corner post back to adjacent line post with horizontal center brace rail. Install brace rail, one bay from end posts.
- J. The placing of the rails, braces, and the wire fabric shall be accomplished in such

a manner that the finished fence shall be taut, true, and of precise workmanship throughout. The fabric shall be stretched so that no slack sections remain at any point. The fabric shall be securely tied to posts and rails in a manner so that the fabric will remain tight and immovable.

- K. Position bottom of fabric no more than 2 inches above finished grade with tension wire stretched taut between posts.
- L. Attach fabric to end and corner posts with tension bars and tension bar clips.
- M. Install center and bottom brace rail on corner leaves.

END OF SECTION

SECTION 32 3300
SITE FURNISHINGS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Provide the following site furnishings, including accessories, as required for complete, finished installation.
 - 1. Benches
 - 2. Trash & Recycle Containers
 - 3. Picnic Tables
 - 4. Prefabricated Restroom
 - 5. Playground Equipment
 - 6. Splash Pad Equipment

1.2 RELATED SECTIONS:

- A. Division 01 General Requirements, which contain information and requirements that apply to the work specified herein.

1.3 SUBMITTALS

- A. General: Submittals to be in accordance with the requirements of the Standard Specifications. Review or acceptance, as specified, by the Engineer required prior to commencement of work.
- B. Product Data: Submit manufacturer's product data, storage and handling requirements and recommendations, installation methods and available colors, styles, patterns, and textures for all site furnishings listed.
- C. Warranty: Manufacturer's standard warranty.

1.4 QUALITY ASSURANCE

- A. Workmanship and Materials: All workmanship and materials within this Section shall conform strictly to the manufacturer's specifications installation instructions and guarantees.
- B. The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.
- C. Contractor shall provide a GameTime® Certified Installer to oversee and direct the proper installation of the play equipment. If contractor does not have a Certified

Installer at the time of Bid Opening, the Certified Installer may become certified subsequent to Notice to Proceed; however, such certification process must be accomplished within the same Contract Time, and at no additional cost of time extension to the County.

1.5 SUBSTITUTIONS, ADDITIONS AND DELETIONS

- A. General: Submit proposals for substitutions for review and approval. Acceptance by the County is required prior to proceeding with the work under this Section. Provide descriptive catalog literature for each item to be substituted.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Handling of site furnishings: The Contractor is cautioned to exercise care in handling, loading, unloading, storing and installation of site furnishings. All materials shall be transported in a vehicle that allows the materials to lie flat, not to subject it to undue bending or concentrated external load at any point. Any materials that have been dented or damaged will be discarded and, if installed, shall be replaced.
- B. Upon receipt at the job site, all materials shall be checked to ensure that no damages occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism, or theft.

PART 2 - PRODUCTS

2.1 BENCHES

- A. Kings River Casting, 1350 North Ave., Sanger, CA 93657, or approved equal
Phone: (888) 545-5157. Website www.kingsrivercasting.com

Bench: 24.5" x 72.5" x 32", "Iron Valley Slatted" Bench (Model IVSBC-72"), Slats: Aluminum Extrusion, Arms: end and center. Finish: primer powder-coated, and final coat electrostatically powder coated - Color: Evergreen

Mounting: Surface Mounted, bolt to concrete pad with corrosion resistant hardware to be supplied by contractor.

2.2 TRASH AND RECYCLE CONTAINERS: 1 OF EACH (T.+R.) AT EACH LOCATION SHOWN ON PLAN

- A. Kings River Casting, 1350 North Ave., Sanger, CA 93657, or approved equal
Phone: (888) 545-5157. Website www.kingsrivercasting.com

Containers: 26" x 36", 55 Gallon Trash Receptacle - expanded metal (Model - EMTR-55). Finish: primer powder coated, and final coat electrostatically powder-coated - Color: Evergreen for trash container and Blue for Recycle container.

Mounting: Surface Mounted, Bolt to concrete pad with corrosion resistant hardware to be supplied by contractor.

Top #1 - Order with optional Dome Top. Provide painted sign on dome in white letters: LANDFILL. Letters to be 2" to 2.5" tall.

Top #2 - Order with optional Dome Top. Provide painted sign on dome in white letters: RECYCLE. Letters to be 2" to 2.5" tall.

2.3 PICNIC TABLES

- A. Kings River Casting, 1350 North Ave., Sanger, CA 93657, or approved equal
Phone: (888) 545-5157. Website www.kingsrivercasting.com

Picnic Table: 68" x 72", Expanded Metal Picnic Table - Steel (Model EMTP-6). Steel pipe supports and 3/4" #9 expanded metal fully welded diamond patterned slats. Finish: primer powder coated, and final coat electrostatically powder-coated - Color: Evergreen slats, Black supports.

Mounting: surface mounted with surface clamps set in the concrete. Bolt in place with lock washers. Contractor to provide attachment hardware. Provide a submittal of the hardware.

2.4 PREFABRICATED RESTROOM

Public Restroom Company two stall prefabricated restroom, Project Reference # 11644
Contact: Chris Gaughan (888) 888-2060 ext. 106 (chrisg@PublicRestroomCompany.com)
Website www.PublicRestroomCompany.com

Installation of prefabricated restroom per manufacturer's specifications.

2.5 PLAYGROUND EQUIPMENT

Game Time equipment coordinated through Great Western Recreation, Job # 107394-01
Contact: Tyler Kyriopoulos (435) 760-5103 (tyler@gwpark.com) or approved equal
Website www.gametime.com

Installation of all playground equipment: per manufacturer's specifications.

2.6 SPLASH PAD EQUIPMENT

Water Odyssey Splash Pad equipment coordinated through Fountain People, Job # W24084
Contact: Jim Hartman (512) 781-6375 (jim.hartman@fountainpeople.com)
Website www.fountainpeople.com

Installation of all splash pad equipment: per manufacturer's specifications.

2.7 SPLASH PAD EQUIPMENT ENCLOSURE

AquaWorx standalone cabinet (model #AWCB-1) coordinated through Great Western Recreation, Job # 107394-01 Contact: Tyler Kyriopoulos (435) 760-5103 (tyler@gwpark.com) or approved equal
Website www.gametime.com

Installation of cabinet: per manufacturer's specifications.

PART 3 - EXECUTION

3.1 GENERAL

- A. Handle and install site furnishings in accordance with manufacturer's approved shop drawings and instructions.
- B. Deliver manufactured furnishings in original packaging. Protect and secure furnishings delivered to site from damage and theft.

3.2 SITE FURNISHINGS

A. Layout of Site Furnishings

- 1. Layout: Layout site furniture according to the locations shown on the drawings, and as required by the Engineer.
- 2. Examination: Examine areas to receive site furnishings. Notify Engineer of conditions that would adversely affect installation or subsequent use. Do not begin installation until unacceptable conditions are corrected.
- 3. Adjustments: The Engineer reserves the right to make adjustments in the locations of the site furniture without additional cost to the County.
- 4. Quantity of furnishings shall be as specified on plans and in these specifications.

B. Installation of Site Furnishings

- 1. Surface mount furnishings per manufacturer's specifications and as specified on plans.
- 2. Set site furnishings level and true to line, in correct relationship to adjacent materials.
- 3. Bolt down in place or secure by other means all furnishings, as indicated in these specifications.
- 4. Prepare subgrade and utility stubs for the prefabricated restroom per manufacturer's instructions.
- 5. Install all play equipment according to the manufacturer's specifications, including installation of signage that comes with the purchase of the equipment.
- 6. Install all splash pad equipment according to the manufacturer's specifications and connect to potable water and wastewater systems.

C. Cleaning:

- 1. The contractor shall clean the jobsite of excess materials and any debris that is caused by surface mounting.
- 2. Clean furnishings promptly after installation in accordance with manufacturer's

instructions.

3. Do not use harsh cleaning materials or methods that could damage finish.

3.3 FINAL ACCEPTANCE

- A. Final Acceptance shall be when all furnishings and fixtures are installed in accordance with approved Drawings and to manufacturer's specifications, and all damaged parts and items are replaced.
- B. Submit product maintenance data.

END OF SECTION

SECTION 32 8000
IRRIGATION SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Pipe and fittings.
 - 2. Valves.
 - 3. Rotors, Spray, and Bubblers.
 - 4. Control system.

1.2 SYSTEM DESCRIPTION

- A. Automatic programmable electronic solenoid controlled underground irrigation system for landscape plantings.

1.3 RELATED SECTIONS

- A. Section 32 90 00 Planting
- B. Section 32 01 90 Landscape Maintenance
- C. Section 31 00 00 Earthwork

1.4 DEFINITIONS

- A. Lateral Piping: Downstream from control valves to sprinklers, drip emitters, specialties, and drain valves. Piping is under pressure during flow.
- B. Mainline Piping: Downstream from point of connection (P.O.C.) to the water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.

1.5 SUBMITTALS

- A. As-Built Drawings: Include location, type, size, and design data.
 - 1. Piping layout to water source or point of connection, pipe types, sizes, capacities, and flow characteristics.
 - 2. Location of sleeves under pavement
 - 3. Location and coverage of sprinkler heads and nozzles
 - 4. All valves, quick couplers, and other accessories
 - 5. Controller and wiring; show wire size and number of conductors for each control cable.
 - 6. Plant and landscaping features, site structures
 - 7. Schedule of fittings used.

- B. Product Data: Include pressure ratings, rated capacities, and settings of selected models for the following:
 - 1. Controllers, control system and wiring diagrams
 - 2. Wireless Weather Sensor
 - 3. Specialty valves
 - 4. Valve boxes
 - 5. Bubblers
 - 6. Sprinklers
 - 7. Rotors
 - 8. Irrigations specialties and accessories
- C. Operation and maintenance data.
- D. Documentation of Installer's Experience.

1.6 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Work and materials shall be in accordance with requirements of the utility supplying water for backflow prevention and all applicable laws and regulations of governing authorities.
- C. Installer's Qualifications: Engage an experienced installer who has installed irrigation systems for a minimum of 5 years and who has successfully completed irrigation systems similar in material, design, and extent to that indicated for this Project.

1.7 ORDINANCES AND REGULATIONS

- A. All local, municipal, and state laws, rules and regulations governing any portion of this work shall be made a part of these specifications and their provisions carried out.
- B. When specifications or drawings describe materials, workmanship of construction of better quality or higher efficiency, it shall take precedence over such laws, rules, and regulations.

1.8 PROJECT CONDITIONS

- A. Site Inspections: Verify Project site conditions and note irregularities affecting Work of this Section. Report irregularities to the County's Representative prior to beginning work.
 - 1. Beginning work of this section implies acceptance of existing conditions. Preliminary site and soils reports available at the County's Office are for informational purposes only. Data in reports are not intended as

- representations or warranties of accuracy or continuity of conditions between soil borings.
 - 2. The County assumes no responsibility for interpretations or conclusions drawn from this information.
 - 3. Conduct all necessary site inspections and investigations for the proper installation of the specified work.
- B. Utility Locations: Arrange for and coordinate with the County's Representative the location of all underground utilities. Repair underground utilities damaged during construction.

1.9 SEQUENCING AND SCHEDULING

- A. Maintain uninterrupted water and power service to the Project site during normal working hours. Arrange for any temporary water shutoffs during tie-in to existing irrigation mainline, with the County's Representative.
- B. Coordinate irrigation systems work with landscape and other site work.

1.10 SHIPPING, HANDLING AND STORAGE

- A. Shipping: Components shall be packaged to protect against damage from shipping, handling, and transit. Cover all pipe openings to prevent the entry of foreign material. Isolate solvents from other system materials to avoid damage from spillage or leakage.
- B. Handling:
 - 1. Pipe and Fittings: Do not bump, scrape or drop. Do not use chains, hooks, cables, and other devices that can damage pipe and fittings.
 - 2. Exercise caution in handling solvents.
- C. Storage:
 - 1. General: Provide proper storage of system materials. Environmental control shall be provided to maintain proper storage conditions as prescribed by the manufacturers of the irrigation system components.
 - 2. Pipe: Store pipes supported off the ground for the full length of pipe and in a manner that will prevent pipe distortion and accidental motion.
 - 3. Non-metallic Pipe and Fittings: Protect from exposure to direct sunlight during shipping and storage and minimize exposure to sunlight during installation.

1.11 EXTRA MATERIALS

- A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Spray Heads: Five of each nozzle type
 - 2. Rotor Heads: Five of each nozzle type
 - 3. Quick Coupling Keys: Two each.

4. Operation and Maintenance Manuals: Controller and weather sensor.
5. Keys to any locking enclosures.

1.12 WARRANTY

- A. Complete all work in accordance with the Drawings and Specifications and warrant materials and workmanship to be free from defects for the period of one year from the Date of Acceptance.
- B. Repair or replace all defects in material or workmanship, and any damage resulting from the repairing of such defects that may develop during the warranty period at no additional cost to the County.
 1. Make such repairs or replacements within three days of written notification by the County.
 2. County reserves the right undertake repairs and replacement, at the Contractor's expense, for repairs and replacement not completed by the Contractor within three days of notification.

1.13 DAMAGE TO PROPERTY

- A. Repair property damaged by defective irrigation material, poor workmanship or negligence of Contractor and his employees at Contractor's expense and restore to its original condition and to the satisfaction of the County's Representative.

1.14 MAINTENANCE SERVICE

- A. Maintain the irrigation system for the Maintenance Period of 1-year.

PART 2 - PRODUCTS

2.1 PIPE AND FITTINGS

- A. Sleeving:
 1. Provide rigid, unplasticized polyvinyl chloride (PVC) 1120, Type 1, Grade 1, NSF approved pipe, extruded from material meeting the requirements of ASTM D 1785, purple in color.
 2. Provide Schedule 40 solvent weld pipe for sleeving.
 3. Provide Schedule 40, Type 1, PVC solvent weld fittings conforming to ASTM D 2466 and ASTM D 1784.
 4. Provide primer approved by pipe manufacturer and solvent cement conforming to ASTM D 2564.
- B. Mainline Pipe and Fittings:
 1. Provide rigid, unplasticized polyvinyl chloride (PVC) 1120, Type 1, Grade 1, NSF approved pipe, extruded from material meeting the requirements of ASTM D 1785, purple in color.
 2. Provide Schedule 40 solvent weld pipe for mainline piping.

3. Provide Schedule 40, Type 1, PVC solvent weld fittings conforming to ASTM D 2466 and ASTM D 1784.
 4. Provide primer approved by pipe manufacturer and solvent cement conforming to ASTM D 2564.
- C. Lateral Pipe and Fittings:
1. Provide rigid, unplasticized polyvinyl chloride (PVC) 1120, Type 1, Grade 1, NSF approved pipe, extruded from material meeting the requirements of ASTM D 2241, purple in color.
 2. Provide Class 200, SDR-21, solvent welded pipe for lateral piping.
 3. Provide Schedule 40, Type 1, PVC solvent weld fittings conforming to ASTM D 2466 and ASTM D 1784.
 4. Provide primer approved by pipe manufacturer and solvent cement conforming to ASTM D 2564.
- D. Swing Joints and Risers:
1. Nipples:
 - a. Provide rigid, unplasticized polyvinyl chloride (PVC) 1120, Type 1, Grade 1, NSF approved pipe, extruded from material meeting the requirements of ASTM D 1785, uniformly gray in color
 - b. Provide Schedule 80 threaded nipples conforming to ASTM D 2464 and ASTM D 1784.
 2. Fittings:
 - a. Provide Schedule 40, Type 1, PVC solvent weld fittings conforming to ASTM D 2466 and ASTM D 1784.
 - b. Provide Schedule 40, Type 1, PVC threaded, socket, or both type fittings conforming to ASTM D 2466 and ASTM D 1784.
 - c. Provide primer approved by pipe manufacturer and solvent cement conforming to ASTM D 2564.
- E. Copper Pipe:
1. Type K conforming to ASTM B 42.
- F. Galvanized Steel Pipe:
1. Standard weight, seamless or welded, galvanized, conforming to ASTM A 53.

2.2 REMOTE CONTROL VALVES (RCV)

- A. Industrial-strength glass-filled nylon globe valves for commercial use, with pressure regulating module; manufacturer, model, size as shown on Drawings.
- B. Boxes for RCV:
1. Type: Rectangular plastic hinged cover with bolt down lock kit, Carson 1914-2 or approved equal.
 2. Color: Purple.

2.3 SPRINKLERS, BUBBLERS, AND ROTORS

- A. Sprinklers: Plastic, pressure compensating; manufacturer, model, size as shown on Drawings.
- B. Bubblers: Plastic, pressure compensating; manufacturer, model, size as shown on Drawings.
- C. Rotors: Plastic, pressure compensating; manufacturer, model, size as shown on Drawings.

2.4 CONTROL SYSTEM

- A. Controller:
 - 1. Electronic, solid state, nonvolatile memory, with wireless communication to weather sensor; manufacturer, model, number of stations as shown on Drawings.
 - 2. Provide compatible weather sensor, manufacturer, model, as shown on Drawings.
- B. Control Wires:
 - 1. Provide AWG No. 14, solid conductor, Type UF, UL-approved for underground direct burial for control wire from the controller to each remote-control valve.
 - 2. Provide AWG No. 12, solid conductor, Type UF, UL-approved for underground direct burial for common wire.
 - 3. Color: Provide white for common ground wire, red for control wires, and green for spare control wire(s).
 - 4. Splices: Provide 3M DBY wire connectors.
 - 5. Warning Tape: Inert plastic film highly resistant to alkalis, acids, or other destructive chemical components likely to be encountered in soils.
 - 6. Provide 3-inch wide, colored yellow, and imprinted with "CAUTION: BURIED ELECTRIC LINE BELOW".
- C. Boxes for Control Wire Splices:
 - 1. Type: 10-inch round plastic, with bolt down lock kit, Carson 910-3 or approved equal.
 - 2. Color: Green.
- D. Controller Housing: Outdoor style with lockable access door.

2.5 MISCELLANEOUS INSTALLATION MATERIALS

- A. Pipe Joint Compound: Teflon tape.
- B. Pipe Coatings for Below Grade Steel Pipe and Fittings: Koopers Bitumastic 300-M coal tar epoxy, 50 mil polyethylene tape; wrap to 6 inches above grade.

- C. Non-Potable Line Tape: Purple color warning tape with black lettering for reclaimed water piping, with warning "NOT FOR DRINKING" for placing over pipe. Tape shall be Terra-Tape or equal.
- D. Provide other ancillary materials and equipment necessary to install the assemblies and the systems to fully operational condition.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

- A. Verify field conditions and locations of existing utilities are acceptable.
- B. Piping layout indicated is diagrammatic only. Route piping to avoid plants and structures.

3.2 LAYOUT OF WORK

- A. Stake out the irrigation system. Items to be staked include mainline pipe routing, mainline components, remote control valves, sprinklers, and controller.
- B. Location of Piping, Valving and Water Emission Devices: Design location is approximate. Make minor adjustments to irrigation system to avoid obstructing plant materials, architectural features, and obstructions such as signs and light standards.
- C. Install all mainline pipe and mainline components inside of Project limit of work lines.
- D. Irrigation System Layout Review: Irrigation system layout review will occur after the staking has been completed. Notify the County's Representative 7 days in advance of review. Modifications will be identified by the County's Representative at this review. Obtain County's Representative's approval before starting excavation.

3.3 EXCAVATION, TRENCHING, AND BACKFILLING

- A. Trench in accordance with Section 31 00 00 Earthwork.
- B. Excavate to permit the pipes to be laid at intended elevations and to permit workspace for installing connections and fittings.
- C. Minimum cover (distance from top of pipe or control wire to finish grade) as follows:
 - 1. 18 inches over mainline pipe.
 - 2. 18 inches over control wire and over electrical conduit.
 - 3. 12 inches over lateral pipe to sprinklers, bubblers and rotors.

- D. Backfill only after lines have been inspected and tested.
- E. Excavated material is generally satisfactory for backfill.
 - 1. Use only backfill free from rubbish, vegetative matter, and stones larger than 2 inches in maximum dimension.
 - 2. Use backfill free of sharp objects which may damage the pipe
 - 3. Remove material not suitable for backfill.
- F. Backfill for pipe not in sleeve by one of the following methods:
 - 1. Backfill and puddle lower half of trench. Allow to dry 24 hours. Backfill remainder of trench in 6-in. layers. Compact each to density of surrounding soil.
 - 2. Backfill rest of trench by depositing the backfill material equally on both sides of pipe in 6-in. layers and compacting each to density of surrounding soil.
- G. Enclose pipe and wiring beneath hardscape structures, roadways, walks, curbs, etc., in sleeves. Minimum compaction of backfill for sleeves shall be 95 percent Standard Proctor Density in accordance with ASTM D 698. Use of water for compaction around sleeves by "puddling" method is not acceptable.
- H. Dress backfilled areas to original grade. Incorporate excess backfill into existing Project site grades.
- I. Where utilities conflict with irrigation trenching and pipe work, contact the County's Representative for trench depth adjustments.

3.4 ASSEMBLING PIPE AND FITTINGS

- A. General:
 - 1. Keep pipe free from dirt and pipe scale. Cut pipe ends square and deburr. Clean pipe ends.
 - 2. Keep ends of assembled pipe capped. Remove caps only when necessary to continue assembly.
 - 3. Trenches may be curved to change direction or avoid obstructions within limits of curvature of pipe. Maximum offset per 20-foot pipe length: 7.5 feet for 2-in. diameter pipe and 2 feet for 2.5 and 3-in. diameter pipe. All curvature shall result from the bending of the pipe lengths. No deflection will be allowed at pipe joints.
- B. Sleeving:
 - 1. Install sleeving at a depth to allow encased pipe or wiring to remain at specified burial depth.
 - 2. Extend sleeve ends 12 inches beyond edge of paved surface. Cover pipe ends and mark with stakes.
 - 3. Bore for sleeves under obstructions that cannot be removed. Use equipment and methods designed for horizontal boring.

- C. Mainline Pipe and Fittings:
 - 1. Use only strap-type friction wrenches for threaded plastic pipe.
 - 2. PVC Solvent Weld Pipe:
 - a. Use primer and solvent cement. Join pipe as recommended by manufacturer and in accordance with accepted industry practices.
 - b. Cure for 30 minutes before handling and 24 hours before allowing water in pipe.
 - c. Snake pipe from side to side within trench.
 - 3. Fittings: The use of cross type fittings is not acceptable.
- D. Lateral Pipe and Fittings:
 - 1. Use only strap-type friction wrenches for threaded plastic pipe.
 - 2. PVC Solvent Weld Pipe:
 - a. Use primer and solvent cement. Join pipe as recommended by the manufacturer and in accordance with accepted industry practices.
 - b. Cure for 30 minutes before handling and 24 hours before allowing water in the pipe.
 - c. Snake pipe from side to side within trench.
- E. Specialized Pipe and Fittings:
 - 1. PVC Threaded Connections:
 - a. Use only factory-formed threads. Field-cut threads are not acceptable.
 - b. Use only Teflon-type tape or Teflon-based paste.
 - c. When connection is plastic-to-metal, plastic component shall have male threads and metal component shall have female threads.
 - 2. Make metal-to-metal, threaded connections with Teflon-type tape or pipe joint compound applied to the male threads only.
 - a. Set Shut Off Valves to the off position and turn the main line water on.

3.5 INSTALLATION OF SPRINKLER, BUBBLER AND DRIP IRRIGATION COMPONENTS

- A. Remote Control Valves for Sprinkler and Rotor Laterals:
 - 1. Flush mainline before installation of RCV.
 - 2. Install where indicated on the Drawings. Use wire connectors and waterproof sealant to connect control wires to remote control valve wires. Install connectors and sealant in accordance with manufacturer's instructions.
 - 3. Install only one RCV to a valve box. Locate valve box at least 12 inches from and align with nearby walls or edges of paved areas. Group RCV valves together where practical. Arrange grouped valve boxes in rectangular patterns. Allow at least 12 inches between valve boxes.
 - 4. Adjust RCV to regulate the downstream operating pressure.
 - 5. Attach ID tag with controller station number to control wiring.
- B. Sprinkler Assembly:
 - 1. Flush lateral pipe before installing sprinkler assembly.

2. Install sprinkler assembly in accordance with the installation details at locations shown on the Drawings.
3. Locate sprinklers 2-inches from adjacent walls, fences, or edges of paved areas.
4. Install sprinklers perpendicular to the finish grade.
5. Supply appropriate nozzle and adjust arc of coverage of each sprinkler for best performance.
6. Adjust radius of throw of each sprinkler for best performance.

3.6 INSTALLATION OF CONTROL SYSTEM COMPONENTS

A. Controller:

1. Location of controller as shown on the Drawings is approximate. Location shall be as approved by the County's Representative during irrigation layout review.
2. Install and test controller in accordance with manufacturer's instructions.
3. Contractor is responsible to reconnect all remaining existing irrigation stations near the project site that have been disturbed during the course of the work to the original controller in the same order they were installed originally.

B. Power Wire:

1. Route power wire along the mainline routes. Install with a minimum number of field splices. If a power wire must be spliced, make splice with recommended connector, and install in accordance with manufacturer's instructions. Locate all splices in a separate 10-inch round valve box. Coil 24 inches of wire in valve box.
2. All power wire shall be installed in PVC conduit.

C. Control Wire:

1. Install control wires in PVC conduit - do not direct bury.
2. Provide a 24-inch excess length of wire in an 8-inch diameter loop at each 90-degree change of direction, at both ends of sleeves, and at 100 feet intervals along continuous runs of wiring. Do not tie wiring loop. Coil 30-inch length of wire within each remote-control valve box as shown on Drawings.
3. Install common ground wire and one control wire for each remote-control valve. Multiple valves on a single control wire are not acceptable.
4. If a control wire must be spliced, make splice with wire connectors and waterproof sealant, and install in accordance with manufacturer's instructions. Locate splice in a valve box which contains an irrigation valve assembly, or in a separate 10-inch round valve box. Use same procedure for connection to valves as for inline splices.
5. Unless otherwise shown, install wire parallel with and below mainline pipe.
6. Protect wire not installed with PVC mainline pipe with a continuous run of warning tape placed in the backfill at 6-inches above the wiring.

3.7 INSTALLATION OF OTHER COMPONENTS

- A. Provide other ancillary materials and equipment necessary to install the assemblies and systems to fully operational condition. Install in accordance with manufacturer's instructions.

3.8 TESTING

- A. Notify the County's Representative 7 days in advance of testing.
- B. Pipelines jointed with solvent-welded PVC joints shall be allowed to cure at least 24 hours before testing.
- C. Subsections of mainline pipe may be tested independently, subject to the County's Representative's approval.
- D. Furnish clean, clear water, pumps, labor, fittings, and equipment necessary to conduct tests.
- E. Hydrostatic Pressure Test:
 - 1. Subject mainline pipe to a hydrostatic pressure equal to 1.5 times the anticipated operating pressure (min. 120 psi) for 2 hours. Test with mainline components installed.
 - 2. Subject lateral pipe to a hydrostatic pressure equal to anticipated operating pressure. Test with risers for bubblers capped.
 - 3. Backfill to prevent pipe from moving under pressure. Expose couplings and fittings.
 - 4. Leakage will be detected by visual inspection. Replace defective pipes, fittings, joints, valves, or appurtenances. Repeat test until pipe passes test.
 - 5. Use of cement or caulking to seal leaks is prohibited.
- F. Operational Test:
 - 1. Activate each remote-control valve in sequence from controller. The County's Representative will visually observe operation, water application patterns, and leakage.
 - 2. Replace defective remote-control valve, solenoid, wiring, or appurtenance to correct operational deficiencies.
 - 3. Replace, adjust, or move water emission devices to correct operational or coverage deficiencies.
 - 4. Replace defective pipes, fittings, joints, valves, bubblers, or appurtenances to correct leakage problems. Cement or caulking to seal leaks is prohibited.
 - 5. Repeat tests until each lateral passes all tests.

3.9 DEMONSTRATION

- A. Demonstrate to the County's maintenance personnel the operation of equipment, water emission devices, specialties, and accessories. Review operating and maintenance information.
- B. Notify the County's Representative 7 days in advance of demonstration.

3.10 PROJECT RECORD (AS-BUILT) DRAWINGS

- A. Maintain on the Project site and separate from documents used for construction, one complete set of Contract Documents as Project Documents. Keep documents current. Do not backfill trenches and excavations until as-built information is recorded.
- B. Record pipe and wiring network alterations. Record work that is installed differently than shown on the Drawings. Record accurate reference dimensions, measured from at least two permanent reference points, of each irrigation system valve, controller, sleeve end, wiring connections, and other irrigation components enclosed within a valve box.

3.11 CLEAN UP

- A. Upon completion of work, remove from Project site all machinery, tools, excess materials, and rubbish.

3.12 MAINTENANCE

- A. Interim Maintenance: Program and maintain the system in full operational condition for irrigating plantings until Date of Substantial Completion in accordance with Section 32 01 90 Landscape Maintenance.
- B. One-year Maintenance Period: In accordance with Section 32 01 90 Landscape Maintenance.
- C. Maintenance Work:
 - 1. Maintain by applying standard industry practices, keeping the system fully operational and adjusted at all times including, but not limited to, the following:
 - a. Monitor the irrigation controller on a weekly basis to verify that it is adjusting the system to the current reference ET. Make corrections to the system if it is not automatically adjusting.
 - b. Adjust remote control valve pressure regulator and flow control as required.
 - c. Adjust nozzles to maintain coverage and adequate soil moisture.
 - 2. Water Conservation: Program and adjust equipment to apply water in an efficient and water conserving manner and to minimize waste from over watering and runoff.

- D. Provide system seasonal start-up and shut-down, outlet adjustment, control testing, and replacement of worn or damaged components.

END OF SECTION

SECTION 32 9000

PLANTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Furnishing plants and installing landscape planting and lawns, with related accessories and material as required for complete installation.
 - 1. Provide planting accessories, soil amendments, fertilizers, mulches, and other material as required for complete installation.
 - 2. Provide all labor and equipment for the work specified herein.
 - 3. Provide initial maintenance until Date of Substantial Completion.
 - 4. Provide 1-year Maintenance from Date of Substantial Completion.

1.2 RELATED SECTIONS

- A. Section 31 00 00 Earthwork
- B. Section 32 80 00 Irrigation Systems
- C. Section 32 01 90 Landscape Maintenance

1.3 SUBMITTALS

- A. Submit plant material list from supplying nurseries certifying quality and size of plant materials. Include phytosanitary certificates issued by the applicable County Agricultural Commissioner for plant material point of origin.
- B. Samples: Submit samples in sealed plastic bags, of mulch, fertilizers and all organic amendments showing brand, source, and laboratory analysis.
- C. Certificates: Submit certified laboratory organic amendment analysis.
- D. Soils Reports: Submit soil-testing reports for required testing specified herein performed by a California certified agricultural testing laboratory approved by the County.
- E. Contractor's License: Submit a copy of current California Landscape Contractor's License.

1.4 QUALITY ASSURANCE

- A. Reference Standards:
 - 1. Plant Material Standards: ANSI Z60.1 – American Standard for Nursery Stocks,

2004 edition.

B. Planting and Maintenance Standards:

1. Arboriculture, 4th edition, by Harris, Clark, & Matheny, copyright 2004.
2. Integrated Pest Management (IPM) publications, current editions from University of California Cooperative Extension.

C. Landscape Contractor: Landscaping firm maintaining a current California Landscape Contractor's License, which has engaged in landscaping work for not less than five years and has a record of successful installations of similar scope and types of plantings.

D. Qualifications of Plant Suppliers:

1. Nursery: Company specializing in growing and cultivating plants specified herein for not less than 5 years and will certify the quality of the plants.

E. Soil Testing Laboratory Qualifications: An independent, established laboratory recognized by the California State Department of Agriculture, experienced in performing fertility, agricultural suitability, and physical appraisal soil testing and analysis.

F. Field Observations and Inspections: Contractor shall schedule observations and inspections by the Client Representative with minimum 3 days notice for the following:

1. Plant material quality review and approval upon delivery to site.
2. Pre-installation of plants, with plants placed on grade at spots where they are intended per approved drawings.
3. Substantial Completion and Final Acceptance review.
4. End of 1-year Maintenance Period.
5. Any other necessary site visits for progress observation and review.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not prune prior to delivery, except by prior approval from the Engineer.
- B. Protect plants from sun, wind, and physical injury and damage during transit and during storage while waiting for planting work.
- C. Remove rejected plants from site immediately and replace with plants with acceptable quality.
- D. Delivery:
 1. Schedule plant delivery to avoid lengthy periods of storage and preplanting

maintenance.

2. Deliver all plant blocks with legible and water-resistant identification labels.
3. Deliver fertilizer to the site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trademark, and compliance with all applicable laws.

E. Handling:

1. Handle container plants by the container and rootball. Do not lift plants by the trunk.
2. Do not remove container grown stock from containers before time planting.

F. Maintenance:

1. Water root systems of plants stored on-site as often as necessary to prevent container soil from drying out.
2. Protect from sun and wind as specified herein.

1.6 WARRANTY

- A. Special Warranty: Replace dead plants, dying plants, and plants not showing evidence of active growth at end of warranty period.
- B. Replacement Plants: Provide same kind and size originally planted. Maintain replacement plants for original maintenance period.
- C. Special Warranty Period:
 1. Shrubs, Vines, and Groundcovers: 1-year.
 2. Trees: 1-year.
 3. Other Planting: One year unless specifically noted otherwise.
 4. Warranty period shall commence upon written acceptance of the landscaping by the Engineer.

1.7 COORDINATION

- A. Coordinate with related work, including irrigation systems, landscape paving and construction,
- B. Planting work shall proceed only after the irrigation system has been tested and approved.

PART 2 - PRODUCTS

2.1 PLANT MATERIALS

A. Plant Materials: Provide nursery-grown stock.

1. Quality and Size: Conform to State of California Grading Code for Nursery Stock Number 1 grade and conforming to ANSI Z60.1 standards.
2. Measurements of Plants: Provide plants of uniform and standard sizes, neither overgrown nor too recently canned so root system is not thoroughly established throughout can.
3. Plants of the same botanical name and container size shall be matching in form and size.
4. Plant Label: Identify species and variety of each container plant on waterproof label; do not make variety substitutions without prior approval.

B. Shrubs:

1. Deciduous Shrubs: Grown in containers, with no less than the minimum number of canes requires by and measured according to ANSI Z60.1 for the type, shape, and height normal for the size specified.
2. Broadleaf Evergreen Shrubs: Container grown, with well-balanced form, of the type, height, spread, and shape required, complying with ANSI Z60.1, normal for the size specified.

C. Ground Cover and Other Plants:

1. Ground Cover: Provide ground cover of species indicated, established and well rooted in pots or similar containers, complying with ANSI Z60.1 and as indicated on drawings.
2. Perennials: Provide healthy container grown plants with well-developed roots system and branches from a commercial nursery, of the species and variety indicated.

D. Turf

1. Turf seed shall be Drought Tolerant Cynodon x 'Tifton 328' or approved equal.
2. Seed shall be 100% weed free.
3. Turf variety shall be "Medium" water use per WUCOLS Water Use Classification of Landscape Species.

2.2 PLANTING MATERIAL

A. Soil:

1. In-situ soil: Use stockpiled on site surface soil for topsoil only if recommended by laboratory soil report. Submit a sample to a certified laboratory for fertility, agricultural suitability, and physical appraisal soil testing and analysis, for every 1,000 cu. Yd. of soil for use in planting work.
 2. Planting Backfill: Prepare planting backfill using on-site soil as applicable, in accordance with recommendations of the Soil Report.
- B. Commercial Fertilizer for Backfill Soil: As recommended by Soil Report.
- C. Mulch:
1. Ground pine or fir bark or other Engineer approved mulch.
 2. Particle size shall be within 1" and with not over 10% wood fibers, free of salt, foreign materials such as clods, coarse objects, sticks, roots, weeds or weed seeds.
 3. Maximum pH: 5.5.
- D. Fertilizers and Planting Amendments
1. Fertilizer for planting soil: Supply commercial fertilizers as recommended by soil report.
 2. Fertilizer Tablets: Slow release 20-10-5 tablets by Agriform or approved equal.
 3. Provide three 21-gram tablets for each tree.
 4. Provide two 10-gram tablets for each shrub and vines.
 5. Provide sod and seed starter fertilizer 6-24-24 for sod.

2.3 OTHER PLANTING MATERIAL

- A. Herbicide: When necessary, provide per recommendation of a licensed California Pest Control Advisor.
- B. Pesticide: When necessary, provide per recommendation of a licensed California Pest Control Advisor.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Site Conditions: Examine areas to receive plants for compliance with requirements and for conditions that affect installation and performance.
1. Proceed with plantings only after unsatisfactory conditions have been corrected.
 2. Flag underground structures and utilities and protect from damage during planting

operations.

3. Ensure that irrigation system is tested, approved and in operational condition prior to planting work.

3.2 PREPARATION

A. Protection: Protect surrounding structures, pavement, and other work from damage during planting work.

1. Provide slope 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.

B. Soil Preparation:

1. Prepare subsoil at 12-inch depth to eliminate uneven areas, maintain smooth gradients, profiles and contours required for finish grading.
2. Scarify subsoil to a minimum depth of 6 inches, removing stones larger than 1 inch, sticks, roots, rubbish, and other extraneous material.
3. Planting Backfill: Prepare with approved in-situ soil, fertilizer and amendments as recommended by Soil Report.
4. Finish Grading: Grade planting beds to a smooth, uniform surface plane to provide positive drainage away from foundations and walls.
5. Irrigate planting beds to field capacity and allow to drain for 24 hours prior to planting work. Report non-draining areas to the County for resolution.

C. Plant Locations:

1. Mark shrub locations by placing specified plants in their containers at locations per approved plans.
2. Schedule plant placement review with the Engineer as specified herein.
3. Make placement adjustments per the Engineer's request.

3.3 SHRUB PLANTING

- A. Pits: Circular with vertical sides; twice the root ball diameter, depth of root ball unless otherwise approved by the County; sides scarified for root penetration.
- B. Backfill Mix: Place shrubs so crown of ball is 2" above surrounding grade; backfill with planting backfill mix in 6-inch lifts. Water in backfill to settle soil after each lift.
- C. Distribute fertilizer tablets evenly around root ball at top of first lift, complete backfilling.
- D. Build 3-inch-high watering basins around plant pit; raise settled plants to specified level.

- E. All soil areas shall be covered with 3 inches of mulch.

3.4 GROUND COVER PLANTING

- A. Set out and space ground cover plants as indicated.
- B. Dig holes large enough to allow spreading of roots and backfill with planting soil.
- C. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- D. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- E. Restore beds to the required finish grades after planting.
- F. Spread 3 inches of mulch throughout planting beds.

3.5 TURF PLANTING

- A. Preparing Soil: Prepare soil as per Soil Preparation.
- B. Grading and Rolling: Carefully smooth all surfaces to be seeded. Roll area to expose soil depression or surface irregularities. Regrade as required. Rake lightly. Be sure soil is level and smooth before applying seed. Avoid spreading seed on bone dry soil.
- C. Prior to the spreading seed, apply Sod and Seed Starter (6-24-24) at the rate of (10) lbs. per 1,000 sq. ft. unless directed otherwise by soils report.
- D. Installing seed: using a belly grinder or push spreader, apply seed at a rate of 15 pounds per 15,000 square feet. Rake seed into topsoil and thoroughly irrigate.
- E. Turf protection: install temporary construction fencing around turf seeding area and protect area until after third mowing.
- F. Irrigation: Water thoroughly the completed lawn surface. Soil should be moistened at least 6 inches deep. Repeat sprinkling at regular intervals to keep seed moist at all times until sprouts are 1" tall minimum. After turf is established, decrease frequency and increase amount of water per application as necessary.
- G. Replacement: Reseed all bare spots in turf area that are larger than 6" diameter with equal seed as directed by the Engineer.

3.6 FIELD QUALITY CONTROL

- A. Preliminary Inspections: Engineer to provide preliminary inspection of planting work upon completion of planting.
 - 1. Approval of planting work after inspection establishes beginning of maintenance period; no partial approvals will be given.

- B. Complete following prior to time of Final Inspection.
 - 1. Remove weeds from planting areas.
 - 2. Remove dead, diseased, or damaged plants and provide new plants.
 - 3. Broom clean walks and paved areas.
 - 4. Remove debris and discarded materials from site.
 - 5. Put landscape work in a neat and orderly condition.
- C. Final Inspection: Engineer will make final inspection for acceptance of planting at conclusion of planting maintenance period, provided improvements and corrective work have been completed.
 - 1. If corrective work has not been completed, continue planting maintenance until work has been completed.
 - 2. Final inspection by the Engineer will be made within 10 working days of written request.

3.7 MAINTENANCE

- A. General: Maintain plants during and immediately following planting operations until acceptance of planting work, which shall be the start of the 1-year Maintenance Period.
- B. Maintenance Program: See Section 32 01 90 – Landscape Maintenance.

END OF SECTION

SECTION 33 3400

SEPTIC SEWAGE DISPOSAL SYSTEM

PART 1 GENERAL

1.01 DESCRIPTION

Furnish and install all septic sewage disposal system components including, but not limited to, PVC piping, valves, fittings, cleanouts, frames and covers, septic tank and appurtenances, distribution boxes, and leach field disposal system appurtenances shown and specified in accordance with the requirements of the Contract documents. The septic sewage disposal system shall be complete with all necessary excavation, bedding, backfill, compaction, components, accessories, and testing, to provide a functional installation.

1.02 SUBMITTALS

- A. Product Data
 - 1. Material lists for materials to be used shall be submitted for approval and shall include the name of the manufacturer and the source, model number, description, and standard of manufacture
- B. Manufacturer's descriptive data and catalog cuts for the following shall be submitted for approval:
 - 1. Underground tracer tape
 - 2. Sewer and drain pipe and fittings
 - 3. Leach line pipe and fittings
 - 4. Septic tank
 - 5. Distribution box Manhole frames and covers
 - 6. Cleanouts
 - 7. Valves
 - 8. Filter fabric
 - 9. Diversion valve
 - 10. Monitor well caps
 - 11. Septic tank outlet filter
- C. Working Drawings: Working drawings for each precast septic tank used in the work shall be submitted for approval. Complete bedding, assembly, installation and backfilling instructions shall be submitted for approval.

1.03 QUALITY ASSURANCE

- A. Codes and Standards: All sanitary sewage work shall conform to the applicable portions of the CPC, California Code of Regulations, Title 24, Part 5.
- B. Certificates of Compliance: Certificates of compliance shall be furnished for manhole frames and covers in accordance with the requirements specified in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

PART 2 PRODUCT

2.01 IDENTIFICATION

- A. Underground Tracer Tape: Underground tracer tape shall be permanent, detectable, bright colored, continuous printed plastic tape intended for direct burial service; not less than 2 inches wide; lettering shall read "CAUTION SEWER BURIED BELOW".

2.02 PIPES AND PIPE FITTINGS SEWER AND DRAIN PIPE AND FITTINGS

- A. Sewer and drain pipe and fittings shall be polyvinyl chloride (PVC) gravity sewer plastic pipe and fittings conforming to ASTM Designation: D 3034, Standard Dimension Ratio (SDR) 35, with integral bell and bell and spigot rubber gasketed joints or conforming to ASTM Designation: D2665 with solvent welded fittings. Rubber gaskets shall conform to ASTM Designation: F 477. Stainless steel clamps with rubber boots shall not be used.

2.03 LEACH LINE PIPE

- A. Leach line pipe shall be perforated PVC plastic sewer pipe and fittings, standard dimension ratio, (SDR) 35, conforming to ASTM Designation: D 3034; or perforated PVC drain, waste and vent pipe, (PVC-DWV), conforming to ASTM Designation: D 2665.

2.04 TANK PIPING

- A. Schedule 40 PVC or FRP pipe shall be used for inlet and outlet piping
- B. When a PVC pipe is affixed to the tank, a fiberglass lay-up is used.
- C. All piping shall be factory-sealed to enable field tight-ness testing with at least one pipe opening provided with a threaded fitting for connecting a pressure-test manifold.

2.05 DISTRIBUTION BOXES

- A. Distribution boxes and riser sections shall be precast, reinforced concrete conforming to ASTM Designation: C 478 or precast reinforced concrete pipe conforming to ASTM Designation: C 76. Jensen Precast Model D-30, or equal.
- B. Distribution Box frame and cover shall be H-20 traffic rated with 24" cast iron ring with gas tight gasket conforming to ASTM C-478. Cover shall be T-handle bar lock (no bolt), closed pick hole and shall be marked "SS," "SEWER," or "SANITARY SEWER." Three T-handles shall be supplied.

2.06 SEPTIC TANK

- A. Septic tank shall be a precast a single-wall fiberglass reinforced plastic (FRP) underground storage tank as shown on the drawings and conforming to the requirements of ANSI/AWWA D120 Thermosetting Fiberglass Reinforced Plastic Tanks; Xerxes Corporation or approved equal. Tank shall be capable of storing wastewater products limited to the collection and storage of human solid or liquid organic sewage.

- B. Sizes and fittings shall be as shown. Tank shall be vented to atmospheric pressure and H-20 traffic rated.
- C. Tank shall be manufactured with 100% resin (isophthalic polyester) and glass-fiber reinforcement.
- D. Nominal tank volume shall be 2,500-gallons with 6-foot diameter.
- E. The septic tank shall be 1) listed and approved by the International Association of Plumbing and Mechanical Officials (IAPMO) and tank shall be marked accordingly, or 2) the design shall be stamped and certified by a California Registered Engineer as meeting the general industry standards necessary to comply with these standards. This design shall include ballasting calculations and details to be included as part of the product material submittal prior to installation.
- F. Internal Load — Tank shall be designed to withstand a 5-psig air-pressure test (3 psig for a 12'-diameter tank) with a 5:1 safety factor. When tank is designed for on-site testing, contractor shall individually test tank for leakage prior to installation. Maximum test pressure is 5 psig (3 psig for a 12'-diameter tank).
- G. Surface Loads — Tank shall withstand surface H-20 axle loads when properly installed according to tank manufacturer's current Installation Manual and Operating Guidelines.
- H. External Hydrostatic Pressure — Tank shall be capable of being buried in ground with 7' of overburden over the top of the tank, the hole fully flooded and a safety factor of 5:1 against general buckling.
- I. Tank shall support accessory equipment — such as inlet and outlet piping, effluent filter chamber, ladders and baffles — when installed according to tank manufacturer's current Installation Manual and Operating Guidelines.
- J. Access Openings:
 - 1. All access openings 24 inches in diameter or larger shall be manufactured of FRP.
 - 2. Location(s) shall be as shown on tank drawings.
 - 3. Optional riser extensions shall be FRP or PVC.
 - 4. With tanks designed for on-site tightness testing, all access openings shall be factory-sealed to enable field tightness testing.
- K. Access Cover Assembly Frame and Cover:
 - 1. Access cover frame and cover shall be gray cast iron, conforming to ASTM Designation: A 48, Class 30 or greater (traffic rated). Cover shall be T-handle bar lock (no bolt), closed pick hole and shall be marked "SS," "SEWER," or "SANITARY SEWER." Three T-handles shall be supplied. The side or bottom of the cover shall be machined grooved for an integral O-ring gasket. The frame seat for the bottom O-ring gasket shall be a minimum of 7/8 inch in width.
- L. Anchor Straps:
 - 1. Straps shall be FRP anchor straps as supplied by tank manufacturer.
 - 2. Number and location of straps shall be specified in current literature by tank manufacturer.
- M. Fittings:
 - 1. All threaded fittings shall be constructed of carbon steel or FRP.

2. All standard threaded fittings shall be half-couplings and shall be 2", 4" or 6" in diameter. Reducers are to be used for smaller sizes where shown and provided by contractor. All FRP and PVC nozzles shall be flat-faced and flanged, and shall conform to ANSI B16.5 150# bolting pattern.

2.07 CLEANOUTS

- A. Cleanout piping shall terminate with an appropriately sized flexible PVC access cap and stainless steel band coupler with hex tightening screw. Rubber coupling or cap will not be allowed. Access cap shall be Indiana Seal; Fernco; or equal.

2.08 VALVES

- A. Diversion valve shall be PVC, 4-inch Schedule 40, 3-way female connections with 2 outlets 120 degrees from inlet, PVC riser and PVC watertight riser cap and adapter. Provide valve key to operate valve from the surface. The valve shall be UPC listed and shall withstand a working pressure of 25 psi.

2.09 MONITOR/OBSERVATION WELLS

- A. Monitor wells shall be sewer pipe, SDR 35, conforming to ASTM Designation: D 3034; or plastic drain, waste, and vent pipe, conforming to ASTM Designation: D 2665, perforated as shown on the plans, and terminating with an appropriately sized flexible PVC access cap and stainless steel band coupler with hex tightening screw threaded cap fitting.

2.010 MISCELLANEOUS MATERIALS

- A. Cement mortar shall be one part cement to 2 to 3 parts clean plaster or concrete sand mixed with just enough water for suitable consistency.
- B. Epoxy adhesive shall be commercial quality low viscosity paste polysulfide extended epoxy formulated primarily for use in bonding new portland cement concrete to existing portland cement concrete.
- C. Plastic joint sealant shall be commercial quality butyl mastic strip type, conforming to ASTM C-900, Henry; Press-Seal; or equal.
- D. Class 2 aggregate base: In accordance with Section 26, Aggregate Bases, of the California State Department of Transportation Standard Specifications.
- E. Sand shall be clean, washed sand, free from clay or organic material graded such that 90 percent to 100 percent passes the No. 4 sieve size and not more than 20 passes the No. 50 sieve size.
- F. Leach line backfill shall be native material free of rocks greater than 2 inches in greatest dimension, vegetable matter, trash or other deleterious material.
- G. Leach line rock shall be washed, clean, graded gravel, rock, or crushed rock varying in size between 3/4 in and 2½ inches in greatest dimension. Rock shall have not more than 10 percent loss when tested in accordance with California Test 214. Tests may be waived if rock is from an approved supply or is accompanied by a Certificate of Compliance conforming to the requirements specified in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications.

H. Tank Backfill

1. Primary backfill shall be a coarse aggregate that is clean, free-flowing, and free of dirt, sand, large rocks, roots, organic materials, and debris. Primary shall meet ASTM C33 requirements and be size 7 crushed stone meeting the gradation requirements in the following table:

Sieve Size	Percent Passing
1 inch	--
¾ inch	100%
½ inch	90-100%
3/8 inch	40-70%
No. 4	0-15%
No. 8	0-5%

2. Secondary backfill shall be clean, free-flowing, and free of dirt, sand, large rocks, roots, organic materials, and debris. One hundred percent (100%) of all backfill material must pass through a 1-inch sieve. The following materials are acceptable as secondary backfill:
 - a. Clean native backfill
 - b. Coarse sand or gravel \
3. Secondary backfill shall be compacted to a minimum of 85 percent standard proctor density.

I. Filter Fabric:

1. Filter fabric shall be commercial quality, chemically stable, non-biodegradable, ultraviolet stabilized, 100 percent polyester, 100 percent polypropylene or 100 percent combined polyester and polypropylene, nonwoven, needle punched permeable geotextile.
2. Filter fabric shall be shipped in packaging that shall protect filter fabric from ultraviolet radiation and abrasion during storage and handling. Filter fabric shall be Mirafi, 140N; AMOCO Fabrics, 4506; or equal.
3. Filter fabric shall conform to the following requirements:

Property	Value	Test Designation
Average roll weight	4.0 ounces per square yard, min.	ASTM D 1117
Grab tensile strength, Pounds	MD 120 ±15 XMD 110 ±15	ASTM D 5034, 5035 1 inch grip
Grab elongation	MD 50 min.	ASTM D 5034, 5035
Trapezoidal tear strength, Pounds	MD 50 ±10 XMD 45 ±10	ASTM D 1117
Water passage rate	100 gallons per minute per square foot, min.	ASTM D 4491 (Constant head, 2 inches)
Thickness, mils	55 min.	ASTM D 1777
Permeability, cm per sec.	0.3 cm per sec.±0.1 cm per sec.	ASTM D 4491 (Constant head, 2 inches)
AOS (Avg. opening size)	0.21 mm, min.	ASTM D 4751

- J. Epoxy Mortar mortar shall be a commercial quality trowelable 3-component epoxy mortar consisting of 2 pourable epoxy components and a chemically resistant aggregate filler of silica quartz sand with maximum water absorption of 0.1 percent.

Epoxy shall have a pull-off strength of not less than 1,000 psi and a 90 percent cure in 24 hours. Epoxy mortar shall be the type that requires no primer as bonding agent.

PART 3 EXECUTION

3.01 INSTALLATION OF IDENTIFICATION

- A. Continuous underground tracer tape shall be installed directly above the buried line and 6 inches to 8 inches below finished grade during backfilling operations.

3.02 INSTALLATION OF PIPES AND FITTINGS

- A. Sewer and drain pipe shall be installed upgrade (starting from utility connection back to the construction) unless otherwise permitted by the Engineer.
- B. Sewers Near Water Lines:
 - 1. Sewers near water lines shall be installed below water lines in the same trench, in parallel trenches less than 10 feet apart, or at any crossing.
 - 2. When water lines cross above a sewer line, a vertical separation of not less than 12 inches shall be maintained between the top of the sewer pipe and the bottom of the water line.
- C. Connections between Differing Pipe Types: Joints between different types of pipes shall be made with sewer pipe adapters intended for that purpose.
- D. Damaged pipe shall be replaced prior to use. Misaligned pipe shall be corrected or replaced prior to use.
- E. Cleaning Pipe:
 - 1. Interior of pipes shall be cleaned of dirt and other materials as the work progresses.
 - 2. Lines between structures shall be flushed as necessary to remove collected material.

3.03 INSTALLATION OF SEPTIC TANK AND CONCRETE VAULTS/BOXES

- A. Manufactured sewer structures shall be installed in accordance with the manufacturer's recommendations and to the lines and grades shown on the plans.
- B. Contractor shall be trained in proper installation procedures by the tank manufacturer, the state, or other approved agency. Tank shall be installed in accordance with the manufacturer's installation and operations manual.
- C. All joints and penetrations of septic tanks, septic tank manholes and distribution boxes shall be sealed watertight, inside and outside, with epoxy mortar or joint sealant.
- D. Interior of tank shall be cleaned of all debris after installation of tank, barrels and manhole frame and covers is complete and prior to testing. All debris from flushing and testing shall be removed prior to use.
- E. Slabs Collars shall be broom surface finished. Slabs Collars shall match existing/finished grade. Compaction prior to form work shall be as specified elsewhere in these special provisions.

- F. Septic tank shall sit on a uniform 12" thick bed of class 2 aggregate base compacted to 95% of maximum density. Over-excavate and recompact native soil as needed to achieve 95% of maximum density. Compacted base shall extend a minimum of 12" beyond the tank footprint.
- G. Subgrade material for concrete vaults and boxes shall be excavated to undisturbed native soils and uniform elevation allowing for placement of 6-inch minimum of $\frac{3}{4}$ crushed, granular base material. Over-excavate and recompact native soil as needed to achieve 95% of maximum density. Adjust elevation of granular base material as required for proper grade and alignment of the tank or vault base.
- H. Where manholes, pipe inlets or cleanouts to grade are located in areas to be paved or surfaced, no individual structure shall be constructed to final grade until the paving or surfacing has been completed immediately adjacent to said structure.

3.04 INSTALLATION OF LEACH LINES

- A. Leach line construction shall be performed in dry weather.
- B. The trenches shall be prepared by carefully raking sidewalls and the bottom to remove any smeared or glazed soil surfaces. All loose material shall be removed from the trench. Sharp objects which may damage the filter fabric shall be removed during backfilling operations.
- C. Leach line pipe shall be installed on prepared rock layers to the invert elevations shown on the plans and to flat grades established by accurate survey methods. Pipes shall be within 1/4 inch of the required grade and installed with perforated sides down.
- D. Washed rock fill material shall be placed evenly on both sides of the leach line pipe and above the pipe in such a manner as to prevent displacement or disturbance of the pipe system.
- E. Sand and backfill placed above the leach line filter fabric shall be placed without adding water. The backfill material shall be placed in 6-inch maximum thickness lifts and, unless otherwise shown on the plans, mounded 3 inches above the trench. Backfill shall not be compacted.

3.05 TESTING

- A. Testing Pipes:
 - 1. All sewer and drain pipes shall be tested for obstructions before covering the pipes by balling and flushing the pipes with an approved commercial sewer cleaning ball. The ball shall be moved slowly through the sewer with a tag line. Four-inch sewer pipe shall be tested by pulling an appropriately sized inflatable plug through the pipe. Obstructions or irregularities shall be removed or repaired.
 - 2. Sewer and drain pipes shall be tested for leakage for a minimum period of 4 hours by filling with water to an elevation of 4 feet above the average invert of sewer, or to the top of the manholes where less than 4 feet deep. The system shall show no visible leaks, and the leakage rate shall not exceed 3.5 gallons per 24 hours, per 1-inch diameter, per 100 feet of pipe. Sewers may be tested in sections with the test water progressively passed down the sewers if feasible. Water shall be released at a rate which will not create water hammer or surge in the plugged section of sewer.

3. In lieu of hydrostatic test with water, the air test method, "Air Test," as outlined in the CPC, may be used.
- B. Testing Septic Tank:
1. Testing shall be performed in accordance with manufacturer's written instruction.
 2. Prior to installation, a tank-tightness test consisting of a 5 psig air pressure/soap test shall be performed (3 psig for 12-foot-diameter tanks) per the tank testing procedures outlined in the manufacturer's installation and operations manual.
 3. After installation, the septic tank shall be tested for leakage by filling the tank with water to the outlet flow line for a period of 24 hours. The tank shall remain watertight. Repairs, if necessary, shall be made at the Contractor's expense.

3.06 MEASUREMENT AND PAYMENT

- A. The contract lump sum price paid for SEPTIC SEWAGE DISPOSAL SYSTEM includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in installing SEPTIC SEWAGE DISPOSAL SYSTEM including all excavation, septic tank installation, leach field construction, trenching, pipe installation all connections, and testing for a fully functional sewage disposal system as detailed on the Plans and these specifications, and as directed by the Engineer.

END OF SECTION

SECTION 33 4100
STORMWATER CATCH BASINS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Precast concrete catch basins
- B. In accordance with Caltrans 2022 Standard Specifications, except as noted herein.

1.02 SUBMITTALS

- A. Precast concrete catch basins

PART 2 PRODUCTS

2.01 GENERAL

- A. No materials shall be delivered to the site that are not in conformance with these specifications, or unless accepted by the engineer in writing.
- B. Catch basins to be precast concrete minimum 4" thick walls and base and minimum 2500 psi compressive strength. Grate and frame shall be heavy duty galvanized steel.

PART 3 EXECUTION

3.01 GENERAL

- A. Install in accordance with Caltrans Section 70.

END OF SECTION

SECTION 33 4110

PLAYGROUND SUBDRAINAGE SYSTEM

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Perforated PVC pipe specifications
 - 2. Base/Drain rock specifications
 - 3. Filter fabric specifications
- B. Installation in accordance with manufacturer's recommendations

1.02 SUBMITTALS

- A. Perforated PVC Pipe
- B. Base/drain rock
- C. Filter fabric

PART 2 PRODUCTS

2.01 GENERAL

- A. No materials shall be delivered to the site that are not in conformance with these specifications, or unless accepted by the engineer in writing.
- B. Perforated PVC pipe shall be schedule 40, meeting the requirements of Caltrans Section 68-2.02D
- C. Base/drain rock to conform to Class 2 permeable material per Caltrans Section 68-2.02F(3)
- D. Filter fabric shall be Class A conforming to Caltrans Section 96.1.02B

PART 3 EXECUTION

3.01 GENERAL

- A. Grade subgrade to the elevations and slopes shown on Plans (minimum 2% slope toward PVC pipe)
- B. Compact subgrade in accordance with Section 31 00 00, Earthwork
- C. Place base/drain rock in even thickness layers not to exceed 4 inches
- D. Moisture condition and compact base/drain rock to 90-95% of maximum compaction.

- E. Elevation Tolerance- $\frac{1}{4}$ " in any 10-ft direction and $\frac{1}{8}$ " in any 3-ft direction
- F. Refer to resilient surfacing manufacturer for additional requirements

END OF SECTION